



The Curious Destillatory.

The. Utric. julpit.

THE
Curious Distillatory:

OR

The Art of Distilling Coloured
Liquors, Spirits, Oyls,
&c. from *Vegetables, Animals,*
Minerals, and Metals.

A Thing hitherto known by few.

Containing many Experiments easy to perform, yet Curious, surprizing, and useful: relating to the production of Colours, Consistence, and Heat, in divers Bodies which are Colourless, Fluid, and Cold.

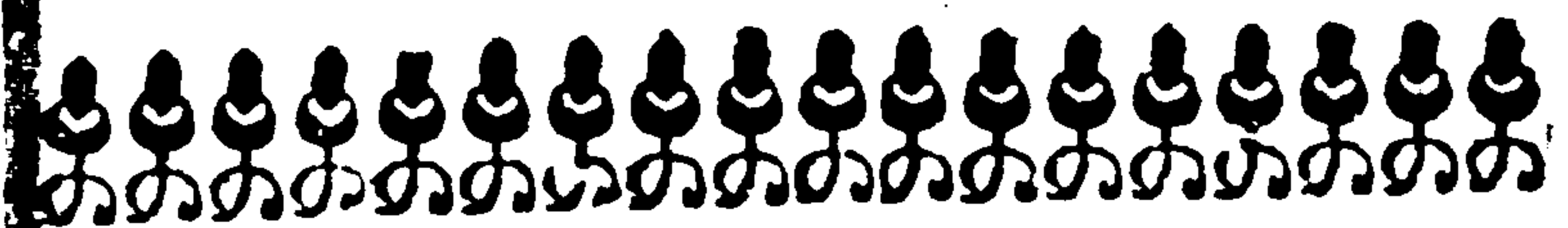
Together with several Experiments upon the Blood (and its *Serum*) of Diseased Persons, with divers other Collateral Experiments.

Written Originally in *Latin* by *Jo. Sigis. Elsholt.*

Put into *English*

By *T. S. M. D.* Physician in Ordinary to his Majesty.

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in *Cornhil,* 1677.



T O T H E
Right Honourable
PHILIP,

*Earl of Chesterfield,
Lord Stanhope of Shel-
ford, &c.*

My Lord,



IN the Eastern parts
of the World, no
Man approaches a
Great, an Illustri-
ous Person, without
a Present: And in these Western
parts it hath been for many

A 3 Ages

Ages a Custome, (and still remains so) to dedicate Books of *Curious* and Polite Learning, to Eminent, and Worthy Men. And this for several Reasons: for by prefixing before the Books they publish the Names of those Excellent Men to whom they are obliged for former benefits, They do thereby in some measure express their Gratitude: As also by that means their works are better Adorned; and thus receiving Splendor from their Patrons Glory, they thereby gain the better acceptation in the World. Some propose the writing of *Panegyricks* in Honour of their Patrons. But that

that looking so like Flattery, I willingly avoid. Besides, it were madness to suppose, your Lordships *Masculine Virtues* both of *Mind*, and *Body*; As your *Courage*, *Generosity*, *Singular Prudence*, *Equity*, *Candor*, *Affability*, *Compassion* to the Afflicted, &c. can possibly be described, or comprized, within the Limits of an Epistle: Nor need I attempt the doing this, since your Lordships truly Noble Qualities, are so Eminently known to the whole Nation.

I Address this Book to your Lordship, not for any of the foregoing Arguments, but chiefly for the following Cause.

The Epistle Deditatory.

The Art by which the Experiments produced in these Papers are made, (*viz. Chymistry*) hath in all Ages been imbraced, and cultivated by both the Learned *Magi* and *Kings*, and is at this day much prized, and Practised by many of the *Princes* of *Germany*: And highly esteemed and promoted by the Example of our own *Sovereign's* delighting in it, and favouring of it. And it must be granted that the *Antients* could not bestow so much Honour upon it, as it hath gained (in this our time) by obtaining your Lordships Favour. For you have added new *Rayes* to Illustrate it,

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it, by your Studying and Practising of it.

My Lord, Having mentioned this, I have shewed the cause why I presume to make you this Present: The Treatise it self being of that *Art*, whereof your Lordship is so great a Master; And therefore I hope the Argument will not be ungrateful. The Original Author is sufficiently known (abroad) to be both a Learned, and Practically knowing Man, and he thought this piece worth the presenting to a whole Society of Men, that are likewise such themselves; I mean the *German Academy* of the *CURIOSI*. It hath also the Applause of many

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many of our ingenious *Vertuosi* of the *Royal Society*: These Reasons have encouraged me to put it into *English*: And to deposite it at your Feet. Desiring your Lordships acceptation of it, as a Testimony of Veneration, And the Eternal devoting of my Self,

Your Lordships

From my Study
London, this
4th of April,
1677.

Most Humble,

Affectionate

and

Faithful Servant,

Tho. Sherley.

To the Reader.

READER,

Good Wine needs no Bush; Nor
Good Books Commendatory Epistles: And yet as the Vintner will hang out his Garland to draw in Customers to his House, So also the Book-teller thinks himself obliged both in interest to himself, and Civility to Thee, to put out this Sign to acquaint Thee with the quality of the Ware he here exposeth to Sale.

Know then, this Treatise consists of many Curious Experiments, which both upon the account of their variety, usefulness, singularity, and ease in performing them, must needs prove delightful, and consequently acceptable to him that desireth to improve his Dominion over the Creatures: which is only to be acquired by gaining a true knowledg of their Natures and qualities,

To the Reader.

lities, which can no way be attained so well, and with that certainty, as by making Experiments upon them: of which here are such plenty, and of such different kinds, and those such as will afford such fruitful hints to a considerate Reader, for Analogous Experiments, That I cannot but give this Testimony, That I have not met with a Tract which contains so much, in so little roome, and without Confusion. Add to this, That the Experiments here alledged, are so easily practicable, That a great part of them may be performed in a Chamber, (by such common and cheap means, as are constantly to be had, either at the Druggists, or common Chymists) and do not require a Specious Laboratory, (which is expensive,) nor long attendance (as many Chymical Processes do) which is tedious: And yet these are not of the Nature of Contingent Experiments (which sometimes happen, and sometimes

To the Reader.

times fail, being much varied by slight and unheeded Circumstances:) But they are certain in their event, and seldom subject to Miscariage. If therefore Reader thou art virtuously inclined, and hadst rather spend Thy time innocently, and usefully, than viciously, (not to say Modishly:) Thou maist here be furnished with occasions to do so. And to be serviceable to Thee in this end, was indeed one of the chief Motives which caused me to render this Book into English; the Original being so valued beyond Sea, that it was gratefully accepted there; and those few Copies, which were transmitted hither, were quickly bought up, so that the Book becoming scarce, I thought it a charitable act to Translate it; and thereby preserve it for thy use, and satisfaction, to which intent I commend the perusal of the Tract it self to Thee,

And Remain Thy Friend,

Tho. Sherley.

The

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O R

The manner of drawing colour'd Liquors by an *Alimbeck*, which thing if it hath not been altogether unknown, yet hath been hitherto observed, and noted by very few.

CHAP. I.

The occasion of writing.

THe English Philosophical Transactions have now a long time been published, and are grown into *Volumes*; also the French *Diary*, doth consist of and hath compleated five *Tomes*: And likewise the German *Academy* is now employed in putting forth their fourth *Volume*:

Mend the *Errata's*, Thus.

PAg. 2. line 24. read, *they is*. P. 7. l. 6. r. *intencely*. P. 13. l. 26. r. *Particles*. P. 27. l. 13, &c. and P. 50. l. 8. &c. *The Paragrass* in *High-Dutch* are both misprinted; but the sense being truly rendred in English, the Reader is desired to excuse it. P. 30. l. 5. r. *Alimbecks*. P. 34. l. 15. r. *swiftness* when they are distilled. P. 41. l. 16. r. *Tree*. l. 24. r. *enode*. P. 42. l. 6. r. *assulatin*. P. 44. l. 23. r. *Experiments* which follow were &c. P. 46. l. 20. dele by, & r. *Salt is broken, and the Particles are*. l. 22. dele. which were kept under. P. 49. l. 16. dele are. P. 56. l. 5. for which, r. *this*. P. 60. l. 8. for to, r. *doth*. P. 62. l. 15. for but, r. *more then*. P. 66. l. 20. r. or of an *Orient*. P. 75. l. 26. r. *well*. P. 83. l. 1. dele now. P. 84. l. 2. r. *ounce*. l. 7. r. *late it*. P. 97. l. 14. r. *Illustration*. P. 98. l. 1. r. *Experienced Sir*. P. 104. l. 1. uk. r. *Menzelius*. P. 107. l. 18. r. contained in it. P. 108. l. 5. r. and under the form of.

lume: so great every where at this day hath been their studious labour, and so great is the *Emulation*, and struggling of the most flourishing Nations betwixt themselves: that every one of them do seem to hope in a small time to vanquish and triumph over *Nature*. Truly it is a most Noble Imployment, and such an one as former Ages hath been unacquainted with: to which if there shall be added, the greater Munificence of *Kings*, and *Princes*, there is no doubt left, but that at last from thence, there will redound great Advantage to the Publick.

All of these are imployed about new Inventions, and observations, in the *Mathematicks*, in Natural *Knowledg*, or *Philosophy*, in *Anatomy*, in *Chirurgery*, in *Medicine* in General, also in the Books of *Politicks*, *Histories*, and other Books lately Printed to adjudge, and revive them. Also they have mixed many things which particularly belong to the *Chymical Art*: but they if compared with the rest are but few: although from thence a more plentiful crop might certainly be expected, than from any of the other Sciences.

Upon this very occasion, I evolving those kind of writings, it came into my mind

mind that perhaps it were convenient, that those most excellent *Academical* men, were by some publick admonition excited to bestow more pains for the future upon that *Art*, in whose deep Well lies hid an infinite plenty of *Arcana's*, or secrets. To this intent therefore we have written this Book, and Intituled it *Destillatoria Curiosa*; I say *Curiosa*, for neither is it such, that it should be extold by us with high Encomiums, nor can it promise of it self very great advantages, or utility, but this praise is sufficient for it, if by occasion of it, a *Spur* shall be added to men of sublime ingenuity, and expert *Artists*, that thereby they may not only find out the like experiments, but having found them out, communicate them without envy.

CHAP. II.

Of Colour, and of the Appearances of various Colours.

EXactly to teach the *Nature of Colour*, is as hard as to explain the true reason of *Light*, of it self most clear: *Jul. C. Scaliger, Exert. 325. Sect. 1.* Rightly says, *The Causes, and Essence of Colours are as full of controversy, and obscurity to the Intellect as they are manifest to the sight.* Aristotle *Lib. de sens. & sensit. cap. 3.* Defines Colour, that it is *perspicui terminante extremitas*: *The extremity of a terminated body that may be seen, or seen through.* Neither more clear is the description of others, *That it is a quality of a coloured Body.* Also that it is *modified Light.* Many of the *Chymists* do attribute all Colours to their principle of *Sulphur*, others of them to *Mercury*: of which opinion what is to be thought, it is very well worth the reading of *Dan. Sennertus, lib. de consensu, Cap. 11.* Excellent also is what hath been delivered upon this Argument by *Antonius Scarmilionius Fulginas*, and Mr.

Mr. Boyle in his *Book of Colours.* See also upon this subject, *Petrus Maria Capenarius lib. de Atrimentis*, and *Johan. Christoph. Kolhansius Tract. Optic.* and others.

But these controversies not properly belonging to our design, leaving them, we will rather note the differences of Colours; yet not all of them, since they are many; (and already amongst others) they have been sufficiently and subtilly explained by *Scaliger. Exercit. 325. Sect. 6.* and in the following: we will only touch upon and handle slightly such of them now, as will lead us the shortest way to our prefixed end.

For the material subject of Colours we distinguish them into those which are real, or true, and into such as are *Emphatick*, and *Apparent*, or seeming. A *Specimen*, or example of these is afforded by the *Rainbow*, a *Prismatick* or *Triangular Glass*, the redness of *Wine* spilt upon a *Napkin*. These we divide again into *Penetrative Colours*, such as *Obryz*, or pure *Gold*, and *Sealing Wax*: and into such as are *Superficial*, of which sort are *Apples* appearing outwardly red, and yet are inwardly white.

Moreover Colours considered in the ab-

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tract are either *Primitive*, or *Simple*; to wit, *White*, *Yellow*, *Green*, *Blow*, *Red*, *Black*; I say considered in *Abstracto*, or as they are to be distributed into certain, and distinct *Clauses*: for otherways *Green* seems rather to be composed of *Yellow* and *Blow*, whether it be made of *Vegetables*, or *Minerals*. So *Auripigmentum*, or *Orpiment* if mixed with *Indigo*; or *Gum of Peru* cemented with *Cobalt*, or *Bergblau*, as the *Germans* call it, supposed to be the Native *Cadmia*, or *Copper-Stone*: or mix *Ultra Marine* with *Saffron* and you shall see a *Green Colour* will proceed from these mixtures.

Or else they are divided into *compound Colours* made from the mixture of *simple ones*: or else they are *decompositi*, or doubly compounded, which are made again in infinite variety by the mixture of compounded ones among themselves, as may be seen upon the *Palates of Painters*: but if you go to the *Laboratories of Chymists*, there you will be supplied with a reason very different from these, by which *Colours* may be so changed, (and that with a most delightful variety to behold) that adding what is necessary to be added, there will suddenly result, and appear new *Colours*.

1. As

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1. As *Spirit of Turpentine*, though of it self it be clear, if it be poured upon *Saccharum Saturni*, (or *Sugar of Lead*) which is also of it self exceeding *White*, if it be digested upon it, will in a small time become a *Tincture* intercelly or extremely *Red*.

2. Also *Spirit of Turpentine*, if it be mixed with *Water*, and strongly shook together, will look like *Milk*; although this milkiness is not lasting, but this oylly *Spirit*, ascending to the superficies is diminished, or plainly vaniseth again. The like of which happens if *Oyl of Olives* be mixed with the *Lixivium*, or *Lees of Vine Ashes*.

3. *Distilled Oyl of Aniseeds*, (which is wont to coagulate, and grow thick with the cold Air,) if a *Leaf of white Paper* be anointed with it, and a few drops of *Oyl of Vitriol* be poured upon it, it will presently grow *Red*; I say the *Oyl of Vitriol*, not the *Spirit*.

4. *Syrup of Violets*, which is of its self of an obscure *Purple Colour*, is changed into a vivid and *brisk red*, if you mix by drops with it *Spirit of Vitriol*: (which knack is now known to all the *Apothecaries Shops*;) if you shall add *Oyl of Tartar* to this,

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a Green Colour will emerge from thence : which will perish and be lost again, if you add *Spirit of Vitriol* to it again.

5. *Syrup of Piony Flowers*, if you mix *Salt of Vitriol* with it, will become wholly *Black*: the same happens to *Syrup of Clove July-Flowers*, if in the time of boyling it be stirred with an *Iron Spatula*.

6. *Tincture of Coral*, prepared with distilled *Vinegar*, mixed with the *Tincture of Dasey Flowers*, there will result from thence a *Liquor* of an *obscure Blew*.

7. If you mix *Silvius's Sal volatile*, or the like *Urinous Spirit* in small quantity, with the same *Tincture of Dasey*, or *Roses*, there will arise an *obscure Blew Colour*; but if you drop in a little more, it will be made an *obscure Red*: Neither can you make that *Red Colour* clear, although you should add more (*Spirit or Volatile Salt*) to it. It therefore follows that *acid*, or *four Spirits*, do strike a *red Colour* with clearness, but *urinous* ones with *obscureness*.

8. A Solution of *Lead* made with distilled *Vinegar*, appeareth clear like *common Water*: If you shall add to this *Oyl of Tartar*, (*per deliquium*) which is also clear as *Water*, the mixture will presently grow *White as Milk*.

9. If

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9. If *Antimony* which is calcin'd with *Nitre* be boyl'd in *Fountain Water*, the straining will be clear, and almost without smell, which nevertheless by pouring any *Acid* upon it, will acquire a *Saffron Colour*, with a stinking scent.

10. *Common Water* in which *Mercury Sublimate* hath been infused, doth presently grow *Yellow* by dropping into it *Oyl of Tartar*.

The solution of calcin'd *Tin*, mixed with dissolved *Salt of Tartar* becomes *Blew*. Dr. Willis lib. de Ferment. cap. 11.

11. *Quicksilver* and *Sal Armoniack* ground together, and sublimed in a *bolt Head* with a *heat of Sand*, will become a *white Powder*, which suffer'd to dissolve (by it self in the *Air*) will produce a *clear Liquor* like *Spring Water*, which for all its clearness, if *Copper* or *Brass* be moistned with it, they will appear *silver'd*; and if *Copper Vessels* be slightly rub'd with it, it will render them as if they were perfectly *silver'd*: although this be rather an *incrustation*, (or coating of them over.)

12. But a *Powder* to *gild* with, is made thus. Dip fine *Lint*, made of *Linnen-Cloath*, in *Aqua Regis*, in which *Gold* is dissolved, and having cast it into

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a *Crucible*, make a *Circular Fire* about it, at a distance; and so by degrees reduce it into a *Powder*: But towards the end increase the heat by bringing the *Fire* nearer to the *Crucible*, and at last if you please, take out the *Powder* and free it from dirt by pouring *Water* upon it, it will be without *splendor*, or *shining*, and is of a *Violet colour*; but if you rub it upon *Silver*, the genuine *splendor* of *Gold* will appear, which afterwards will be made more *splendid*, and *shining* by *polishing*.

13. *Lignum Acanthinum*, or the *Wood* which is brought from *Brazil*, infused in common *Water*, will communicate a pleasant redness to it, like that of *red Wine*: If you pour upon this a little *distill'd Vinegar*, the *Liquor* will appear clear like *white Wine*, but a few drops of *Oyl of Tartar* reduces the *Colour* to a deep *Purple*, after which, if you drop in *Spirit of Vitriol*, it will be *yellow* like *Sack*: if you cast on it *Salt of Lead* dissolved *per deliquium* (or in the *Aire*) the *mixture* will be *whitish* like *Milk*. *Dr. Willis* (*lib. de Ferment. cap. 11.*) proposeth this Experiment, every Branch of which will answer the *Trial* but the fourth, for we by adding *Spirit of Vitriol* could not produce

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a *pale Yellow*, but made a certain *obscure Blue Colour*.

14. Have in a readiness a *solution of Vitriol*, and likewise by it sell an *infusion of Galls*. If you pour both of them together, you will make *Writing Ink*. Add *Spirit of Vitriol* to this, and the *Blackness* will clear up; then cast in *Oyl of Tartar*, and after a little working, and heat, there will appear a *light Red*, or *bright Bay Colour*: which by mixing *Spirit of Vitriol* again will be taken away, all clearing up again: And you may reiterate this *Circle* as often as you do by turns put in *Oyl of Tartar*, or *Spirit of Vitriol*: So that as often as you please you may render the *Liquor* of a *light Red* or *Bay Colour*, or else clear again.

15. It is also a pleasant *Metamorphosis*, which is proposed by the excellent *Mr. Daniel Major*, the *Famous Professor of the University of Denmark. Lib. de Chirurg. Infusar. Dub. 9.* to this purpose. Pour into a good transparent *Glass* the *Sapphire colour'd Water*, made by the help of *Spirit of Sal Armoniack* being put into a *Brass Basin*: Afterwards add the common *Clystus of Antimony*, and the *mixture* being shook, it will become clear: but if you

add

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add to it *Oyl of Tartar* it will be restor'd to its former *Blewness*.

16. Take one *Ounce* of the solution of *Crabs eyes*, made with *distilled Vinegar*: drop into it of the *Salt Spirit of Sal Armoniack* 120 drops, and you shall perceive the matter to grow *Milky*, and a *white Powder* will fall to the *bottom*, if by turns you pour upon this *Liquor* as many drops of *Joa. Polemanus his Tincture of the Blood-stone*, after some bubbling, the *Powder* which lay in the *bottom* will be dissolved again, and the whole will be changed into an exceeding *Red* transparent *Liquor*, indowed with a grateful *Saline* taste.

17. The change of light doth also cause a new *Colour* to appear. So we have observed, the *Flowers of Convolvulus* or *Bird-weed* (that sort with the *Blew Flower* and *Ivy-shaped Leaves*, with sharp points,) which *Lobelius* calls *Asureum*, in the day time is of a delicate *Blew*, but at night by *Candlelight* it appears of of a *Violet Colour*. *Wooden Tables*, and such like *Utensils*, if they be painted *Blew*, by day shew their own *Colour*, but by night they appear *Greenish*.

18. Let there be taken two parts of *Oyl of Tartar*, and one of *Cows Milk*: this

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mixture in a heat of *Sand* will grow *Red*, a part of the *Cheesy*, or *Curddy* part of the *Milk* swimming at the top, if you strain this through a *Cloath*, the *Red Liquor* will be more transparent. Being led by the *Analogy*, or resemblance of this Experiment, I have thought (that I may add this by the by) whether or no the *whitishness* of *Chyle* in an *Humane Body*, being mingled every day with the *red Blood*, doth not perhaps grow red upon the like account also. Although the *common People* wrongfully suppose, this *redness* is induced upon the *Chyle* by the *Circular motion* of the *Blood*: but motion of it self doth hardly appear sufficient for to change the *Colour*, unless there be hid also in the *Blood* it self a *Saline Principle*, which may continue this *Tincture* so many years, even to old Age, which is perfected by the assistance of the *Heart*, its *Vessels* and *Heat*.

These and the like *Phænomena*, or appearances and their causes, perhaps might be conveniently demonstrated, by the *smallest Particulars* of which these *Liquors* consist. A *Battel* composed of some *thousands of thousands* which may be *dilated*, and *contracted* at the will of the *Commander*,

Commander; nay being *disordered* by the *Enemy*, may again be rallied, and reduced into *order*. After the same manner, from the *small Particles* of Liquors dilated ariseth *perspicuity* and *whiteness*: but from their contraction *obscurity* and *blackness*. Again, according as the *dilatation* and *contraction* is more or less, there will arise intermediate Colours; *Yellow, Red, Green, Blew*. Whether those that study the *Opticks* can render a more exact account let them try.

C H A P.

C H A P. III.

Of the different ways of Distilling, and particularly of bringing the Tincture of Simples over the Helm, or Alimbeck.

THE various ways of Distilling dependeth partly from the variety of *Furnaces*, of which some are to distil by *Ascension*, others by *Descention*: to say nothing of *Probatory, Cementatory, Reverberatory, or Wind-Furnaces*, partly also from the difference of *Vessels*, of which sort are *Vesica's, Cucurbits, or Bodies, Retorts, Phials, Alimbecks, Receivers*, and others of that kind. All which *Apparatus* or Furniture may not only be seen in our Laboratory, but are also described both by Writing, and Figures by *Andr. Librius. Johan. Rhenanus*, and the rest of those kind of Artists.

There is also other ways of Distilling, respect being had not to the *Furnaces*, or *Vessels*, but to the *Matter* which comes forth during the Operation. For whilst the

the

the *Fire* worketh upon the *Matter* committed to *Distillation*, *Vapours* ascend, which being collected again fall into the *Receiver* under the Form of a *Liquor*.

To say nothing of *Sublimation* [to wit, of *Antimony*, with *Sal Armoniack*] by means of which there will also arise fair, and great variety of Colours in the head of the *Alimbeck*.

Therefore, *first*, as to what concerns the *Vapours*, or *Fumes*, they also differ in their colour. For *Nitre* though it be a *white Body*, yet in *Distillation* (at a certain time of the operation) gives red *Fumes*. *Vitriol* of it self *Green*, or *Blew*, affords white *Fumes*. *Soot* though it be never so *Black*, yet the *Fumes* which fill the *Receiver* are so *White*, that it seems to be washed within with *Milk*.

But *secondly*, as to the *Liquors* which are come over into the *Receiver*, although all of them compared together are not altogether of the same *Colour*; yet it is certain, if you consider almost infinite plenty of *Simples*, there will be very little difference or variety in them.

Those which draw *Aromatical Oyls*, may easily observe, that they come over not *White*, but *Coloured*: As to instance *Oyl*
of

of *Cinnamon* is *Yellowish*, *Oyl of Mace* is of a *Yellowish White*, *Oyl of Cloves* is of a *Yellowish Black*, *Oyl of Rhodium Wood* is of a *Yellow Colour* tending to *Red*. And as to distilled Waters, I think it worth our remark, that every one of them (not excluding all manner of *Spirits*) which are commonly found in the *Apothecaries Shops*, every one of them I say are limpid, and without *Colour*: Notwithstanding the so great variety of *Colour* in the *Herbs*, *Roots*, *Leaves* and *Flowers* from whence they were distilled. All that *Blackness*, *Greeness*, *Blewness*, *Redness*, *Yellowness*, &c. is left behind in the bottom of the *Cucurbit*, or in the *Copper distilling Vessel*, or *Vesica*, or rather perisheth: there arising (which is worth noting) nothing but limpid, and almost colourless liquor.

Truly, heretofore this Subject tyred my thoughts, and I have many times weighed this *Problem*; Whether or no amongst so great variety of *Simples*, there were not at least some *Species*, or sorts of them which would bring over the *Helm* or *Alimbeck* with themselves their own *Native Colours*; I mention an *Alimbeck* only as the chief Instrument, not excluding a *Retort*, or any other distilling
C Instru-

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Instrument. That there are some such *Species in Nature* which will do this, Labour hath taught me, nor do I repent the pains; part of these I have my self observed, part I have collected from the *observation* of others: The *Observations*, and *Experiments* are comprised in the following Chapters. Let the Industry of others add more to them.

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CHAP. IV.

Experiments in Metals and Minerals.

THAT we may begin this Business, first with *Metals*, although if they be left to themselves, they constantly retain their *Native Colours*, better than *Vegetables* do, by reason of their solidity of substance: yet being tryed with *Menstruums*, or *dissolving Liquors*, they are much varied; there doth also arise much more difficulty in distilling them than in *Vegetables*. The case is the same also in *Minerals*, although the difficulty in distilling them be somewhat less: but let the difficulty be what it will, having made trials in both sorts, we will produce a few; which Experiments (if not all of them in general) yet most of them are made by the help of an *Alimbeck*.

Experiment the first, upon Gold.

Take the *Calx of Gold* prepared with
C 2 *Aqua*

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Aqua Regis, and by reverberating reduced to extreme fineness, and an exceeding red Colour; Pour upon it a *Menstruum* (or dissolving Liquor) composed of equal parts of the best Spirit of Wine, and of the *Volatile Salt of Urine*; digest it for fifteen days in a Vessel (*Hermetically sealed,*) with the heat of a gentle Bath, and repeat this as often as there is occasion: Afterwards joyn all the several *Solutions* of the Gold, which will be red like Blood, and digest them for a Week or two. If you then distil this *Liquor* by a low Body, or Retort in Sand, at length the Gold together with the *Tincture* will pass over by the *Alimbeck*, with an intense redness, leaving in the Body an acid, black and spongy Earth. Mr. *Boyl* in his *History of Fluid, and Firm*, Sect. 5. says thus: *We prepare a Menstruum, by the help of which, without much difficulty we can bring over the Helm, at the first, or second distillation, so much Gold as is sufficient to communicate to the distilled Liquor a lasting Gold colour.* 'Tis an Artifice worth remembering, which *Joel Langelot*, in *Epist. de Pretermiff.* relates in these words: *The Powder of Gold ground in the Philosophical Mill, and put into a little Retort, not too*

high

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high an one, but a plain one, such as the English ones use to be; press it by a sand fire by degrees, and at last, with a very strong fire; and so it will distil a few 'tis true, but those exceeding red drops; which digested by it self, or with the *Tartarous Spirit of Wine*, will become an *Aurum Potabile*, which is (true, and) not sophisticate with any other peregrine or strange quality.

Experiment the second, upon Silver.

Calcine Silver with *Mercury sublimata*, after which pour upon it the very same *Menstruum* of which mention is made in the foregoing Experiment: and so there will appear a most elegant or lovely blew *Tincture*; upon which if you pour *Spirit of Salt*, it will become a green.

Experiment the third, concerning Iron.

The *Tincture* of it is reddish, and is made, by taking the filings of Steel in sufficient quantity: Pour upon them *distilled Vinegar*, and extract the redness; afterwards pour on more *distilled Vinegar*, and reiterate this for a Month, or longer, till you perceive it will extract no more red-

ness.

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ness. Then joyn all the *tinced Vinegar* together, and distil it in *Balneo*, and put *Spirit of Wine* upon that which remains; and digest it so long till it hath drawn a *Tincture*. Abstract the *Spirit of Wine* from it by *distillation*, pour it on again; after you have done this six times, the *Tincture* of Steel is perfect. It is compleat indeed, but the *Tincture* is much promoted by the *Salt of Vinegar*, extracted by the *Pblegm* of the *Spirit of Wine*: but yet so nevertheless, that it is very probable that there is some small portion of the *Iron* in it.

Experiment the fourth, about Copper.

Concerning this the Noble Mr. *Boyl*, in his *Book of Colours*, pag. 305. observes, That it is a *Metal* upon which divers and distinct sort of *Liquors* do act so easily, that there is scarce any *Mineral* that will concur to the production of so many different *Colours* as *Copper*, it being dissolvable in most sorts of *Menstruums*: To wit, in *Spirit of Vinegar*, *Aqua Fortis*, *Aqua Regis*, *Spirit of Nitre*, of *Urine*, of *Soot*, *Oyls* of divers sorts, and in most other *Liquors*, the *Colours* of which are not a little different, and various from each

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each other, although they are comprehended within the limits of *Green*, or *Blew*, or of a *blewish Green*. But it seemeth the before praised Mr. *Boyl* had not took notice that if the *duplicate Spirit* of *Joa. Polemanus* made of the *Blood-stone*, and *Sal Armoniack*, were pour'd upon *Copper*, that the *Liquor* would distill over *Green*, and that *green Chrystals* would shoot in it.

Experiment the fifth, concerning the rest of the Metals.

Tin, *Lead* and *Quicksilver* dissolved in *Corrosive Waters*, do not tinge their *Menstruums* after the manner that we have related above, as *Gold*, *Silver*, *Copper* and *Iron* do, &c. for these *Metals* are of a baser nature, and *whitish*; wherefore their *solutions* also are *white*: nor is it likely they should easily pass over the *Alimbeck* of another colour.

Experiment the sixth.

When we make *Spirit of Vitriol*, if there be added a little *Vinegar*, the *Spirit* will come over the *Alimbeck* of a *green Colour*:

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Colour : Also the *Phlegm* of *Spirit of Venus*, or *verd. Æris*, is greenish.

Experiment the seventh.

If you mix *Sulphur*, *Sal Armoniack* and *Quick-Lime*, and distil them by a *Retort*, although they are *Bodies* which of themselves are not *Red*, yet by distillation they yield a *red Liquor* : which *red Liquor* being rub'd upon the *Fingers* doth colour them *black*. *Mr. Boyl, de Coloribus, Experim. 34.*

Experiment the eighth.

Spirit of Quick-Lime, prepared after the way that *Basilus Valentinus* prescribes in *Test. Part. 5.* and from him is repeated by *Thomas Kestlerus Process. Chym. Num. 287.* This before it be rectified doth please the eye with an elegant *blewness*.

Experiment the ninth.

Take of *Vitriol* calcin'd to a *yellowness*, one part; *Flint-stones* beaten to a *Powder* two parts; and of *Spirit of Wine* as much as is sufficient to make them all into a
Past.

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Past. After which if you distill it by a *Retort*, there will come forth a *Red Oyl*. To this purpose confer with *Christoph. Glucrad. in Not. ad Tyrocin. Joa. Beguini lib. 11. cap. 6.* Also *Andreas Tenzelius in Exeget. Chymiatrica*, and *Joan. Schroderus. lib. 3. Pharmacop. cap. 26.* Where more *Oyls of Vitriol* are discovered which pass over the *Retort Red*.

Experiment the tenth.

This is to be observed concerning *Sinobar*, as well that which is *Natural* as that which is *Artificial*; if you put *Spirit of Turpentine* upon it, and then distill it by a *Glass Body* in *Sand*, the *Liquor* which comes forth will be of a very fine *Red Colour*.

CHAP. V.

Experiments upon Animals.

WE may admire in the *Animal Kingdom* the diversity of Colours with which the chief *Master Picture-Drawer* hath most curiously spotted many *Fishes*, and also *Shells*; and amongst *Insects*, *Butterflies* of all sorts; and among four-footed *Beasts*, the *Leopard*, *Linxes*, *Tygers*, &c. but when we come to *Birds*, who is there that is not amazed at the *Feathers* of *Peacocks*, and *Parrots*? But whatever variety there is in this kind in general, the *Alimbeck* makes no discovery of them, for whatsoever passeth over by it, as much as is hitherto discovered, is *Whitish*, only excepting from this rule those which by way of *Gleaning* we have annexed left, this place should be empty.

1. From the several parts of a *Stag*, or *Hart*, various and efficacious *Shop-Medicines* are prepared, amongst which the chief are the *Horns*, whose *Spirit* being drawn by a *Retort*, shines with a *Yellow*, or rather *Golden*

Golden Colour; although I deny not when the *Oyl* is exactly separated it grows *white*.

2. Amongst *Insects*, *Bees* make *Honey*; from which the *Water* which flows at the beginning of its distillation is *White*, but the following *Spirit* is first *Yellow*, and towards the end of a *Gold Colour*, and so distils constantly, and is of many uses in Art.

3. Of the *Blew Water* of *Gnats*, this following Experiment is produced by *Adamus Lonicerus Herb. German. part. ult. pag. 349.*

Wasser von gemeinen Mussen gebraunt wird blauefarb. Dasselbe bereite also: Spreite ein Sacklein, so Laufft das Wasser durch das Sacklein oder auch in die Kachel. Wo du es aber in einem helm brennest, so wird der helm stinkend. *Water* (saith he) *distilled from common Gnats is Blewish, I make it thus: Spred a Cloth over a Caldron, but put the Gnats into a Sack, or Bag: and so let them fall out of the Sack, or Cloath into the Cauldron of Water, which if you distil by an Alimbeck, the Alimbeck will contract a stink. Thus saith Lonicerus. Although I do not deny that this way of distilling Gnats is partly obscure, and partly defective.*

CHAP. VI.

Experiments appearing in Vegetables.

Here goes about a *Story* of a great Person that was very curious, who having called together to him certain *Alchymists*, shewed them divers *Simples*, which having mixed together, he caused them to be committed to distillation in their presence: but it happened that the *Liquor* as it distilled did breath forth a grateful scent of *Musk*. When this Illustrious Person required of these *Artists* a reason of this Odor, for they saw not the least Grain of *Musk* mixed with the *Simples*; They afflicted themselves all day long, and yet could produce no reason for the thing, unless this *fragrant* scent did arise from the *mixture* of the *Simples* in a certain proportion; at length, about the Evening, the Nobleman discovered to them the fallacy, to wit, that unknown to them, he had put *Musk* into the Nose of the *Alimbeck*.

As therefore we may counterfeit a *Scent*, by putting into the *Alimbeck*, *Musk*, *Civet*,
or

or *Odoriferous Flowers*; In like manner 'tis possible to fain *Colours* since the *Water* in its passing carries along with it self the *Tincture* of those things which are imposed in the *Alimbeck*: provided you light on such Spectators upon whom this Legerdemain or trick may pass.

1. The most facile way of all is, by putting *Flowers* into the *Beak* or *Spout* of the *Alimbeck*, (for example) put in *Blew-Bottle Flowers*: so the *Water* by passing through them will gain a *Blew Colour*.

2. If you think it necessary to do the thing with more care, put betwixt the *Beak* of the *Alimbeck* and the *Receiver*, a *Fistula* or *Pipe*, wider in the middle then at each end, or *Bellyed* like a *Bottle*, in which let those *Flowers* be contained (the *Figure* is thus.)



—Moreover this *Pipe* ought to be somewhat wider in its uppermost end, and narrower in its lowermost: as is to be seen in the *Figure*.

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3. This is a Spectacle for *Mountebanks* to shew upon a Stage, Thus: if there be four *Cucurbits* or Bodies full of *Water* all in one *Furnace*, put an *Alimbeck* upon each of them, let it be done so that the *Alimbeck* may only be seen, and the Pipes, or Beaks hid. Let there be put into every Beak several Flowers (for example) *Blew-Bottles*, *Violets*, *Marygolds*, *Red-Roses*, *Saffron*, *Sanders*, &c. suddenly by the help of the Fire the Liquors which are forced into the Receivers will obtain different *Colours*, not without the admiration of the common People which stand by. The same thing may be performed with those *Bellyed Pipes* put betwixt and covered.

4. This also is for ostentation, and shew: If you take one, or more *Walnuts* made Hollow and Empty, and fill them with the Spirit of the roots of *Saphire*, coloured *Pimpernel*, describ'd below in the *15th Chapter*, and stop them up lightly with wax. Then before the *Spectators* take these Nuts thus filled, and cast them into a vessel half full of *Spirit of Wine*, and putting on an *Alimbeck*, distill it in Sand; from the heat within the *Wax* will be melted, and the matter flowing out, the clear Spirit will be so tinged that to admiration it will appear all *Blew*.

C H A P.

C H A P. VII.

Of Veronica or Fluellin.

BUT some body will answer; Ah! but these are fallacies. Tis true. But you must know, that these ridiculous things are also necessary, lest you be deceived your self, and that you may be able to detect the fraud of others. *Aristotles* Sentence concerning a wise man is this: *Qui ipse non mentitur, & alium mentientem facile deprehendit. Who is not false himself, and can easily discover the falshood of others.* But now passing over *crafty cheats*, let us proceed to *Operations*, which are *Genuine*, and agreeable to truth.

Veronica, or *Fluellin*, is a Plant known to all the *Apothecaries*, and its Vertues both as to *the Breast*, and *Spleen*; also its curing of *Ulcers*, and *Wounds*, are much cryed up to the Sick. Whether it were known to the Antient Writers both *Greek* and *Latin*, is uncertain: Although *Cæsalpinus* refers it to *Diascorides*, *Myosotida* or *Mouf-eare. lib. II. cap. 214.* others make it another Plant. The kinds of it are commonly

monly (by *Herbalists*) recorded to be eight: amongst which the most usual is that which by *Caspar Bauhinus* is called *Veronica Mas, supina & vulgatissima*. The *Male Fluellin* the *Superior*, and most common. There is prepared from it a *Syrup, Conserve, Salt, Wine*, and also *distilled Water*: of the former nothing, but concerning the *Wine*, and the *Water*, take a couple of *Observations*.

Experiment the first.

Take fresh *Veronica*, when it begins to be in the *Flower*, cut it, and sprinkling it with a little *Water*, cast it into a *Glass Body*, and applying the like *Alimbeck* to it distil it by *Balneo Mariae*, or *Water*. So the *Water* which distills, will not be white and limpid like to other *Waters*, but *Greenish*. This *Greeness* though it be not constant, yet it will last at least *three months*, and afterwards it will begin to vanish by degrees.

Experiment the second.

If in the place of *Fountain Water* you put on *Wine*, and draw it the same way by *Balneo,*

Balneo, you will then also have a *Green Liquor*, but in which the *Greeness* is much deeper, and will also continue for a *year*, and longer.

Truly this neat *Tincture* which *Veronica* brings over the *Alimbeck* with it, seems to be a *Note*, or *Character* of the efficacy, which is indulged to that *Plant* before a thousand others.

Let no *Body* here accuse *Copper* for giving this *Tincture*: for if the distillation be made in *Glass Vessels*, the *Water* of *Veronica* will be equally *Green*. The latter way by *Glasses* is best to perform it, and by that means it will clearly evidence that this *Greeness* doth not proceed from *Copper*, but springs only from the peculiar *Nature* of the *Plant*.

But concerning *Vegetable Waters* distilled by *Copper Vessels* not exactly *Tyn'd*, we have observed this; if they contain any thing of *Copper*, by putting in a *drop*, or two of the *Salt Spirit* of *Sal Armoniack*, they will become *Milky* or *White*; but if they have no *Copper*, they will remain clear. However the observation of *Otto Tachenius* (an excellent *Physitian* of *Venice*) may seem to look otherways, concerning *Rose-Water* distilled by a *Copper-Vessel*; which

D

he

he proposeth, chap. 19. Hippocr. Chymic. to this sence: *It doth eat off certain Atoms from the Copper, which are invisibly mixed with the Water. Would you see the Copper? drop into the Water some drops of an Urinous Alcaly, and by it the whole Water will grow greenish: because the acidity of the Rose Water, doth with more greediness snatch to it self the light, and more like it self Alcaly than the Metal, which therefore by degrees falls Green to the Bottom.*

Whilst I am writing this a certain not inexperienced Man in the Art of distillation doth affirm, that the *Water of Sage*, and also of *Rosemary*, will be *Green*, as well as that of *Veronica*, if they be managed with a certain dexterity, and moderate swiftness. The truth of which *Experience* will determine.

CHAP.

CHAP. VIII.

Of Camomil.

Botanists, or Herbarists, are wont to reckon ten sorts of this *Plant*, amongst which the most eminent are the *common Camomil with the Noble Flower Single*, and *with the full, or double Flower Camomil without scent, and stinking Camomil or Mayweed*; but I shall chiefly have to do in this place with the first sort or *common Camomil*.

The *distilled Water* of this is to be had in *Apothecaries Shops* after the manner of other waters limpid and colourless. There is also to be sold its *Oyl*, made by infusion from the *Yellow Flowers*. But that which is made by distillation from the same *Flowers* is very different from this, for it is deeply *saturated* and fill'd with a *Saphire Colour*, very pleasing to the sight.

Experiment 1.

Take the fresh *Flowers of common Camomil*

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momil, sprinkle them with fair Water, and bruise them together; after they have stood some dayes cast them into a *Copper* distilling Vessel, well covered with *Tin*, and applying a *Head* to it, distill it. The Water being drawn forth, you shall perceive the *Oyl* to swim at the top of it, which though it be but little in quantity, will be of a true Sky Colour.

Experiment 2.

We have with the same success tryed the same, with the *dryed Flowers*; but the infusion of them stood for fourteen days to procure the greater extraction.

Experiment 3.

If you mix with them a handful or two of *common Salt*, or the like quantity of *Tartar*, the *Blew Oyl* will come over in greater plenty.

Experiment 4.

We substituted in the place of these the *Flowers of Roman Camomil*, but we had then a *Yellowish Oyl*, not a *Saphire coloured*

one:

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one: what there is to be found in the rest of the sorts of *Camomil* we have not yet tryed.

Experiment 5.

This innate *Blewishness* of the *Camomil* is of that *contagious*, or *communicative* Nature, that it is able to infect other things, and render them like it self. For Example: Take the tender tops of a *Pine*, or *Fir-tree*, and being cut into pieces, cast them into a *Copper Body*, adding a good quantity of *Camomil Flowers*, distill them by themselves, and there will come over a compound *Oyl*, which may be named *Oleum Pini caeruleum*, or the *Sky-coloured Oyl of Pines*.

Experiment 6.

After the same way you may prepare the *Saphirine Oyl of Juniper*, by mixing with a fit proportion of the *Camomil Flowers*, some *Juniper Berries*; and this not without a communication and exaltation of the *Medicinal Vertues*, with which the *Juniper* it self doth abound.

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Experiment 7.

The same way the shavings of *Lignum vite*, being mixed with the *Flowers of Camomil*, you may make a *blewish Oyl*; which though it be well scented of it self, yet adding *Oyl of Rhodium* to it, it will be rendered more odoriferous.

Experiment 8.

Nay these *Flowers* seem to be of such a disposition, that whatsoever *Rosiny matter* they are mixed with, they yeild a *Saphirine Oyl*. An Argument worthy a further speculation, whether or no by this Method many more *Oyls* may not be prepared against particular *Diseases*, by the mixture of peculiar and specifick rosinous *Simples*.

Experiment 9.

There is a *decompound Oyl*, which is described by *Boetius. lib. 11. de Gemm. & Lapid. cap. 43. Impostures* (saith he) joyn the *Flowers of Camomil*, and the *white Oyl* or *Spirit of Turpentine*, and a very large proportion of *Artificial Sal Armoniack*. They put
this

this mixture into a *Copper Body*; and to this they add *common Water*, from whence they distil *Water* and *Oyl* after the common way. The distilled *Water* contains on the *Superficies* or top of it *Oyl* of a *Colour* like a *Saphire*; this is *Oyl of Turpentine* joyned with the *Oyl of Camomil*: for this *Herb*, or the *Flowers of this Herb*, do yield some of the *Oyl*: But the *Colour* is produced by the *Sal Armoniack*, which it extracts from the *Copper*, and communicates it to the *Oyl*. If the *Oyl* be kept long it will be spoyled with age, and then you will manifestly discover the Scent of *Turpentine*. This is an usual cheat with common *Chymists* or *Preparers* of *Chymical Medicines* for the *Shops* here in *London*, because many are deceived by this means, and many *Chymists* are so simple to think the *Colour* proceedeth from the *Camomil*. I thought fit hereto discover the *Imposture, Cheat* and *Error* of *Chymists*.

Thus far *Boetius*, who in vain suspects a fraud in this matter: For, as we have shewed before in the first and second *Experiment*, that also without any manner of *Salt*, either *common*, or *Armoniack* a *Skicoloured Oyl* may be drawn from the *Flowers* of *common Camomil*; wherefore the *Co-*

lour doth not result from the *Copper Body*: for otherways the same thing would happen in distilling other *Plants* in a *Copper Body*, which nevertheless is very far from being true. It remains therefore in these operations, that the *blewishness* is produced altogether from the *Flowers*. But what is affirmed by *Boetius* concerning the *blew Colour* being drawn out of the *Copper* by the *Sal Armoniack*, signifies nothing in this case, That being an *Artifice*, commonly known to *Barbers*.

Experiment 10.

As to what concerns the *duration*, or *lastingness* of the *Oyl*, we have an *Oyl* which was extracted from *Camomil Flowers* above three years since, without the addition of *Salt* or *Tartar*, whose *Sapphire Colour* appears so constant, that if it continue not for ever, yet it seems to promise to last many years. Nevertheless I do not deny what *Boetius* alledgeth, of his false *Sapphire Oyl*, that the *Blew Colour* doth perish with *Age*, and that the *whitishness* of the added *Oyl* of *Turpentine* will *emerge* or be *apparent*.

CHAP.

CHAP. IX.

Of Lignum Nephriticum, or the wood against the Stone.

CAsper Bauhinus in pinnace Botanic. calls this Wood, *Lignum peregrinum, sive Mexicanum, Aquam ceruleam reddens, i. e. The strange, or Mexican wood, colouring Water Blew.* And places it among the Species or Kinds of *Ash trees*. *Franciscus Hernandez* in his Book Intituled *Thesaurus Rerum Medicarum Novae Hispaniae*, which afterwards was published by *Nardus Antonius Recchus* in the 4th Book, chap. 25. says thus: 'Tis called *Coatlis*, by others *Tlapalezpatl*, or the *Medicine of the Scarlet* or *Crimson coloured Blood*. It is a great *Trees-Shrub*, with a body thick and without knobs, like the *Pear-tree wood*, the *Leaves* like *Sheep Pease*, or *Rue*, with a *Yellow Flower* growing among *Prickles*. It is also excellently described by *Nicol. Monades* in his *History of Simples*, chap. 27. in these words; *Mittit Nova Hispania Ligni quoddam genus crassum & erode, Materiae piri, cujus*

cujus usus jamdiu receptus fuit in his Regioni-
bus, ad Renum vitia, urineque difficultates
& incommoda. Postea experimento comproba-
tum est, ejus Aquam in Jecoris & Leinis ob-
structionibus utilem esse. Illa autem hac rati-
one paratur, Lignum assutatim, & minutim,
concisum in optima & lymphidissima aqua fonta-
na maceratur, atque in ea relinquitur donec a-
qua à bibentibus absumpta sit. Dimidia Hora
post injectum lignum aqua caeruleum dilutio-
rem colorem contrahit, qui sensum intenditur
pro temporis diuturnitate, tametsi lignum can-
didum (potius ruffum) sit, caeruleum ideo
dico quoniam adulteratur alio ligno simili,
quod aquam croceo colore inficit, ne quis fallat-
tur. That is, there is sent from New-
Spain a certain kind of thick Wood,
without Knotts, like the substance of a
Pear-Tree, it hath been long made use
of in these parts, against the distempers
of the Kidnies, and the difficulties, and
inconveniencies of making Urine. After-
wards it was found by experience that its
Water was beneficial in the Obstructions
of the Liver, and Spleen. It is prepared
after this manner; The Wood being
shaved and final cut, let it be steeped in
the best and clearest Fountain Water, and
left in it till it be consumed by those that
drink

drink it: Half an hour after the Wood is
put into the Water, the Water will con-
tract a pale Blew, which is heightned by
degrees according to the time it remains
in it, and yet the Wood is White (or rather
Brown.) I therefore mention this Blew-
ness, because it is counterfeited with
another Wood like it, (which gives the
Water a Saffron Colour) lest any body
should be deceived.

This *ἐνχέλφως*, or knack, is now a
 daies commonly known, and certainly
 except it were so well known, it would
 be more esteemed. Of which *Fire* is an
 Example: which although there be no-
 thing more admirable then the nature
 of it, yet we despise it as a common
 thing; which were it brought from the
 remotest parts of the *Indies*, and sudden-
 ly and unthought-of shewed to us, I doubt
 not with how much amazement we should
 contemplate it.

Experiment 1.

Being about therefore to search, if that
Golden Blewish Colour, would remain
 with the same constancy in passing over
 the *Alimbeck*, I cast into a *Glass Body*,
 the

the infusion, together with the rasped shavings of *Lignum Nephriticum*, and drew it off. The *Distilling Water*, although it lost both the *Colours*, and was become clear: yet for all that I observed that it breathed forth a grateful *rosinous Odour*. But the Scent of the Shavings themselves might be observed to be much more pleasing, although the crude Wood of it self was almost *ἀοσμον*, without Scent.

Experiment 2.

We substituted in the place of Fountain Water *Spirit of Wine*, which being poured upon the shavings, in like manner became of a double Colour: But being drawn over by the *Alimbeck*; it became White like common Water. And because I easily foresaw, that I could do nothing further with this Wood, by distillation with an *Alimbeck*, I desisted: yet nevertheless I tryed other ways, and the *Experiment* which follows was produced thereby.

Expe-

Experiment 3.

We distilled some drops of *Oyl of Tartar per deliquium* into the Golden Blewish Coloured *Infusion*, made with *common Water*, and we perceived both the *Colours* remained constant.

Experiment 4.

We poured into the same *Infusion Spirit of Vitriol* drop by drop, and the aforesaid blewish Colour vanished, the Yellow one only remaining.

Experiment 5.

We tryed the same with *Spirit of Salt, Sulphur, Nitre, &c.* and the Golden Colour continued, the Blew one disappearing, as it did happen in *Experiment* the 4th. A clear sign that the *acid Salt* by its penetrative power did infringe, and otherways dispose those *Particles*, which the *Urinous*, and as it were blunt *Salt of Tartar* could not infringe or otherwise dispose.

Expe-

Experiment 6.

Many considerable Remarks are produced concerning this *Nephritick Wood*, by that *careful* and industrious searcher after *Nature*, Mr. Boyle in his *Book of Colours*, *Experiment the 10.* and in those which follow, which worthily deserve to be read. But I may repeat one of them here, which concerns the redintegration of the once lost *Blew Colour*. But because the Authors Relation is a little too long, I will repeat it with more brevity. Drop into the *double coloured* Infusion of the Wood, a few drops of the *Spirit of Wine Vinegar*, so the *Blew Colour* will vanish, the *Saffron* one remaining. Upon this pour a little *Oyl of Tartar per deliquium*, and immediately the *Blew Colour* will return, and the Infusion will appear as before of two Colours, perhaps by the *acidity* of the *Salt* the *Particles* are broke, and returned to their former position, which were kept under by the heavy *Oyl of Tartar*.

CHAP.

CHAP. X.

Of the Dregs of Wine, of wild Carnations, or Pinks, and Parsley.

Old Wine deposits two sorts of Excrements; to wit *Dregs*, and *Tartar*. The *Dregs* are the grosser, and earthly parts of the Wine which after fermentation it lets fall (like *Slime* and *Mudd*) to the Bottom of the Vessel, it not being void of a useful *saltness*, from whence the *Wine* gains strength: So that taken from this root as it were, and put into another Vessel, it will not endure any long time, but will easily degenerate.

Concerning the usefulness of these *Fæces*, or *Dregs*, we have a testimony in *Brandy*, or *Spirit of Wine*, which the *Vintners*, and *Distillers* make from them: That we may omit other uses now, which are not unknown to the common people.

But this we suppose is hardly taken notice of by every body, that an *Oyl* is to be prepared from these *Fæces* or *Dregs* which ascends the *Alimbeck* of a *Green Colour*. In this

this Operation 'tis to be observed, that that Oyl is most green which distilleth last, but this *Greenness* doth vanish with length of time: Nay presently, if you rectify the Oyl, it being changed into a *Yellowishness*. Let the distilling vessels be well covered with *Tin*, lest you suppose the *Tincture* doth arise from the erosion of the *Copper* in its passage. Many affirm that from the pressings, or husks of *Grapes*, an Oyl may be likewise made, after the same manner, which will ascend *Green*. *Wild Pinks*, or *Carnations* whilest they are in *Flower*, and running up to *Seed*, if the whole *Plant* be fresh gathered, cut small, and distilled after the usual manner, there commonly swims on the top of the *Water* drawn by the *Alimbeck*, a *Greenish Oyl*.

You will find the same thing to be true, with the *Garden Smallage*, or *Parsley* distilled after the same manner, if you have wrought aright: but this *Greenness* is but temporary, and of small duration. But the Oyls of *Chervil*, and *Parsley* which are to be seen in the Shops, are wont to be prepared by long *fermentation*, and are of a deep *Gold Colour*, which they constantly retain.

C H A P. X I.

Of wild Flower-de-luce.

IT is called *Iris*, and receiveth its name from the similitude it hath to the *Rainbow*, it being variously painted with the colours of divers Flowers. From the *Form* of the *Roots* it may conveniently be divided into *Classes*, the first of which is contained under that of the *Bulbous*, or round rooted, and are in number twenty: the other sort is *tuberous*, or full of swellings, and of this sort truly there is but one: The third sort is *Geniculate*, knotted, or *jointed* on the stems, of which there is about sixty four; the *jointed* are subdivided into *broad leav'd*, *narrow leav'd*, and *dwarfs*. First the *broad leav'd*, which is called by *Casper Bauhinus*, the common *wild German Flower-de-luce*, which is so well known, that it is called in the Shops our *Orris*, or *Flower-de-luce*. They commonly reserve only its root, from whence they make *juice*, *Oyl* by infusion, and a *Powder* called *Faculæ*: The *blewish Flowers* are beheld for their neatness, but

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never preserved or kept. Moreover, *Joachimus Camerarius* in his *Notes upon Petr. Andrea, Mathiolus German Herbal*, which was printed 1590 at *Frankfort*, to wit, upon the first Book, *cap. 1. fol. 2.* layeth down an observation concerning these *blew Flowers* worthy our noting, in these words, **Das Wasser aus den Blumen der schonen Iris destilliret, ist gut fur die Wasserfucht: and ist solches viel krafftiger, Wana also dasselbe destilliret wird, dak es der blumen natvrllich Farbe behalte, thie den solches ohne allen frembden Busa Bivichtlich geschehen-san.** *Water* (says he) *distilled from Flower-de-luce Flowers is available in the Dropsy, and is the more efficacious if it be so distilled that it retains the native colour of the Flowers: as also it may easily be perform'd without any strange additament.* And truly except we will impute the crime of falshood to *Camerarius*, there is a way to be found by which a *blew Water* may be distilled from that Plant, but the way of doing this *Camerarius* himself ought to have discovered to have freed himself from censure, lest there arise a suspicion in the *Readers*, that the thing is done by the *Artifice* mention'd above, in *Chap. 4.* for whether or no the

Water

Water distilled by the common method will be *Blew*, we have not yet had leisure to try.

Curcuma, or *Turmerick roots* are vulgarly known, but the entire Plant few are acquainted with. The figure or picture shews it to be *Indian Saffron* (to which the name of *Curcuma* is added) also it is clearly described by *Jacob Bontius* in *lib. 6. Histor. Oriental. cap. 30.* put out by *Guilielmus Piso* in his Works printed 1658. He attributes to it the Leaves of *white Hellebore*, and *purple Flowers*, with a fruit prickly, or like the outward hairy barks of *Chestnuts*, which includes a Seed of the form of a Pea. If there be poured well rectified *Spirit of Wine* upon the Powder of common *Turmerick*, the *Liquor* being distilled somewhat swifter than ordinary, will be of a light *yellow Colour*, which yellowness will continue so long only as it shall be kept in a cold and shady place: but it is easily dissipated, and caused to vanish, by the rayes of the *Sun*, or any other heat. But if any do contend that this yellowness is caused by the coming over of very small particles of the *Turmerick* with the *Spirit*, by reason of the swiftness of the distillation, I will not stiffly deny it.

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CHAP.

C H A P. XII.

Of *Sun-dew*.

Some Plants comprehend many Species or kinds under them, as *Tulips*, *Hawk-weed*, *Cranes-bill*, *Orchis*, or *Dog-stones*, *Treacle Mustard*, and *Grass*. Others contain no variety of kinds, in as much as we hitherto know of; as *Annise*, *Cymbalaria*, or *Bastard-Italian-Navelwort*, *Wall-Rue*, *Matthiolus bis Orpine*. Others hold a middle betwixt these, and contain but few Species or sorts: As, *Goats-Rue*, *Liquoriss*, *Celandine*. And the last of the three is the most ample, containing under it, amongst other sorts, a *Plant* of a most excellent structure, which from a dewy Liquor which stands upon the leaves of it, even when the *Sun* is hottest in *Summer*, is commonly called *Ros Solis*, or *Sun-dew*. Nor do our *Botanists* know more than two species, or sorts of it: of which one sort is called *Sun-dew with the round Leaf*, and is the most usually known in the Shops. The other which

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is rarer with us, is wont to be called *Sun-dew with the longest Leaf*.

Experiment 1.

Take either of the sorts of this Plant fresh and new gather'd, and let it be the whole Plant, and in the middle of *Summer* gather'd in a *hot clear Air*; after you have made it all clean, cut it, and sprinkling it with a small quantity of *Water*, let it be bruised; then put it into a *Glass Body*, and without addition distil it by an *Alimbeck*. There will come over (not without the delight of the Beholders) a *Golden Liquor*, tending towards redness.

Experiment 2.

We would try the same also with the *dried Plant*, pouring *Spirit of Wine* upon it; after standing some hours, by the help of a *Bath*, we distilled it with *Glass Vessels*, observing (which was a pleasant Spectacle) the Liquor distilled by the *Alimbeck* was of a Gold colour. Concerning the causes of this effect, if I may guess, I believe the *Sun-dew* is so composed, that it abounds with *volatile Salt*,

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which in the time of distillation doth joyn it self with the *Rosiny Particles* which are dispersed through the whole *Plant*: for if you behold its external face any manner of way, you will easily discern it to grow *reddish* from goldishness. Moreover this must happen from a peculiar proportion of *Salt*: because there are not wanting many Herbs which are both *reddish*, and *rosiny*, whose distilled Waters nevertheless do not in the least look *reddish*, or *yellowish*.

After we had made these our *Experiments*, we happened upon *Conradus Kunraths, Medulla Distillatoria*, who in the fifteenth Tract written upon *Ros Solis*, propounds (after his custom) a tedious method of making Medicines out of this *Plant*; and amongst other things asserts, that the *distilled Water* of it is *yellow*, and that there is to be prepared from it a *Quintessence* which is a *Panacea* in all manner of diseases. Which thing we will leave to its *Author*, or rather to *Isaac Hollandus*, out of whose Book, intituled, *De Opere Vegetabili*, all that *Kunrath* hath writ seems to be taken.

CHAP.

C H A P. XIII.

Of Blew Pimpernel, and of Curcuma, or Turmeric.

THE Family, or kind of *Pimpernels* may be conveniently divided into two *Classes*. The first contains those *Pimpernels* called *Sanguisorbe*, or *Barnet*, of which there are four sorts: to wit, the *greater*, the *lesser* which is hairy or rough, the *lesser* which is *smooth*, and that which is *without scent*. Of the *latter sort* are those *Pimpernels* commonly known by the name of *Pimpinella Saxifraga*, of which five kinds are reckoned up by *Bouhinus* in *Pinac*: that is the *greater with the white boss or Top*, the *other greater*, the *greater with the red boss or Tuft*, and the *lesser with the thin Leaf*. To which may be added those which were unknown to *Bouhinus*: *Pimpinella Cadanensis Maxima* of *Jacobus Cornutus*, and the *Pimpinella Mixima Cadan.* with the long red spire or ear, and that with the red ear conglomerated, or heaped together, of *Robert Morisons*; also *Pimpi-*

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nella Agnimonoides, of the Physick Garden of Padua.

But besides all the aforementioned, there is another sort which grows with us, in the Fields near the City, which for certain reasons we call the *Blew Pimpinell*; the same also may be found near *Steinfeld*, a place six Miles distance from hence, where it is propagated in the *Physick-Garden* of the *Court*; and also at *Frankfort* by the way side.

If you regard its *Figure*, it doth not seem to belong to those sort of *Pimpinels* called *Sanguisorbes*, but to that other sort called *Saxifraga's*, amongst them to these called *Major Umbella, Candida*, or the greater with the *white boss*, or *Tuft*, to which it approacheth very near. But again it doth differ from it; *First*, In the *Native Soil*, or place of its growth: for *Blew Pimpinels* grow in a *blackish Earth*, but the other in a *sandy*. *Secondly*, The root of *Blew Pimpinels* is outwardly of a gray colour, and inwardly is white: the other root is white both without and within. *Thirdly*, These roots do abound within with a *blewish juice*, which is never seen in the common sort, for which cause it hath seem'd convenient to me to
give

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give it the name of *Blew Saxifrage Pimpinell*.

Experiment 1.

It is a wonder that so fine a Spectacle should be so long unknown, which this Plant distilled can expose to the sight; for if the *roots*, either *fresh*, or *dried*, be cut into *pieces*, and *Spirit of Wine* poured upon them, it will be tinged with a *yellow Colour*, and if you distil it by an *Alimbeck*, the *Liquor* will pass over of an exceeding *Saphirine Colour*. The *Spectators* which are ignorant of the thing, will be amaz'd, and be ready to swear there is some juggle or cheat in it.

Experiment 2.

But if you put the *roots* either cut, or bruised, into *Oyl of Turpentine*, with a triple proportion of *Fountain Water*, and afterwards shake the *Glass*, the *Oyl* that swims at the top when it stands still, will be *Blew*: and if afterwards you distil all of it with a strong fire in *Sand*, the *blew colour* will vanish, and the *Oyl* which swims upon the *Water* will be of a *Gold colour*.

Expe-

Experiment 3.

Wherefore if you have a mind to transfer this operation to a Medicinal use, and particularly to prepare a *Physagogal blew Water*, then let there be added with the roots of this *Pimpinell*, the seed of *Anise*, *Fennel*, and the other *Carminatives*, or breakers of wind.

Experiment 4.

If you have a mind to make a *blew Water against the Stone*, then add to these roots, the seeds of *Winter-Cherries*, *Parsley*, and such like; but if you would have the *blew Colour* to prevail, there ought to be more of the *Pimpinell roots* then of the rest.

Experiment 5.

If you take equal parts of the *blew Pimpinell roots*, and of the Herb *Sun-dew*, and mix them together, and then put them into *Spirit of Wine*, there will flow from them, distilled by an *Alimbeck*, a *Liquor* of a most pleasant *Sea-green colour*, the *blew-ishness*

ishness being refracted or broke by the native redness of the *Ros Solis*, or *Sun-dew*.

Caution 1. No waterish *Liquor* will extract the *Saphirine colour* of these *Roots*, but it ought to be a *Spirituos Liquor*; but the best way of all is, with *Oleaginous Liquors*, by reason of the resemblance betwixt them, and the *Rosinous juice* of the *Roots*. This is further to be added, if you pour *Oyl of Citrons* upon them, they will presently after a little stay let fall their *blew Colour*.

Secondly, The distillation in these Operations is not to be too gentle, for then the *Liquor* will be *white*, but a little *brisk*, and *swift*; so at first the *Liquor* will be of a *blewish white*, but the latter will appear of a perfect *Saphirine colour*.

Thirdly, This *Blew colour* (as you may observe in the two former Experiments) is not so very lasting, but that after *three or four Months* it will degenerate into *yellowness* by degrees, but it will endure the longer if it be kept out of the rayes of the *Sun*, and in a *cool place*.

Fourthly, These *Roots* ought to be gathered in the *Spring*, *Summer*, or *Autumn*, and to be kept all the *Winter*: for the *dryed Roots*, as well as the *fresh*, are fit to produce

produce this *Phenomenon*, or appearance: although by very long keeping the *Blew juice* is dissipated, and after the manner of other *Roots* they become useless.

Fifthly, Sometimes we steep the very fresh gathered *Roots*, only in *Oyl of Turpentine*, and have observed that the day following a *Sea green*, not a *Blew colour* to arise: And although we afterwards added a triple proportion of *Water*, and by fits shook it strongly, yet the *Oyl* which swam at the top, remained of a *Sea colour*.

CHAP.

CHAP. XIV.

Of Cinnamon.

BY reason of the difficulties, and length of Navigations, there hath been related both by the *Ancient Greek*, as well as *Latine Authors*, many uncertain, and also *fabulous* things concerning *Cinnamon*. And from hence, heretofore there hath sprang so many controversies amongst *Botanists*, about the differences and identities of *Cinnamon*, and *Cannella*; which quarrels will be easily determined by reading of the writings of latter *Authors*.

The most noble sort of *Cinnamon* is the *Cannella Zeilanica*, or the *Cinnamon of Zeilan*: the next to this, is that of *Malaver*, or *Java*: the next is, the *Peruvian*. Nor must we pass by the *Clove Cinnamon*, or *Clove Bark*, so called from its taste, which in this Age begins to be brought to us from the *Southern Provinces of America*, called *Guiana*.

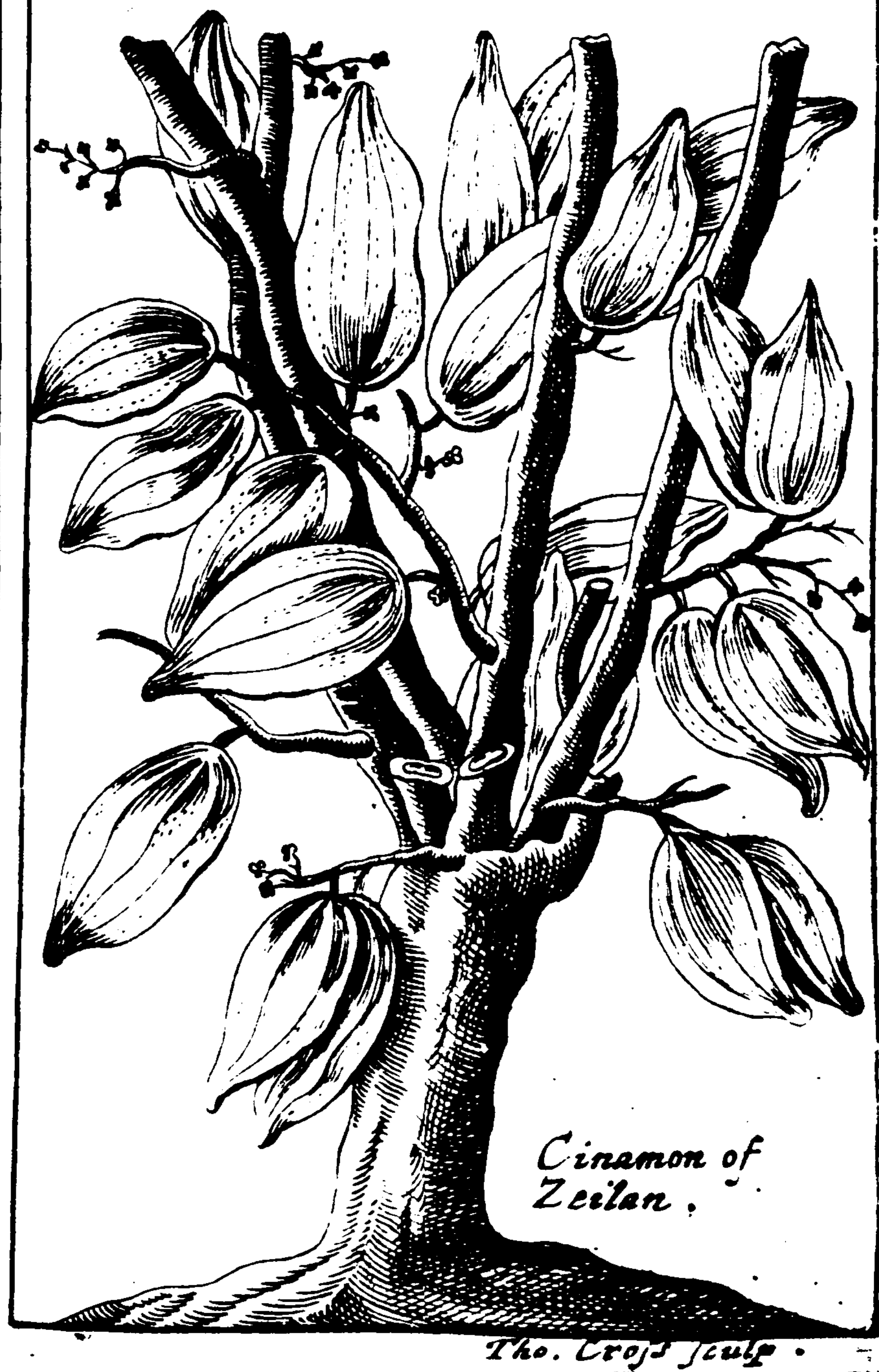
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But the History of *Cannella* is above all others most exactly described by *Gulielmus Piso*, cap. 1. and 2. of his *Mantiffæ Aromaticæ*, which he hath described and annexed to his splendid and neat work, *De India utriusque re naturali atque Medica*. Printed Anno 1658 at *Amsterdam*. I confess I was not a little joyed when I turning over this *Volume*, first beheld the *Cut* or *Figure* of the *intire Cinnamon Tree*: having been troubled at the negligence, shall I say, or ignorance of the rest of *Herbarists*, for almost every one of them in their *Commentaries*, have hardly afforded us but one *Leaf*, with a *Berry*, with a *small Pipe*, or *Stem*. Moreover, because this *Author*, as *Johan. Johnstonus* (who follows his steps in his *Hist. Nat. de Arboribus*,) is not to be found in every bodies hands, and that besides there is hardly any hope left, that this *Tree* will ever be procured to grow in our colder *Clymat*: Therefore we esteem so much of this *Cardinal*, and most fragrant *Spice*, that being led by the example of *Piso*, I have caused its *Effigies* to be ingraved, and that it might be the better known to our *Courtrymen*, have taken care to insert it in this place.

But

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Cinamon of
Zeilan.

Tho. Cross sculp.

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But that we may draw nearer to what we design, there is made of this Bark a *Water* to be had in the Shops; which if you reckon to be the first of *Aromatical*, or spicy ones, you will not be mistaken; for it is so *cordial* and friendly to the *Vital Spirits*, and doth so powerfully expel *Wind* in the *Stomack* and *Guts*, and also is so grateful, and pleasing to the *Palate*, that it leaves other *Spices* much behind it. They are wont to distil it with *Wine*, or without with *Borage Water*: either way that which first distils over the *Alimbeck*, is of a *Milky colour*. But this *Milki*ness is hardly native, or true, but doth proceed from the *Oyl*, with which this *Spice* doth abound: which being dispersed through the *Water* in small *Particles*, causeth a *Milky colour*: And if these, as it were *Atomes*, shall by length of time be united, they will be carried to the *top* of the *Liquor*, and there will shew themselves small *Oily drops* of a *Golden colour*, leaving the *Water* clear: although that *Oyl*, if it be somewhat more plentiful, doth usually at last fall to the bottom.

Nor

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Nor ought this so to be interpreted, as if this *milky Colour* were only proper to *Cinamon water*: for it appeareth also in the *Water of Cloves*, *Nutmegs*, and the rest of waters drawn from *Spices*. But I thought fit to name *Cinamon* above the rest, because, as we said a little before, it doth excel other *Waters*. And also, because it is more frequently used every where.

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CHAP.

CHAP. XV.

Of Corrals.

There are three kinds of *Corrals*: *Red*, *Black*, and *White*. The *White* may also conveniently be distinguished into *branched*, *starred*, *joynted*, and that which is *warty*, or *knobby*. There is also a sort of *Corral* which is *Red* without, and *Black* within. But that which is prized above the rest in Medicine, is the *Red* called the *Male Corral*, of which *Pedac. Dioscorides. lib. 5. cap. 139.* Thus: *Sea Corral is a Shrub, which drawn to the top of the Water growth hard presently, and swims, and as it is incompassed with aire it concretes, or hardens. Much of it is found in a Promontory by Syracuse. The name of which is Pachyno. The most commended is the Red sort, of the Colour of a Daffidil stalk, or of the deep coloured Sardix or Orient bright Purple. Being of a long and round figure easy to break, and of a like hardness in every part of it: again, it is of the scent of Oreweed, or Sea-grass. It is very full of small branches, and is like in form to*
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the Shrub Cinamon. The like description to this *Pliny* hath *lib. 32. Histo. Natur.* but that he erroneously alledgeth that these *Berries* or *litle Balls*, which are worn for ornament about *womans Necks*, do grow of their own accord on this small *Sea tree*: for it is sufficiently known at this day, that they are made by *Turnings*; and that also might aswell have been known heretofore. Of the same reddish *Beads*, is to be understood the most antient of *Poets*, *Orpheus*, in his peculiar verses of *Corral*, in which he elegently prosecutes the vertues of it, and the *Fables* of it also.

Concerning this bright sparkling *Corral*, whether or no the true tincture of its genuine Colour, can be extracted, hath been already examined: The *Solutions* made with *Juice of Lemmans*, or of *Barberries*, although they delight us with a false shew, yet they will not answer the thing designed: Neither also will those *Liquors* which after abstraction remain of a *Red Colour* in the bottom of the *Vessel*. Of this sort may be seen many *Processes* or *Methods* in *Anselm. Boetius. lib. 11. Histor. Gemm. & Lapid. cap. 154.* But many more in *Jo. Lodov. Gansius Histor. Corral. caput 7.* Also amongst other late *Authors*. The

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business consists in this point, that a reason may be shewed, how without the addition of any suspected thing, there may be drawn either by *Alimbeck*, or *Retort* a *Red Liquor* from *Corrals*, that is, a *Genuine* and true *Tincture*.

Experiment 1.

The forecited *Jo. Lodov. Gansius*, *sect. 8.* doth testify that it was sometime observed by the famous Physician of his time, *Jac. Zuingerus*, That a *Tincture* might be drawn by distillation in an *Alimbeck*, if the *Corral* being made into a very fine *Calx*. or Powder, and being well digested with *Spirit of Wine*, it be distilled nine times, first with a gentle distillation, afterwards forced over with a vehement heat, so that the *Water* will come forth first *Yellow*, and at last *Red*, which is believed to be the *Tincture*.

Experiment 2.

The same *Gansius* in the same *chap. sect. 16.* hath this following. Let the Powder of *Corral* be calcined with *Spirit of Salt*: then wash the *Calx* with distilled water,

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water, that the saltishness may be taken away. After which extract it, by adding *Spirit of Wine*. Let the extractions poured back again upon the *Corrals* be distilled so long till the *Tincture* ascends by the *Alimbeck*. From this separate the *Spirit* by a *Balneo*. Note in this place that what is extracted, is always to be circulated ten days space: and after each time to be *co-hobated*, or poured back again, and distilled.

This is to be done six times, always adding new *Spirit*. The *Red Colour* is said to come forth in the *fifth* distillation, and in the *sixth* a *Powder* altogether *Red* will remain at the *bottom*.

Experiment 3.

Agreeable to this way, is that of *Conradus Kunrath* in his *Medulla Distillatoria*, *Tract. 10.* written upon *Corral*, which therefore at this time we will not repeat, but leave untouched.

Experiment 4.

Daniel Sennertus lib. 5. institut. Medic. pag. 3. sect. 3. cap. 9. laies down the following

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lowing way. Let *Corral* dissolved in *Vinegar* be impregnated with *Spirit* of distilled *Vinegar* till the *Salt* will receive no more of that *Spirit*; which is performed thus: To one pound of *Corrals*, add two ounces of the strongest *Vinegar*, and distil it gently, there will only distil from it an insipid *phlegm*. The second time add to the *Corrals* three ounces of *Vinegar*, and distil it again, and so proceed every time, adding of one *Ounce* of *Vinegar* more than formerly, and continuing this, so long, till the *Vinegar* distil as sharp, and strong, from the *Salt* of *Corral* as it is put upon it. Let the *Salt* so impregnated be digested for thirty days in *Balneo Mariae*, or a Bath of hot Water, and afterwards distill it in a close *Reverberatory*, by a *Retort*, but so that the *Phlegm* may be received first by it self; and then the *White Spirits* by themselves, till all the *Spirits* are come forth, together with an *Oyl*, Red as *Blood*. This *Spirit* is to be rectified by an *Alimbeck*, and the *Red Oyl* will remain at the bottom. But this *Spirit* poured upon fresh *Corral* doth extract a *Red Tincture* like to *Gum Lacca*, which if it be again freed from this *Spirit* by distillation, and the *Corrals* be joyned with *Spirit* of *Wine*, or some *Cor-*
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dial Water, and by distilling, and cohobation, it will be made *volatile*, and will then be the *Tincture* of *Corral*.

Experiment 5.

Also this following is a compendious way. Take of *Red Corrals* three ounces, and of *Sugar* half a pound, being finely bruised and mixed, distil them in a *Retort*, and you will see a *Red Liquor* to come forth.

But it is not to be doubted concerning these *Operations*, that this *Redness* is hardly due to the *Corrals*: but is more owing to the *Spirit* of *Salt*, *Salt* of *Vinegar*, *Sugar*, and the like additions: and much of it also to long digestions. Inasmuch that these sort of *Tinctures*, are rather to be taken for *Analogous*, than *Genuine*, until the Fates grant us the true one. And truly whilst I am writing this, there is come to my hand the *Epistle* of that most excellent man *Dr. Joel Langelot* (chief *Physitian* of the *Duke* of *Holsteen*, my most Noble *Friend*.) *De quibusdam in Chymia pretermisissis*, wherein he sets down an hitherto unknown solution of *Corral*,
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which (as I suspect is performed by *Oyl of Citrons*) doth first mollify the hard Fragments, and afterwards doth dissolve them into an exceeding *Red Mucilage*, or slimy Substance, and afterwards (as may be seen) by pouring on of *Spirit of Wine* that is *Tartarised*, it will go also into an exceeding *Red Tincture*.

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CHAP. XVI.

The Conclusion: Containing three sorts of Observations.

SINCE we have spoken concerning *Colours* emerging, and resulting from *mixture* in the *second Chapter*: we shall not seem to wander from the matter, if by way of *Colophony* or conclusion, we produce also by way of Example, the various *effervescencies*, and *incalescencies* of things, together with their *attenuation*, and *coagulations*. These also are *Chymical*, and afford much light towards the Knowledge of *Nature*, and of the differences of *Acid*, and *Urinous Salts*. As also it will easily appear from hence, which *Saline Spirits* will either suffer themselves to be joyned to each other, or refuse it. Which Doctrine, as it contains under it the foundation of some of the most noble *Operations*, and is not commonly known to all men: So upon its own account it seems worthy to be annexed to our *Distillatory*, by way of *Mantissa*, or overplus.

Obser-

Observations relating to effervescency, and incalescency, or production of heat.

To begin with those things best known: It is well known to the common people, that if Water be sprinkled upon *Quick-Lime*, it will excite from it both *heat*, and *smoke*: which Operation is by *Brick-layers*, and *Plasterers* called *slaking*, or *extinguishing of Lime*.

2. If you moisten with *Aqua-fortis*, the filings of *Iron*, *Copper*, or *Tinn*, the Glass in which it is done will grow so *hot*, that you can scarce hold it in your *hand*, there also ascending at the same time plenty of *Fumes*.

3. Almost the like effect doth follow, if you poure the *Caustick Water* upon *Quicksilver*, *Lead*, or *Marcasite*. But as to what relates to the more perfect *Metals*; *Luna*, or *Silver*, doth stronger resist *Aqua-Fortis*, than the imperfect *Metals* are wont to do: but *Gold* doth plainly elude its force, except *Sal Armoniack* be added.

4. You may also observe an exagitation, if you pour *Aqua Fortis* upon *Salt of Tartar*.

5. Pour Fountain Water upon calcined
Vitriol

Vitriol, whilst it is yet *warm*, stirring it softly; and you shall perceive it to wax vehemently hot. The same will happen if you pour *Water* upon any *Alcalizate*, or fixed *Salt* whilst it is yet hot.

6. Distil drop by drop of the *Spirit of Vitriol*, into the *Salt*, or the *Oyl of Tartar* prepared *per deliquium*, and there will be caused a *crackling noise*: which being finished there will appear a *coagulum* which is commonly called *Tartarus Vitriolatus*.

7. Mix the same *acid Spirit of Vitriol*, or of *Sulphur* with the *Gall of an Ox* (which is fill'd with its own native *Urinous Salt*,) and you will presently perceive them to fight. But the ebullition will be much stronger, if you mix *Gall* with *Aqua-fortis*: insomuch that a great disturbance will follow it, and a *White froath* will arise a great height upon it.

8. If the *Genuine Red Oyl of Vitriol*, and *Spirit of Turpentine* be mixed together; the Glass doth begin to wax so very hot, that it cannot be touched by naked hands.

9. Neither doth the *Spirit of Salt Nitre*, or *Peter* will agree with the *butter of Antimony*, but these two *Liquors* being mixed together, are seen rather like *Enemies* to fight between themselves.

10. I had lately reserved for a use, Spirit of common Salt, and after it was consumed, I put into the Glals (perhaps whilst it was yet moist) Spirit of Sal Armoniack, tinged with the Flowers of Brass, (which many now a days call the Saphirine Spirit) I observed when I poured it in, immediately the first drop stirred up a Cloud in the Glass, and a Smoakie Vapour did manifestly exhale from it. A not obscure Argument, that these two Spirits were almost insociable, upon the account of their contrary Salts.

11. To this place belongs the Observation of Regnerus de Graff. in his Book *de Succo Pancreatico*, pag. 60. which he lays down to this sence: *We took, says he, Oyl of Tartar per deliquium and we poured it into Cows Milk, after which we added a small quantity of Spirit of Vitriol, and presently there arose an effervescence, and that of longer continuance, than if Milk had not been added. Which differency seems to depend upon the visciduity of the Milk: this effervescence will not proceed so well, if you put the Spirit of Vitriol into the Milk before you put in the Oyl of Tartar, (to wit,) because of its aptness to be coagulated by the Acid.*

Obser-

Observations of Attenuation, and of Coagulation.

1. We call *Attenuation*, when a *solid* and *Gross Body*, is rendred *thin* and *fluid*: but the contrary to this is called to *inspissat*, thicken, or *coagulate*, when such things which of themselves are *fluid*, and *thin*, acquire *firmness* and *subsistence*, and are *thickned*, either by the means of *Coagulation*, or *Glacifcency*, (that is, *frozen* or made *Ice*) or else altogether *Lapidificated*, or turned into *Stones*; which *Physical*, or natural affections above all others are most frequently known not only in the *Apothecaries Shops*, but also in other *Mechanical Arts*: wherefore the whole *Spagirical Art* is by many believed to receive its name from *dissolving* and *congregating*, or *compacting* together, for which reason these two qualities (in our opinion) justly deserve a peculiar consideration.

2. When the *Apothecary* prepares *Decoctions*, or *Infusions*, and the *Cook* makes *fresh Broth*, by pouring on of *Liquids*: *gross* and *dense* bodies are *attenuated*, and their nobler parts extracted. There is the like reason in *Juleps*, or *emulsions*, and the

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the rest of Medicines in a Liquid form.

3. Thus we see the bodies of all dry *Salts*, are melted and *attenuated*, by effusing watry Liquors upon them: From whence those *Solutions* called the *simple ones*, of which sort for *Example* is that of *Vitriol* dissolved into *Fountain Water*, which being mixed with the infusion of *Galls* produceth *Ink*, of which mention is made above in *chap. 2.*

4. Relating to this purpose are all the *corrosive Solutions* made by *Caustick Waters*, upon the solid *compage* of *Metals*. For *Gold* by its smallest parts doth swim in *Aqua Regia*, so that, that which if left to itself stops the sharpest sight from looking into, it presently changeth its *Species*, and *Texture*, and appears *diaphanous*, or transparent.

5. Nor is it less to be wondred at, that the same *Gold*, and the rest of the *Metals* will suffer themselves to be so *attenuated* by the *Fire*, (by as it were a certain *corrosion*) that they will flow like *Waves* of *Water*: which *fusion* truly, unless the thing were so common as it is, would hardly be believed by such as were ignorant of it.

6. Al-

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6. *Alabaster*, and *Gypsum*, or *Plaster of Paris*, may be burned as they do *Limestone*, as is commonly known; and it is particularly asserted by *Anselmus Boetius*, *lib. 2. de Lapid & Gemm. cap. 269.* But whether or no the following *Experiment* be much noted, I know not, (and therefore will set it down) Cast into a vessel of *Brass*, or *Iron* with a Flat botom, *Alabaster*, or in stead of it *Plaster of Paris*, (very finely grown'd, and sifted) *some pounds weight*: Apply *Fire* to it by degrees, even to the utmost height. And you shall see this *Stony Powder* to put on the form of a *Liquor*, and to boyl like *Waves*, sending up *White Vapours*, resembling *Smok*; moreover if you then stir it with a *Stick*, you will not find it to resist the motion of your *hand*, like *Sand*, but to yeild like *Liquor*: which thing truly doth produce no small delight, to the *curious Spectator*, as *Mr. Boyl* doth witness of himself, in his *History of Fluidity*, *Sect. 18.* where he addeth more *notes*, and cautions upon this thing.

7. It is also a *ἐγχειρησις*, of a *species* of *attenuation*, by which *Salt of Tartar* is dissolved into a *Liquor per deliquium*: And amongst *Natures works*, it is an *Illustrious*
Attenu-

Attenuation, by which the thickest *Ice* of *Rivers* in the *Spring* time is dissolved by the heat of the *Sun*.

8. But that we may also come to the *Phenomena* or appearances of *Coagulation*, amongst those which are best known is that of making *Bread*, whilst the *Bakers* by mixing *Water* with *Flower* or *Meal* coagulate it into a *Mass*, to make *Bread* out of. The like, but more compounded work, is that of the *Confectioner*, who mixeth together *Butter*, *Sugar*, *Egs*, and divers other ingredients.

9. But there is hardly extant a more *domestick*, or familiar *Example*, than the *coagulation* of *Milk*, whether it be performed by *Calves*, or *Lambs Runnit*, or by *juice* of *Lemons*, or by *sowre Herbs*, *Spirit* of *Vitriol*, or other *acid Salt*: by which means the fluid substance of the *Milk* separates it self from the *whey*, and suddenly joyns together into a *cheesy Mass*.

10. In the *Canary Islands* they thicken, (by boyling) the fluid juice of *Canes* and *Reeds* into innumerably useful, and most sweet *Sugar*: And on the contrary, in the *Island of Succotra*, they make *Aloes* of the juice of a *Plant*, which is so exceeding bitter that it is become a nickname,

name, for other bitter things: [You will have a large account of coagulations of this nature in the *Philosophical Essay* of *Petrification*, written by the *Translator* of this *Treatise*, and printed Anno 1672.] Nay without Art, or Labour, *Water* is converted into *Stone* in divers dens. And to omit other *Countrys*, the *Cave* called *Baumanus's Cave*, not far from the *Mountain Brueter* in the great *Forest* of *Hircinia* in *Germany*, in which not only *Waters* are turned into *stony Icicles*, but also there is found a wonderful company of the *Bones* of *Animals*, but from what *Original*, or how they came there, is yet uncertain.

Eleventhly. But as to what concerns *Minerals*. If you mix the best *Urinous Spirit* of *Sal Armoniack* equal parts, with the most dephlegm'd *Spirit* of *Wine*, they will set, or fall to the bottom of the *Glass* in the manner of *Icy flakes*, or rather like *Snow*. For whilst the *Acrimony* of the *Armoniack Spirit* is blunted and mitigated, by the sweetness of the *Spirit* of *Wine*, the *crisped*, and sharp pointed *Particles* of the *Salt* falling to the bottom, and others falling still upon them, they represent the form of *Snow*.

Twelfthly, If Spirit of common Salt be mixed with the Acid Spirit of *Sab Armoniack*, (not with the Salt Urinous one) then at first the mixture will grow hot, and presently it will be troubled, and thick, and at length it will begin to conjoyn together plainly in the form of Butter.

Thirteenthly, If there be mixed together equal parts of highly rectified Spirit of Wine, and exquisitely dephlegm'd Spirit of Urine, they will coagulate (by agitating them) in a quarter of an hours time: first, into the form of Snow, and a little after, into a solid Mass. But unless both the Spirits be freed from all Phlegm, this business will want success: As Mr. Boyle doth prudently admonish in his *History of Fluidity and Firmness*, Part 2. Sect. 32.

Fourteenthly, Beat the white of an Egg, even to thinness, then mix with it half as much of the best Spirit of Salt: and you shall see this mixture will coagulate, even in a few Minutes of an hour by agitating it.

Fifteenthly, Many have attempted divers ways to coagulate the most fluid Body of Quicksilver. For *Thomas Digges* *Chymist*. Part 1. Pag. 35. proposeth his way. And that I may omit others, *Thomas Digges*

form

was now hath propounded his, *Cent. 1. Num. 79*. But the most exquisite, and no less certain way, is by the vapour of Lead; if you make a hole with a Stick in melted Lead, being removed from the Fire, and beginning to cool, then sprinkle some Ashes into the Hole, and nimbly pour in the Quicksilver: and so the Vapour ascending from the Lead will congeal it, although there are not wanting those which doubt of this coagulation. But the Translator of this Treatise hath experimented it to be true.

Sixteenthly, 'Tis a more difficult operation which I make use of to procure a yellow coagulated Mercury: for I take of Quicksilver one ounce, of rust of Brass, and common Salt, of each an ounce and a half, Wine, Vinegar a pound or more: boyl them in an Iron frying-Pan the space of an hour or two, continually stirring them with an Iron Spatula; till at length the Mercury coagulate into an Amalgame, which afterwards wash several times from the Salt, and then form it into little Balls, the bigness of Pease. These little Balls being exposed to a temperate Air, after a few hours, will harden of their own accord: But if you have a mind also to induce a colour upon this coagulated Mercury, then

G 2

take

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take of *Turmerick roots fourteen Drams*, and of prepar'd *Tutiz one ounce*, and mixing them together, make with the *Balls Stratum super Stratum*, that is, one row of the *Powders*, and another of the *Balls*, and so do till you have filled up a *Crucible*, which lute well, that nothing may expire. Let it stand at first in a *gentle fire*, that the matter may dry: afterwards for an *hour* or more, apply a *strong fire* to it; then take it off, and after it is *cold*, melt it as they use to do *Metals*, and pour it into an *Ingot*, and you will have a *Mass* very much resembling *Rhenish Gold*, of which may be made *Rings*, *Bracelets* and *Medals*. If there be any body that will not allow this *Mass* any longer to participate of the *Quicksilver*, I will not contest with him; because others which are acquainted with that *Planet*, will not be induced easily to believe, that it can freely endure a vehement fire for an hour together.

Observations upon Blood, and its Serum.

How much the *Blood within* is altered, by *attenuating*, or *coagulating* it, by means of *Mineral Spirits injected* into the *Veins* of

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of *Brutes*, hath long since been declared by us, in *Clysmatica Neva*, cap. 5.

But, moreover, we have tryed many things upon *Humane blood* whilst it was yet *warm*, and newly drawn out of the *Veins* by *Phlebotomy*: observing that by instilling those *Mineral Spirits*, the *Blood* hath undergone various mutations: of which kind are *Ebullitions*, (or boiling, and bubling,) *Attenuation*, (or becoming thinner,) *grumescence*, curdling or coagulation, and the *exaltation* or heightning of its *colour*, or the *obscuration*, darkning or hiding of it, and many the like variations. But before *Humane blood*, let out by opening a *Vein*, do lose its *heat*, and begin to thicken, there useth to swim upon it a *Liquor*, heretofore taken for *Bile*, or *Choler*, now esteemed its *Serum*, or *Whey*. Certainly it is not so bitter that it can deserve the name of *Gall*, or *Choler*: neither is it so *thin* that it altogether deserves to be called *Whey*, or *Serum*. If it be taken up gently in a *Silver Spoon*, and without the mixture of the bloody substance, if it be held a little while over warm *Embers* or *Coals*, it will be *coagulated* like to the *white of an Egg* boyl'd, both as to its *substance* and *colour*,

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and is also almost like it in taste. As to what concerns its colour, I have taken notice of this difference; that in many it is perfectly white, in others it is palish, in others it tendeth towards yellowness: which variety may depend either from the temperament, or from the healthy, and infirm state of the Body, or from those things which are received into the Body, (for it appeareth that some portion of the Chyle is not changed altogether into Blood.)

If you put in of the aforesaid Mineral Spirits by drops upon this Chylous Serum put into several Vessels, there will also appear various Phenomena, which will be useful for a careful Physician to take notice of. In these kind of examinations, our very much honour'd Collegiate, that excellent man Dr. Godfredus Leisnerus, when he was living, did lately take much pains, who himself writ these following Observations, and a little before he yielded to Fate, communicated them to me to be divulged in this place.

Observation 1.

Mr. N. N. by birth of Clive, of thirty years

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years of age, he was Scorbutick, had red Spots, and Pustils in his Face, a heaviness and weariness in his Joints, and a numbness, a flushing in his Face after drinking strong Wine, or strong Beer, or the Swalbasher Spaw Water, and was obnoxious to bleeding Gums, and the like; after having taken Pills upon the 28 day of July, 1671. He was let Blood in the left Arm, and had about seven Ounces taken from him, in three Porringers. The Blood was very hot in its flowing forth: the day before he had drank Wine largely, after which he was cold, his Blood had much Serum, and the grumous and curdled parts were very red, and would easily be divided by a Twig; in the bottom it was of a bright Bay colour, the Serum poured off, was of the colour of Lee, like Urine of a Citron colour tending to red: It was divided into twelve Dishes, and the Liquors being mixed with it, things appeared thus.

First, With Spirit of Nitre dropt on it, it presently coagulated into a substance like Cheese, from the top to the bottom of the Liquor, in that space the Spirit was dropt into: This Curd was white on the top, but towards the bottom yellow like Sulphur, the rest of the Serum swimming about

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it was clear, but dropping in *Spirit of Nitre* it also became of a *Cheesy substance*; some of the *Liquor* which remained, poured out clear like Water, upon inclining of the Vessel.

Secondly, The *sweet Spirit of Nitre* being drop'd on, made no alteration; but after a short time, the upper half of the *Liquor* grew altogether clear, but the lower half was a little troubled, yet so, that there could scarce any difference be discerned but by *curious Chymical eyes*.

Thirdly, *Spirit of Salt* did presently pervade the *Liquor*, not only in that place where it was drop'd in, but through the whole circumference of the *Liquor*, and about the bottom precipitated a *white coagulum*, but not stiff.

Fourthly, The *sweet Spirit of Salt* did trouble the *Liquor* a little, but in a short time there was a separation made like the *cream of Milk*, which swam at the top.

Fifthly, *Spirit of Vitriol*, did precipitate a *White Curd* equally from all parts to the bottom, almost *Analogous* to the *curd* made with the *sweet Spirit of Salt*, but thinner.

Sixthly, *Aqua-fortis* did altogether agree with the *Spirit of Nitre*, both in the *whiteness* of the *Curd*, its *yellowish bottom*,
and

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and the *clearness* of the *Liquor* which was left uncoagulated.

Seventhly, *Spirit of Sulphur*, converted the whole *Liquor* into a *white coagulum*, or *Curd*, except a few *drops* which were left.

Eighthly, The *Clyffus* (or the *Sulphureous acid Spirit of Antimony*) being dropped in, precipitated to the bottom of the *Liquor* a *Curd*, which was on one side *White*, and *Cheesy*, and on the other side transparent, and like a *Jelly*.

Ninthly, *Arcanum Nitri* (that is the *Solution* of the *Salt* of the *caput Mortuum* of *Aqua-fortis*, or its red Earth left in the bottom of the *Retort*) dropped in, at the beginning it did presently fall to the bottom of the *Liquor* in which it was put: nor would it be mixed with it, so that it might be very well discerned from it, but after an hour or two, the *Liquor* was of a *higher Colour*, and there settled in the bottom of the *Vessel* a troubled *Sediment*, which upon slightly shaking of the *Glass* united again with the *Liquor*.

Tenthly, The *Salt Spirit of Sal Armoniack* did introduce no alteration at all in the *Liquor*, neither in its *Colour*, nor in its *consistence*.

Eleventhly,

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Eleventhly, The fixed Liquor of Nitre, did thicken and trouble this Liquor, and precipitated to the bottom a certain Sal-*tish Curd*, the Liquor which swam at the top was very clear.

Observation 2.

A Young man who was descended of *consumptive Parents*, and was himself *consumptive*, (with much coughing casting out both *Blood*, and *Matter*;) a *Vein* being opened there was taken from him about eight *Ounces of Blood*. The grumous *Blood* was of a *florid Colour*, *Thin*, and had much *Serum*, which being poured out into little *dishes*, it brought off with it from the top of the *Blood* a little *redness*, this subsided and fell to the bottom in a days time.

1. *Spirit of Nitre*, And

2. *Sweet Spirit of Nitre*, both produced the same effects, as in the former *Observation*.

3. *Spirit of Salt* did the same, but with this difference, that the *Coagulum* was more *Phlegmatick* on the top of it, and as it were a *Jelley*.

4. The

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4. The *Sweet Spirit of Salt*, did the same as in the former *Observation*, but the *Cream* was thicker.

5. *Spirit of Vitriol*, And

6. *Aqua-fortis*, did the same as in the former *Observation*.

7. *Spirit of Sulphur* made a *Coagulum* like *Spirit of Salt*, but a little thinner, and more like *Jelley*.

8. The *Clyffus* made a white and thick *Curd*.

9. *Arcanum Nitri*. And

10. The *Salt Spirit of Sal Armo- niack*. And

11. The *Liquor of fixed Nitre*, did the same as in the former *Observation*.

12. *Spirit of Verdigrece*, at the first dropping into the *Glass* did make the clear *Liquor* to look *Milky*, and afterwards did make no further change.

Observation 3.

Mr. N. N. *Splenetick*, and *Scorbutick*, afflicted with a *Vertigo*, or *Giddiness*, and a straitness in his *Breast*, upon the 27th day of *July*, Anno 1672, was let blood, the *Blood* was good, and had much tinted

Serum

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Serum, into which the following things were dropped.

1. *Aqua-fortis*, from which there was a cheesy and white concretion, the *Serum* which swam at the top was pale; this *Coagulum* was not dissolved, by dropping into it Spirit of *Sal Armoniack*.

2. By the *Clyffus* there was made a white *Curd*, which fell to the bottom, but was less tenacious, or tough.

3. Spirit of *Nitre*, made a *Coagulum* like *Aqua-fortis* in all things, and when more Spirit was put in, the *Serum* was almost all coagulated.

4. Sweet Spirit of *Nitre*, made no alteration at all.

5. Spirit of *Salt* did equally precipitate a white *Curd* to the bottom, like a *Jelly*, and of a pale Yellow Colour at the top, leaving a *Liquor* that was somewhat paler above it.

6. Spirit of *Vitriol*, did absolutely the same thing, excepting that the *Liquor* which swam at the top, did remain somewhat more tinged.

7. Spirit of *Verdigre* made no change at all.

8. The Spirit of *Sulphur* made the same *Coagulum* with Spirit of *Vitriol*.

9. *Polemanus's double Spirit*, did the same with

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with Spirit of *Salt*, excepting that the *Coagulum* was a little thicker, and less white.

10. *Arcanum Nitri*, made a troubled bottom, but the *Glass* with the *Liquor* being shook it was exactly mixed again, and no alteration appeared. Into this mixture there being dropped one or two drops of *Aqua-fortis*, it produced a milkie *curd* after the usual manner.

11. The *Liquor* of fixed *Nitre* also made a troubled bottom, and shaking the glass it was exactly mixed again, but dropping in *Aqua-fortis* there was an ebullition made, and much *Spume*, or *Froth* raised of a *Sulphureous* colour, but nevertheless nothing was precipitated.

12. Spirit of *Sal Armoniack* prepared with the *Bloodstone*, did not thicken the *Liquor*, but only a little heighten the Colour, a drop or two of *Aqua-fortis* being added to this, presently made a milky *curd*: but a greater quantity of Spirit of *Sal Armoniack* being poured upon it, it was again dissolved with small bubbles, and instead of the *Coagulum* there remained as it were a little thin transparent *Phlegm*.

Obser-

Observation 4.

These were instituted not in the *Serum*, but in the clotted *blood* it self. To wit Mr. N. N. after he had spit blood for some years, fell into a spitting of Matter, with an inordinate or irregular Fever, after exhibiting of Medicines, and chiefly of *Adstringents*, the thirtieth day of *May* he fell into a large *Hæmoptisis*, or spitting of blood, he having been afflicted before it with a weightiness, and weariness of his *Joynts*: upon the first of *August* this *Symptom* was urgent again, and he cast up much florid *blood*, which was easily coagulated. The 2d day of *August* after Midnight, his spitting of *blood* was very urgent, only he perceived his *blood* which he threw up to be hotter whilst it was in his *mouth*: it was neither *putrid* matter, nor *Salt* as heretofore. I commanded to take about four ounces of *Blood*, by opening a Vein in the *Right Arm*. The *Blood* which was let out was taken in two *Silver Dishes*, and appeared black even whilst it was flowing forth: it had little *Serum*, scarce two *drams*, and that of a *Yellow Colour*. The clotted blood had a florid red circle about it, the middle

middle part was like the skin of a Jelly. To this *blood*, being well dryed with spongy *Brown Paper*, these following things were applied.

1. One drop of *Spirit of Nitre*, did presently and sooner than in the twinkling of an *Eye*, impress a white spot upon it, and that not superficially, but sufficiently deep, and very white.

2. The *Sweet Spirit of Nitre*, made no change at all.

3. *Spirit of Salt*, did more slowly make a spot, and that less white, and less deep. The red *Circle* of the *blood* it self, and the circumference of the drop, were both black.

4. *Sweet Spirit of Salt*, at the first did nothing, but after it had stood sometime upon the *Liquor* it did a little dissolve the outward *skin* of the *Blood*, and made a hole in it, and rendred the blood under it, (in which it was contained) of a *livid flesh Colour*, spotted like *Marble*.

5. *Spirit of Vitriol* did slowly make a spot a little *whitish*.

6. *Aqua-fortis* did swiftly and immediately (with some *Fume*) make a spot altogether agreeable with that of *Spirit of Nitre*.

7. *Spirit*

7. Spirit of Sulphur, made a Spot like that of Spirit of Vitriol.

8. The Clyffus produced a white spot.

9. Spirit of Verdigre as to its effect agreed with the Sweet Spirit of Salt.

10. Arcanum Nitri stood upon the Blood in its own circumference, afterwards it made a yellowish spot, and rendered the skin of the Blood thinner, so that it might easily be divided by a twig.

11. Spirit of Sal Armoniack made no change, or spot.

12. The Liquor of Fixed Nitre rendered the Blood much Redder and transparent.

F I N I S.

Of the Grun-Walden- sin-Stone.

An Addition to the second Chapter.

Concerning this the most Noble, and Excellent Doctor, Christianus Menzelius, Councillor and chief Physitian to the most Serene the Elector of Brandenburg, hath not only made Egregious and Worthy Experiments: But hath also whilst this Book was under the Press, sent them to me in a Letter. And because they make much towards the illustrations of the second Chapter of this our Curious Distillatory, we thought fit to subjoyn them by way of Addition.

H

Noble

Noble and most Experienc Sir,
my Collegiate, and most
Honoured Friend.

YOU demanding that I would cast
in some of my Chymical Obser-
vations, to be added to your curious
Distillatory, (by reason of the great
Friendship which hath been betwixt us
from our Youth,) I could not deny it:
although I always desired, and had ra-
ther have lain hid, than to have ven-
tured writing either upon my own ac-
cord, or with others. But omitting
an infinite Number which seem to
look towards your second chapter, I
will therefore communicate only one
Observation of my Chymical labours,
about a certain Stone, which from the
place of its growth, I call the Grun-
Walden-Stone. It was found here
hard by Berlin, by my self, and Rhe-
wend the Goldsmith (who is yet li-
ving)

ving) Anno. 1663. in the Month
of May, near the Wood commonly
called **Der Grunwald**, by the
help of a Shepherds Boy, who knew
the place, and shewed it to us. This
Stone contains of Metals, Iron, and
Copper: and of Metalline Juices,
Sulphur, and Vitriol, which are hid
in a Golden Markasite, with which
this Stone abounds. This Markasite
therefore (which the Greeks calls Py-
rites) I separated from the rest of the
Stone, and having reduced it into
Powder, dissolved as much of it as I
could in Aqua-fortis. I put the
Solution in Sand to evaporate, and
there remained in the bottom a matter
that was fine, spongy, and of a yel-
lowish Sulphur Colour. Upon several
parts of this matter I poured,

1. Some Spirit of Wine, that I
might dissolve, and digest it: and be-
hold all became immediately exceeding
Black.

2. Upon another part of this Matter, I dropt Oyl, or Liquor of Tartar in some quantity, and presently there was a crackling noise, and ebullition, and there was induced upon it a bay Colour, but thick, and obscure.

3. This Liquor being Philtred, I mixed the Acid Spirit of Sulphur with it, and there emerged a most lovely Scarlet blood Colour, splendid like a Ruby, and transparent, there remaining in the bottom a gross, and black Sediment.

4. To this Ruby-coloured Liquor I added some drops of a Solution of Silver made with Aqua-fortis, and sooner than you can speak it, the Solution of Silver was coagulated upon the Liquor, into a Curd as white as Snow, and was like Fat, or the white of an Egg boyl'd hard, which after a little time fell down white to the bottom like Lime; the Liquor retaining its Scarlet blood Colour.

5. After

5. After I had abstracted this lovely Ruby-coloured Liquor almost to dryness, there remained in the bottom a snowy Salt, Lanceolated or Chrystallized like Nitre. I poured upon these Chrystals clear Spring Water, and they were most easily dissolved in it, and the Liquor was clear, Limpid, and Transparent even like fair Water. But when I added to it the Oyl or Liquor of common Tartar, immediately the former Scarlet blood-Colour returned again.

6. I have a Liquor of Tartar digested with an Hungarian Gold Mineral; of this Oyl, or Liquor, when I put in a few drops, the whole Liquor became a blewish green Colour.

7. I took again also of the aforesaid Scarlet Blood-Coloured Liquor one ounce or thereabouts, and to it added onely one drop of the Solution of Gold,

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made

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made with AquaRegis: & in less then a moment the whole Liquor of this lovely Red Sanguine Colour, was changed into a Goldish Yellow Colour, such as the Solution of the Gold was like that Kingly Star the Sun, discussing the Clouds, and filling all things with his commanding light.

*Moreover, I here omit many more Chymical Phænomena, wrought upon this Stone, which have slipped out of my mind: as also a Menstruum which turned that blood-coloured Liquor presently into clear, and Diaphanous Water; and another Menstruum, which turned the same Liquor into a Violet-Colour; and others which transform'd it into other Colours. I yet keep by me a Sky-coloured Powder prepared of this Stone, which in its fairness is not exceeded by the Mountain Blew, or Sky colour, called **Bergblau**. For I confess there*

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there are no kind of true Colours which Painters do make use of, which do not in my opinion result from the Calxs of Metals or Minerals variously prepared. I send together with these a piece of this Grun-walden-Stone, that so if you please you your self may experiment the before recited Phænomena. I have also sent a portion of the wonderful Violet coloured Powder, so called by Geber the Arabian in his Summa Perfectionis. Cap. 28. lib. 1. Which I obtained from Copper calcin'd with Sulphur, about three days since. By way of Conclusion I add, an Experiment which happened to me concerning that Bilious Liquor, contained in the bladder of Gall: In this (above twenty years since,) I dissolved some Aloes Rosatum, or depurated Aloes, and the Green Colour of the Bile, or Choler was changed into a true blood Colour. The consideration of which thing,

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thing, cannot I suppose but be beneficial
to all Men, Farewell.

Written in hast From my Study,
this 8th of March, 1674.

Your Excellencies

in all studious Observance.

Christianus Menzelus.

A N

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A N

**Addition to the fourth
Chapter concerning
a Diuretical Tin-
cture, commonly cal-
led the *Solar Tincture.***

As also a singular Experiment
concerning *Tyles*; proposed in
a Letter to me by the Noble
and Excellent Doctor *Casper*
Marchius.

Most Noble and Experienced Sir,
My Friend and Favourer, much
to be Honoured.

After that a little while since,
(according to the singular civili-
ty with which you abound,) you permit-
ted

ted me to read your Curious Distillatory, (which now sweats under the Press;) I began to think, if I could not remember of my Chymical Labours, an Experiment or two, which might have some relation to the things you treat of: And behold there came Two into my mind, perhaps as well known to your self, but not alledged in that Elegant Writing of yours; if I remember rightly: in both of them there comes a Golden Colour over the Alimbeck, in one of them in the form of a Spirituous Liquor, in the other of them inhering in the form of a Salt, sufficiently Volatile; You know, worthy Sir, how from the Mineral of Hungarian Antimony, Nitre, Tartar, and the like, (chiefly such sorts of them as are thought to be Auriferous, or to containe Gold, adding according to the opinion of some men, Sal Armoniack also,) being well mixed together

ther, and cast into a certain instrument, by the help of an open Fire, there is drawn that sufficiently celebrated Liquor against the Stone, by many highly commended also against divers obstructions, and impurities of the Blood; which that it shines in its first distillation with a Golden Colour will hardly procure admiration to any one, since it is a true Solution of the Salt and Sulphur, expelled from these different Matters by the violence of the Fire; as also no man wonders that Spirit of common Salt is indued almost with the same Colour; but if it be rectified by a Retort, with a moderate Fire, it will be discovered how much Corporeal Salt it contained; and this rectified Spirit of Salt, will be almost Diaphanous, and without Colour. But concerning our almost Goldish Colour, I have often taken notice that being rectifi'd more than once yet it brings over
with

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with it self the goldish Tincture, although it be not quite so deep as before: which is a sign that the Salt and Sulphur, are more intimately united, and under a Volatile Salt.

The Other Observation which I offer, is not so commonly known, nor have I happened to read of it in the writings of Chymists: every body knows that baked or burnt Tiles are of a reddish colour throughout, which Colour should any man have told me heretofore, that it were separable from them, I should have given as much credit to it, as to those who contend that the Tincture, or red Colour may be separated from Corals; which as to the Colour, as it is a Naked quality, I hold to be impossible; but in respect of some certain proportion of substantial matter (which I acknowledg to
be

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be the chief Subject of this Colour) which may be taken out of the Corals, by certain Menstruums, to account that thing impossible is neither well nor true. It happned (as I have known by experience) that the rusty, or rather red Colour with which the Tyles are tinged throughout, may be so separated from them, that nothing of it will be left, or remain in them. I was about to prepare the Volatile Urinous Spirit of Sal Armoniack, and therefore took, as the custom is, a Lixivate Alcaly in the preparation of it, by which means I obtained a pound or two of Salt, composed of both of them; to wit, the Alcaly, and the Sal Armoniack; from which being desirous to draw a Spirit, I did, after the most usual Method mix it with three times its weight of Powder of Tyles, and attempted to drive over the Spirit by a Retort, in a naked Fire, but I did not
obtain

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obtain what I would have had: for there distilled but very little Liquor, but at length there arose a Corporeal and Volatile Salt, in such proportion, that it almost filled up the Neck of the Retort, for which cause it would at last break it of necessity; The Retort therefore being taken out of the Fire, I observed all the Salt to be sublimed into the Neck and the upper part of the Retort, and it was Tincted with a Saffron Colour, and the Powder of the Tiles which was left, was deprived of all its Colour, and was like Ashes. Which extracting of the Colour by an Alimbeck from a body which had indured so great a stress of Fire before, As it is an Experiment worthy consideration: So I believe, Noble Sir, it will not be ungrateful, if it be added to your Experiments. Farewell. And as you have hitherto excellently done, Study the publick

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publick Good, and advancement of Learning, and continue to Love me,

Yours

Berlin
10th of
March,
Anno.
1674.

Ready upon all Friendly occasions,

CASPER MARCHIUS,
Doctor, Counsellor,
and chief Physician
to the Elector.

E N D.
