also to contain Seeds, or other little Bodies, which in a certain Time usually grows into a kind of thin, whitish Weed, suspended in the middle of the Water; and daily increasing or spreading itself, becomes a Mucilage, which did not appear at first.

I have kept these Waters undisturbed in separate well closed Vessels, and observed that in a Year's Time, they began to appear thick, which Thickness gradually increased every Year; till at length the Liquor grew ropy and mucilaginous. Hence we see, that this Water contains the elementary Water, and presiding Spirit of the Plant; a Spirit small in Bulk, but rich in Virtues, and exhibiting the specific Smell and Taste of the Subject. This Water, therefore, in exhaling, proves a Vehicle to that Spirit, which contains in a small, subtile, extremely volatile, and hence easily separable Substance; the particular Virtue of the Plant; leaving the Remainder exhausted in this Respect: and hence proceeds the medicinal Virtues of these Waters, which principally depend upon their native Spirit. For this Spirit, in most Plants, having a brisk Mobility, affects the Nerves, and raises the Spirits in case of their Depression.

If the Vessel be close stopped, and set in a cool Place, the Waters drawn by the cold
still will retain their Virtues for a Year; but if negligently kept, or any Crack should happen in the Glass, their extremely volatile Spirit secretly flies off, and leaves the Water vapid.

Hence we learn what it is that Plants lose by being dried in the Summer-time; namely, the Water and Spirit we have been describing. Hence we also know the Nature of that Fluid, which first rises from Plants in Distillation, and what that Matter properly is in Plants, that gives their peculiar Odour; that is, their presiding Spirit. Lastly, we hence learn, in some measure at least, what those Effluvia are, which principally in the Summer-Season, and in the open Air, exhale from Vegetables; for it is highly probable, that these constant Exhalations of Plants, especially in the Dry-time, have a near Agreement in their peculiar Nature, with the Liquor extracted by the cold Still, though differing in this, that the Exhalation made from the Parts is continually recruited by the Root; whilst by our Operation, those Parts alone are collected, which are driven off from the Plant, after being gathered, and no longer supplied with fresh Nourishment.
CHAP. II.

Of the Distilling Simple Waters by the Alembic.

The Plants designed for this Operation are to be gathered when their Leaves are at full Growth, and a little before the Flowers appear, or, at least, before the Seed comes on; because the Virtue of the Simple expected in these Waters is often little, after the Seed or Fruit is formed, at which Time Plants begin to languish: The Morning is best to gather them in, because the volatile Parts are then condensed by the Coldness of the Night, and kept in by the Tenacity of the Dew, not yet exhaled by the Sun.

This is to be understood, when the Virtue of the distilled Water resides principally in the Leaves of Plants; as it does in Mint, Marjoram, Pennyroyal, Rue, and many more; but the Case differs when the aromatic Virtue is only found in the Flowers, as in Roses, Lillies of the Valley, &c. in which Case we choose their flowery Parts, whilst they smell the sweetest, and gather them before they are quite opened, or begin to shed, the morning Dew still hanging on them.
of Distillation.

In other Plants the Seeds are to be preferred, as in Anise, Caraway, Cumin, &c. where the Herb and the Flower are indolent, and the whole resides in the Seed alone, where it manifests itself by its remarkable Fragrance, and aromatic Taste. We find that Seeds are more fully possessed of this Virtue, when they arrive at perfect Maturity.

We must not omit that these desirable Properties are found only in the Roots of certain Plants, as appears in Avens and in Orpine, whose Roots smell like a Rose. Roots of this Kind should be gathered, for the present Purpose, at that Time when they are richest in these Virtues; which is generally at that Season of the Year, just before they begin to sprout, when they are to be dug up in a Morning.

If the Virtues here required be contained in the Barks or Woods of Vegetables, then these Parts must be chosen for the Purpose.

The Subject being chosen, let it be bruised, or cut, if there be occasion, and with it fill two thirds of a Still, leaving a third Part of it empty, without squeezing the Matter close; then pour as much Rain or River Water into the Still as will fill it to
the same Height; that is, two thirds together with the Plant: Fit on the Head, tuting the Juncture, so that no Vapour may pass through; and also lute the Noie of the Still-head to the Worm. Apply a Receiver to the Bottom of the Worm, that no Vapour may fly off in the Distillation; but that all the Vapour being condensed in the Worm, by cold Water in the Worm-tub, may be collected in the Receiver.

Let the Plant remain thus in the Still to digest for twenty-four Hours, with a small Degree of Heat. Afterwards raise the Fire, so as to make the Water in the Still boil; which may be known by a certain hissing Noise, proceeding from the breaking Bubbles of the boiling Matter; as also by the Pipe of the Still-head, or the upper-end of the Worm, becoming too hot to be handled; or the smoaking of the Water in the Worm-tub heated by the Top of the Worm; and, lastly, by the following of one Drop immediately after another, from the Noie of the Worm, so as to form an almost continual Stream. By all these Signs we know that the requisite Heat is given; if it be less than a gentle Ebullition, the Virtues of the Simple, here expected, will not be raised: On the contrary, when the Fire is too strong, the Water hastily rises into the Still-head, and fouls both the Worm and
the distilled Liquor; and the Plant being also raised, it blocks up the Worm; for which Reason it is no bad Caution to fasten a-piece of fine Linen before the Pipe of the Still-head; that, in case of this Accident, the Plant may be kept from stopping up the Worm: But, notwithstanding this Precaution, if the Fire be too fierce, the Plant will stop up the Pipe of the Still-head; and, consequently, the rising Vapour finding no Passage, will blow off the Still-head, and throw the boiling Liquor about the Still-house, so as to do a great deal of Mischief, and even suffocate the Operator, without a proper Caution; and the more oily, tenacious, gummy, or resinous the Subject is, the greater the Danger, in case of this Accident; because the Liquor is the more frothy and explosive.

Let the due Degree of Fire therefore be carefully observed, and equally kept up, as long as the Water, distilling into the Receiver, is white, thick, odorous, rapid, frothy and turbid; for this Water must be carefully kept separate from that which follows it. The Receiver, therefore, should be often changed, that the Operator may be certain that nothing but this first Water comes over; for there afterwards arises "a Water that is transparent, thin, and without the peculiar Taste and Flavour of the Plant,"
A Complete System

Plant, but generally somewhat tartarish and limpid, though somewhat obscured and fouled by white dreggy Matter: And if the Head of the Still be of Copper, and not tinned, the Acidity of this last Water corrodes the Copper, so as to become green, nauseous, emetic and poisonous to those who use it, especially to Children, and Persons of weak Constitutions.

The first Water above-described, principally contains the Oil and presiding Spirit of the Plant; for the Fire by boiling the Subject, dissolves its Oil, and reduces it into small Particles, which are carried upwards by the Assistance of the Water, along with those Parts of the Plant that become volatile with their Motion. And, if the Vessels are exactly closed, all these being united together, will be discharged without Loss, and without much Alteration, into the Receiver; and, consequently, furnish us with a Water richly impregnated with the Smell, Taste, and particular Virtues of the volatile Parts of the Plants it was extracted from.

The Water of the second Running, wants the volatile Part above described, and has scarce any other Virtue than that of cooling.

And
And this is the best Method of preparing simple Waters, provided the two sorts be not mixed together, for both of them would be spoiled by such a Mixture.

Hence it plainly appears at what time, with the same Degree of Fire, quite contrary Virtues may arise from a Plant; for so long as a milk Water continues to come over from such Plants as are aromatic, so long the Water remains warming and attenuating; but when it comes to be thin and pellucid, it is acid and cooling.

Hence we may also learn the true Foundation for conducting of Distillation; for if the Operation be stopped, as soon as ever the white Water ceases to come over, the Preparation will be valuable and perfect; but if, through a Desire of increasing that Quantity, more be drawn off, and the latter acid Part suffered to mix with the first Running, the whole will be spoiled, or at least rendered greatly inferior to what it would otherwise have been.

Such is the general Method of procuring simple Waters, that shall contain the volatile Virtues of the Plants distilled; some Rules are however necessary to render it
applicable to all sorts of plants; these rules are the following:

1. Let the aromatic, balsamic, oily, and strong-smelling plants, which long retain their natural fragrance, such as balm, hyssop, juniper, marjoram, mint, origanum, pennyroyal, rosemary, lavender, sage, &c. be gently dried a little in the shade; then digest them, in the same manner as already mentioned, for twenty-four hours, in a close vessel, with a small degree of heat, and afterwards distil in the manner above delivered; and thus they will afford excellent waters.

2. When waters are to be drawn from barks, roots, seeds, or woods that are very dense, ponderous, tough and resinous, let them be digested for three, four, or more weeks, with a greater degree of heat, in a close vessel, with a proper quantity of salt added, to open and prepare them the better for distillation. The quantity of sea-salt is here added, partly to open the subject the more, but chiefly to prevent putrefaction, which otherwise would certainly happen in so long a time, and with such a heat as is necessary in this case, and so destroy the smell, taste, and virtues expected from the process.
3. Those Plants which diffuse their Odour to some Distance from them, and thus soon lose it, should immediately be distilled after being gathered in a proper Season, without any previous Digestion; thus Borage, Bugloss, Jessamin, white Lilies, Lilies of the Valley, Roses, &c. are hurt by Heat, Digestion, or lying in the Air.

C. H. A. P. III.

Of increasing the Virtues of Simple Waters by means of Cohobation.

By Cohobation is meant the returning the distilled Water procured in the manner described in the preceding Chapter, upon more of the fresh Plant. The Operation is performed in the following manner:

Take the Plant and Liquor remaining in the Still after the Operation described in the foregoing Chapter is performed; and press them strongly in a Bag for that Purpose, that all the Decoction may be obtained; and with this mix all the Water before drawn over. Return this Mixture into the Still, and a fresh Quantity of the same Plant, and if necessary, as much Water as will make the former Proportion to the
the Plant. Close all the Juncures exactly, and digest the whole in a gentle Degree of Heat for three Days and three Nights, that the Herb, being so long steeped in its own Liquor, may be opened, loosened, and disposed the easier to part with its Virtues. This Digestion is of great Service; but if protracted too long, introduces a Change tending to Putrefaction. Let the Water now be distilled off, in the same manner as before; only proceeding more cautiously, and somewhat more slowly at first; because the Liquor in the Still being now thicker, more impregnated with the Plant, and therefore more apt to smell upon feeling the Fire, it easily boils over; but after about half of the expected Water is come off, the Fire may be gradually raised.

By this Method, and carefully observing to change the Receiver, as soon as the first Water is all come over, a noble Liquor, highly impregnated with the Virtues of the Plant, will be obtained. And as this Operation may be repeated as often as desired, the Virtues of Plants may be thus exalted to any Degree the Artist shall think proper; which shews the extraordinary Power of Distillation. This Method I would particularly recommend for making the simple Water of Balm, Elder Flowers, Roses, and
of Distillation.

and the like Simples, but sparingly furnished with an essential Oil.

CHAP. IV.

Of the Method of procuring a simple Water from Vegetables, by previously fermenting the Vegetable before Distillation.

By this elegant Method we obtain the Virtues of Plants very little altered from what they naturally are, though rendered much more penetrating and volatile. The Operation is performed in the following manner.

Take a sufficient Quantity of any recent Plant, cut it, and bruise it if necessary; put it into a Cask, leaving a Space empty at top of about four Inches deep; then take as much Water as would, when added, fill the Cask to the same Height, including the Plant, and mix therein about an eighth Part of Honey, if it be cold Winter Weather; or a twelfth Part, if it be warm: In the Summer the like Quantity of coarse, unrefined Sugar might be added instead of Honey, or half an Ounce of Yeast to each Pint of Water will have the same Effect; though most prefer Honey for this Purpose. When the proper Quantity of Honey is added to the Water, let it be warmed and poured
poured into the Cask, and let it in a warm Place to ferment for two or three Days; but the Herb must not be suffered to fall to the Bottom, nor the Fermentation above half finished. The Whole must then be immediately committed to the Still, and the Fire raised by Degrees; for the Liquor, containing much fermenting Spirit, easily rarifies with the Fire, froths, swells, and therefore becomes very subject to boil over; we ought therefore to work slower, especially at first.

By this Method there will come over at first, a limpid, unctuous, penetrating, odorous, sapid Liquor, which is to be kept separate: After this there follows a milky, opaque, turbid Liquor, still containing something of the same Taste and Odour; and at length comes one that is thin, acid, without either Smell, or scarce any Property of the Plant.

The first Water, or rather Spirit, may be kept several Years, in a close Vessel, without changing or growing ropy. It also excellently retains the Taste and Odour of the Plant, though a little altered; but if less Honey were added, less Heat employed, or the Fermentation continued for a smaller Time, the distilled Liquor of the first
of Distillation.

First running would be white, thick, opaque, unctuous, frothy, and perfectly retain the Scent and Taste of the Plant, or much less altered than in the former Case; though the Water will not be so sharp and penetrating. After this is drawn off, a tartish, limpid, inodorous Liquor will come over.

And thus may simple Waters be made fit for long keeping without spoiling; the Proportion of inflammable Spirit generated in the Fermentation, serving excellently to preserve them.

CHAP. V.

Of the Simple Waters commonly in Use.

SIMPLE Waters are not so much used at present as they were formerly; and perhaps one Reason for their being neglected, is the bad Methods used in distilling them; the Process is carried on in the same manner with every Herb; though some should be gently dried, and others distilled green; some should be drawn with the cold, and others with the hot Still.

The general Rule that should be observed with regard to the hot Still is, that all Herbs should have twice their Weight of Water added
added to them in the Still; and not above a fourth, or a sixth Part of it drawn off again; for simple Waters have their Faints, if drawn too low, as well as those that are spirituous.

Some Plants, particularly Balm, require to have the Water drawn from them coho- bated, or poured several times on a fresh Parcel of the Herb, in order to give it a proper Degree of Strength or Richness. Others, on the contrary, abound too much with an essental Oil that floats on the dis- tilled Water; in this case all the Oil should be carefully taken off. Lastly, those that contain a more fixed Oil, should be imperfectly fermented, in the manner laid down in the preceding Chapter, before they are distilled; of this Kind are Carduus, Chamomile, &c.

The simple Waters now commonly made, are Orange-flower-water, Rose-water, Cinnamon-water, Fennel-water, Pepper-mint-water, Spear-mint-water, Balm-water, Pennyroyal-water, Jamaica Pepper-water, Castor-water, Simple-water of Orange-peel, and of Dill seed.
CHAP. VI.

Of Orange flower-water.

The Orange-tree grows plentifully in Italy, Spain, and Portugal, and bears Flowers and Fruit all the Year; but the Fruit is gathered chiefly in October and November.

The Flowers grow on the younger Shoots among the Leaves: They are white, and consist of a single cup-fashioned Leaf, cut into five Parts, with several yellow Stamina in the middle, and of a fragrant odoriferous Smell.

Some Degree of Attention is requisite to draw a simple and odoriferous Water for the Orange Flowers; the Fire must be carefully regulated; for too small a Degree will not bring over the essential Oil of the Flowers, in which their odoriferous Flavour consists: and, on the contrary, too strong a Fire destroys the Fragrance of the Water, and is very apt to scorch the Flowers, and give the Water an empyreumatic Smell. Care should also be taken to fasten the Receiver to the End of the Worm with a Bladder, to prevent the volatile Parts from evaporating. The Quantity of Water, also, should be carefully
carefully attended to, if you hope to succeed in the Operation. The following Receipts will answer the Intention.

**Receipt for Orange-flower-water.**

Take twelve Pounds of Orange-flowers, and twenty-four Quarts of Water, and draw over three Pints.

Or,

Take twelve Pounds of Orange Flowers, and sixteen Quarts of Water; draw over fifteen Quarts, carefully observing what has been observed at the beginning of the Chapter with regard to the Regulation of the Fire.

**The Manner of making Double Orange-flower-water, and the essential Oil, or Quintessence of Orange Flowers.**

Having shewn how to make simple Orange-flower-water, we shall now shew how to make double Orange-flower-water, and the essential Oil, or Quintessence of Orange Flowers.

*Double Orange-flower-water is made, by distilling the Orange Flowers in a cold Still; in the Manner laid down in the first Chapter. The Water extracted in this manner will be very odoriferous and grateful;*
of Distillation.

ful; being what is called Double Orange-flower-water. The same odoriferous Water will be obtained by distilling the Flowers in Balneum Mariae, without any Water in the Still. If the cold Still be used put into it as many Flowers as the Head will well cover; and then make a gentle Fire under the Plate, and as soon as you perceive the Still is beginning to work, fasten the Receiver to the Beak of the Still with a Bladder. The same Caution must be observed if the Flowers are distilled in Balneum Mariae.

To make this Water to Perfection, the Flowers should be fresh gathered in the Morning with the Dew upon them, if possible; and carefully picked from the Leaves. You should likewise make Choice of the largest Flowers, because these yield most in Distillation. The Fire must be brisk when the Flowers are distilled in Balneum Mariae; because the Operation is longer in performing than by the common Alembic, and the Flowers are not here in Danger of being burnt at the Bottom of the Cucurbit. If you would have your Water of a fine Smell, let it be cohobated on fresh Flowers.

With this double Water, the essential Oil or Quintessence will come over, and float on the Surface of the Water. But a
much larger Quantity of it will be obtained, by cohabating the Water on fresh Flowers in Balneum Mariae. The essential Oil is at first of a green Colour, but after some Days it will turn reddish. The essential Oil is easily separated from the Water, by the separating Glass, in the following manner: Stop the Spout of the separating Glass with a Cork, and then fill it with the Orange-flower-water; when it has stood a small time the Oil will float on the Surface. Then pull out the Cork, and let the Water run out at the Spout into another Receiver placed for that Purpose. As the Water runs out at the Spout of the Separating-glass, let it be supplied at the Mouth, that the Separating-glass may be always full of Water, till the whole is in this manner poured into it. Then by gently inclining the Glass, pour out all the Water in it through the Spout, and the Oil will remain in the Separating-glass, and may be poured into another Bottle, and kept separate from the Water. The double Orange-flower water is odoriferous; but the essential Oil much more so.

Orange-flower-water is not at present so much used as formerly; but as it is a very odoriferous Water, I thought the Method of making it would be not unacceptable to the young Distiller.
of Distillation.

The essential Oil, or Quintessence of Orange-flowers will make a very grateful Cordial, by mixing it with a clean proof Spirit: The Method of mixing it is this:

Take some fine Loaf Sugar, and drop on it the Quantity of Oil you intend to dissolve in the Spirit, and rub them well together in a Glass Mortar, which is what the Chemists call making an Oleoresaccharum. Put this Oleoresaccharum into the Spirit; mix them well together, and dulcify it with Sugar to your Taste. If the Spirit be too strong, it may be lowered with Water; but you must observe, that if you add Water enough to bring the Spirit considerably below Proof, it will turn milky; and in order to render it fine, you must filtrate it thro' thick Flannel, or thin Paper. Twenty Drops of the essential Oil will be sufficient for a Pint of Spirit, and the same Proportion to a larger Quantity.

CHAP. VII.

Of Rose-water.

The Damask Rose is the Species intended to be used in this Operation; it is of a very fragrant Smell, and flowers in June and July. The Water may be
be made either by the hot Still, the cold Still, or the Balneum Mariae. If the hot Still be used, the Leaves picked from the Stalks must be put into the Still with a sufficient Quantity of Water to prevent an Empyreuma, and the Water drawn off by a gentle Fire. The Receiver must be luted with a Bladder to the Nofe of the Worm, to prevent the finest and most volatile Parts from evaporating, which they would otherwise do, to the great Prejudice of the Water.

If the cold Still be used, the Rose Leaves either with the Dew on them, or sprinkled with Water, must be laid on the Iron Plate, and covered with the conical Head. A gentle Fire must then be made under the Plate, and a Receiver luted with a Bladder to the Nofe of the Still. The Water will gradually distil into the Receiver, and be strongly impregnated with the odoriferous Parts of the Roses.

The same Method with regard to the Balneum Mariae must be used in the Distillation of Roses as in that of Orange-flowers, and therefore need not be repeated here. We shall therefore only observe, that Rose-water drawn either by the cold Still, or the Balneum Mariae, is much preferable to that drawn by the hot Still.

The
of Distillation.

The Essence, or essential Oil of Roses is
looked upon as one of the most valuable
Perfumes in the World; but at the same
time the most difficult to be procured in
any Quantity. A small Quantity of it is
made in Italy, but it has always been
thought impossible to procure it here;
and, therefore, a Method of acquiring
this valuable Commodity will not, I pre-
sume, be disagreeable to the Reader.

Take a Quantity of Damask Rose Leaves,
put them into a proper Vessel, with a suf-
cient Quantity of Water, adding some mi-
neral Acid, as Spirit of Salt, Vitriol, &c.
In this Menstruum let the Roses be digested
for fifteen Days; after which put the
Whole into an Alembic, and draw off the
Water with a pretty brisk Fire. But, in-
stead of the common Receiver, a Separating-
Glass must be placed under the Nose of the
Worm, and a Receiver added to the Tube
of the Separating-Glass. By this Means
all the Oil or Essence will float on the
Surface of the Water in the Separating-
Glass, and may easily be separated from it,
when the Operation is finished.
Chap. VIII.

Of Cinnamon-water.

Cinnamon is a thin fine Bark, rolled up in a sort of little Pipes, from the thickness of a Goose-quill, to that of a Man's Thumb, and sometimes more, and about two or three Feet long. Its Colour brownish, with a Mixture of red. It is of an extremely aromatic Smell, and of an acrid and pungent, but very agreeable Taste. It is the interior, or second Bark of a Tree that grows plentifully in Ceylon. The People who gather it take off the two Bark together, and immediately separating the outer one, which is rough, and has very little Fragrancy, they lay the other to dry in the Shade in an airy Place, where it rolls itself up into the Form wherein we see it.

The greatest Cheats in the Sale of Cinnamon, are the selling such as has already had its essentinal Oil distilled from it, and dried again, and the imposing Caffia Lignea in its Place. The first of these is discovered by the want of Pungency in the Cinnamon; the second by this, that the Caffia, when held a little Time in the Mouth, becomes mucilaginous, which the true Cinnamon never does. Cinnamon is a noble Drug, endued
of Distillation. 135

dued with many capital Virtues; it strengthens the Viscera, afflicts Concoction, dispels Flatulencies, and is a pleasant Cardiac.

Recipe for one Gallon of simple Cinnamon-Water.

Take a Pound of the best Cinnamon grossly powdered, digest for twenty-four Hours, in two Gallons of Water; put the Whole into an Alembic, and draw over one Gallon with a pretty brisk Fire.

The Oil of Cinnamon, in which the specific Virtue of the Drug consists, is very ponderous, and therefore will not come over the Helm unless the Fire be pretty brisk, especially with a simple Water. It will therefore be in vain to attempt distilling simple Cinnamon-water by the Balneum Mariae.

CHAP. IX.

Of Fennel-water.

Fennel-water is extracted from a Seed larger and more beautiful than that produced by our common Fennel; it is called Sweet Fennel seed, being of a fragrant Smell, and aromatic sweet Taste, and is cultivated in France and Italy. It is to be chosen new, large and fair; but when damp or dusty to be rejected.

K 4  

Recipe
Recipe for one Gallon of Fennel-water.

Take one Pound of Sweet Fennel-seeds, and two Gallons of Water; put them into an Alembic, and draw off one Gallon with a gentle Fire.

CHAP. X.

Of Pepper-mint-water.

Pepper-mint is a very celebrated Stomachic, and on that account greatly used at present, and its Simple Water often called for.

Recipe for a Gallon of Pepper-mint-water.

Take of the Leaves of dried Pepper-mint, one Pound and a half; Water two Gallons and a half; put all into an Alembic, and draw off one Gallon, with a gentle Fire.

The Water obtained from Pepper-mint by Distillation in Balneum Mariae, is more fragrant and more fully impregnated with the Virtues of the Plant than that drawn by the Alembic. The same may be said with regard to that extracted by the cold Still; when the cold Still is used the Plant must be green, and if possible committed to the still with the Morning Dew upon it.

CHAP.