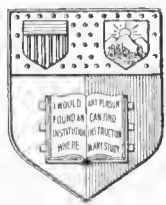


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Vinetum Britannicum :

O R A

T R E A T I S E
O F
C I D E R ;

And other Wines and Drinks extracted
from Fruits Growing in this Kingdom.

With the Method of Propagating all
sorts of Vinous FRUIT-TREES.

And a DESCRIPTION of the New-Invented
I N G E N I O or M I L L,
For the more expeditious making of CIDER.

And also the right way of making
M E T H E G L I N and B I R C H - W I N E .

The Second Impression, much Enlarged.

To which is added, A Discourse teach-
ing the best way of Improving B E E S .

With Copper Plates.

By *J. Worlidge*. Gent.

L O N D O N ,

Printed for *Thomas Dring*, over against the Inner-Tem-
ple-gate: and *Thomas Burrell*, at the Golden-ball under
Dunſton's Church in Fleet-ſtreet. 1678.

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R. L'Estrange.



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To

To *Elias Ashmole Esquire,*
Fellow of the Royal Society.

S I R,



He many Favors I have received from you, make me thus confident to present you with a small piece of Rusticity; It is too meanly pend to deserve your Patronage, who have a greater and more venerable esteem for more sublime subjects. Yet this of Wine being that which incites some to speak too much, will I hope beg my excuse and speak for it self; It being one of the best and most advantageous pieces of improvement of our Country Farms yet known, if duly prosecuted, not much inferior to that most excellent design of planting Timber, unto which this must yield the precedency, in respect of the publick and universal benefit the other produces; It being instrumental in securing us whilst we plant our Vineyards and eat and drink the Fruit of them. I wish this of improving our home-made Drinks may
re-


receive no check from my rough handling it,
Which might have been more acceptable to
you, and would have more easily insinuated it
self into the apprehensions of most men; had
it been written with a smother pen: But
so Rural a Discourse, I hope, may pass un-
der a plain dress, from

Sir, Your very humble servant

John Worlidge.

To the

READER.

ince the first Edition of this Tract, many have attempted the encrease of Honey, according to the late divulged Method of Keeping *Bees* in Colonies, pretended to be newly invented. And by reason that Honey is a useful and profitable subject wherewith to make very excellent Liquors, I have subjoyned a small Treatise of the best way of managing those curious Insects, as a very necessary Supplement to this present design; and partly to prevent the too precipitate expence of Labour, Time and Charges; in so needless and fruitless an Exercise as the Propagators of that Invention would wheedle the credulous into. And had not they had a particular respect to their own gain, they would not have taken so much pains to have made it popular for a publick advantage: Although the Effects had answered their pretences.

B

I

To the Reader.

I have also in this second Edition added several material Improvements to this part of Agriculture, and several late Experiments made to the great improvement of *Cider*. And also the true way of making the *Ingenio* for the Grinding of *Apples*, according to the various Experiments of several Artists, that have contributed to the perfecting so useful a *Machine*. With Proposals and Essays for the best way of making *Presses* after divers manners, for the more easie forcing the Liquor from the *Murc*. And not without additions to most of the principal matters treated of in the former Edition.

J. W.

THE

THE P R E F A C E.



The principal design of the ensuing Treatise, is the improvement and increase of the most excellent Liquor this Isle of Great Britain affords; which hath of late years been brought into use, and very much admired by most, through the means and industry of many worthy persons who have very much added to its reputation. Yet is it not become so general a Drink as probably it may be in time, because the greater part of the people of England are not as yet convinced of the advantage that will arise by the propagation of the Trees that yield this noble Drink, nor acquainted with the right method of planting them: neither do they understand the true and genuine way of extracting or preparing it. Which hath been the occasion that many have exclaim'd against it for a mean dull Drink.

Thus hath this Liquor been undervalued by the ignorant, which did prevent a long time many from undertaking its improvement. The Planters also have been discourag'd either by

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the difficulty of raising the Trees, as supposing them not to agree well with the Soil; or in preserving them, when raised, from Cattle, and other injuries; and the fruit from such casualties they are usually subject unto: many also being not as yet convinc'd of the salubrity and pleasantness of the Drink it self. Therefore is this small Tract adventuring into the world in a plain and homely dress, to endeavour a Conviction of the Country-man, not only of the feasibility of the Raising, Propagating, and Planting of Apple-trees, or other Fruit-trees in most places or Soils in this Island, and that to a considerable improvement and advantage of their Farms or Livings small and great; but also of the times and seasons of gathering the Fruits, and the true and right method of Grinding, Pressing, or Extracting their Juices, and fermenting, preparing, and preserving the same when extracted, after the most genuine and best experimented ways that have been yet known discovered, or made use of. For this Liquor Cider hath been improved even to perfection, as many ingenious and worthy persons can testify; and the Method thereof may in time become practicable by the most vulgar Capacities, from whom is expected the more Universal advancement of this design; into whom it is not easie to infuse any thing that is
Novel,

The Preface.

Novel, although it be ne're so feasible, or to be desir'd; as might be instanced in several points of Agriculture, that by degrees have been introduc'd, and now become generally practis'd, which by them were once slighted and despis'd: there being no argument so prevalent with them as Profit; nor that to be talked of, unless demonstrated by plain Experience, which in this Tract I hope will be done to their satisfaction. However, they need no better Argument to convince them of the profits that arise from this part of Husbandry, than that many places in Herefordshire, Gloucestershire, Worcester-shire, &c. are highly improved by this very Method; the Cider there made being in great quantities annually carried to London, and several other places of this Kingdom, and sold at a very high rate; and valued above the Wines of France, partly from the excellency of it in it self, and partly from the alteration, for the worse that French Wines suffer by their exportation, and from the sophistications and adulterations they receive from those that trade in them; which by the ill effects of the latter, opposed to the virtues and pre-excellency of the former, in all probability will so far encrease and promote the Reputation of Cider, that it will not only continue the price and value of it, but rather enhance it, as the Planters and Ci-

The Preface.

derists grow more expert in planting the best Fruits, and preparing the Liquors after the best methods. For vain and frivolous is the Objection that is usually made, That by much planting of these Fruits, the prices of them will be so low, that they will not quit the cost. The same objections might have been made in Herefordshire, and places adjacent, where these Trees in late years are wonderfully increased; yet in the same places, the Fruit as well as the Cider yields a greater price now than ever it did formerly, or than it doth in any place of England (distant from London) besides: For within these three years Redstreak-Apples have, in some part of that County, been sold after the rate of five and sometimes eight shillings the Bushel, and the Cider made of that Fruit been sold for eight pounds the Hogshead, and if two or three years old, then for twenty pounds the Hogshead, the price of the best Canary. The same may be expected in other places, if Husbandmen would take care to plant the best Fruits, &c. it being presumed that Cider in a little time would wear out the Reputation of French Wines, and by degrees lessen the expence of Malt; it being much to be prefer'd to the former, and found by experience to be more wholesome than the Drink made of the latter; and may in time be made at an easier rate than Ale or Beer, and yet
be

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be a great improvement, considering that an Acre of Land planted with Apple-trees, will by its Fruit yield more Liquor than two or three Acres of Barly can make; and that without the annual charge of Plowing, Sowing, &c.

But the main Objection that may be made by the more sober part of this Nation, is, That the increase of these intoxicating and inebriating Liquors, is an encouragement to the universal vice of Drunkenness. To which it may be answered, That that vice is not now so regnant in this Isle, as it hath been in former Ages, and now is in other European Nations if History may be credited. As in Virgil's time, Drinking and Quaffing to their God Bacchus was in use; that Art being then much in request, and the Goat made a Sacrifice to that God, for cropping the tender sprigs of the Vine that yielded their beloved Liquor.

*Non aliam ob culpam Baccho Caper omnibus
aris
Ceditur, &c.*

Only for this Crime we on Altars pay
Bacchus a Goat, and act the antient Play.
Then from great Villages Athenians haste,
And where the High-ways meet, the Price
is plac'd.

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They to soft Meads, heightned with Wine,
advance,
And joyfully 'mongst oyled Bottles dance
Th' *Ausonian* Race; and those from *Troy* did
spring
Dissolv'd with laughter, Rustick verses sing;
In Vizards of rough Bark conceal their face,
And with glad Numbers thee great *Bacchus*
grace.

And after him, Pliny reports that Drunkenness and Debauchery were the principal studies of those times and Countries; they then inventing all ways imaginable to excite the Appetite, as if they had been born into the world to no other end but to waste good Wine; giving great rewards to the greatest Drinkers. He tells us the Parthians then contended for the glory of excessive Wine-drinking; but the Italians were unwilling to part with that honour. Milain yielding one Novellius Torquatus, that wan the name from all pretenders at that time, who had gone through all honourable degrees of Dignity in Rome, wherein the greatest Repute he obtained, was for drinking in the presence of Tiberius three Gallons of Wine at one draught, and before he drew his breath again: Neither did he rest there, but he so far had acquired the Art of Drinking, that al-
- though

The Preface.

though he continued at it, yet was never known to falter in his tongue; and were it ne'er so late in the evening he followed this Exercise, yet would he be ready again for it in the morning. Those large Draughts also he drank at one breath, without leaving in the Cup so much as would dash against the Pavement. The Western parts of the world, and namely France and Spain, were by Pliny censured for their Drunkenness with Beer and Ale, Wines being not there in that Age so frequent. For Italy exceeded all parts of the world for its curious Wines, there being reckoned 195 sorts of Wines. Virgil counted them innumerable.

*Sed neque quam multæ Species, nec nomina
Est Numerus. ————— (quæ sint.*

Their Names and Kinds innumerable are,
Nor for their Catalogue we need not care;
Which who would know, as soon may
count the Sands.

The Western Windes raise on the Libyan
Strands.

But at this day no Country yieldeth more variety, nor more pleasant Wines than Italy. In Rome are now drank (saith an Historian of their own) 28 distinct sorts of excellent Wines;
and,

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*and, as is reported, their Lachrymæ Christi ex-
ceedeth, for its pleasant and exhilarating qua-
lity. So at this day the Germans are much gi-
ven to Drunkenness, as one of their own Coun-
trymen writes of them; that they drink so im-
modestly and immoderately at their Banquets,
that they cannot pour it in fast enough with the
ordinary Quaffing-Cups, but drink in large
Tankards, whole draughts, none to be left un-
der severe penalties; admiring him that will
drink most, and hating him that will not pledg
them. The Dutch-men are not behind-hand
with them; inviting all Comers with a Pail and
a Dish, making Barrels of their Bellies. In Po-
land, he is most accounted of that will drink
most Healths; and held to be the bravest Fel-
low, that carries his Liquor best; being of opi-
nion, that there is as much Valour to be found in
drinking as in fighting. The Russians, Swedes,
Danes, and those Northern Inhabitants, ex-
ceed all the rest, having made the drinking of
Brandy, Aqua Vitæ, Hydromel, Beer, Mum,
Meth, and other Liquors in great quantities,
so familiar to them, that they usually drink our
Countrymen to death: Priests and people, men
and women, old and young do so delight in
drunkenness, that they are daily early and late
found wallowing in the streets. So that compa-
ring other Nations and Ages with this of ours,*

we

The Preface.

we may well conclude, that the Inhabitants as well as the Air of Great Britain are temperate, not too prone to those Vices other places are subject unto; and may justly give them the Character that was given to the Persians, That Temperance is their chiefest Virtue: yet not to be absolutely excused; for in the best Gardens some weeds grow, and amongst the most civil, some rude and debauch'd are to be found. There is scarce any part of the world, but some of its Inhabitants are addicted to the drinking of intoxicating Liquors; which Nature hath prompted them unto, thereby to suffocate the thoughts of futurity, proper only to Mankind. The very Africans, Americans, and Indians delighted in them, although they were not very exquisite in their preparation; but most of the Americans instead of Liquors used the fume of a Plant, that produced the same effect; whom we think no dishonour to imitate, even to excess; and it's probable out-do them in their own Invention, not esteeming it a Vice. The Mahometans, which possess a great part of the world (it's true) on a superstitious account forbear the drinking of much Wine; because that a young and beautiful Woman being accosted by two Angels (that had intoxicated themselves with it) taking the advantage of their Ebriety, made her escape, and was for her Beauty and Wit prefer'd in Heaven,

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Heaven, and the Angels severely punished for their folly: For which reason, they are commanded not to drink Wine: Yet many of them doubting of the Divinity of that Relation, do transgress that Command, and liberally drink of the Blood of the Grape, which the Christians prepare out of their own Vineyards, palliating their Crime, in that they did not plant the Tree, nor make the Wine: The rest of them for the most part taking great quantities of Opium, which hath a stupifying quality with it; and this generally when they are to look Death in the face. The Chinese, and the other Inhabitants of the Eastern parts of Asia, are the least addicted to Ebriety, delighting themselves with Coffee, Tea, and such-like Drinks, free from those stupifying qualities: yet are they not without their Carouses; and those of the intoxicating Drinks, prepared of Rice, Coco's, Sugar, Dates, &c. equalling in strength and Spirit any Liquors in the World. Therefore may we very well excuse our own Nation in the slender exercise of this Vice, were they satisfied with our own pleasant and salubrious Drinks, and did not spend their Healths, Lives, and Estates, as some are apt to do, on such that are forreign and pernicious.

And it is to be hoped, that if the Gentry of England, which are for the most part Land-
lords

The Preface.

lords of many fruitful Villa's, will but set their own hands to the Spade, and encourage their Tenants therein, which now delight more in the Plow; in a little time, the plenty and excellency of our own, may extirpate the name of foreign Drinks. This being one of the most principal and universal points of Husbandry; Bread and Drink being the chief supports of mans life: And this being of all parts of Agriculture the most pleasant; the Plow carrying with it, many times, more care, cost, and hazard, and not affording the tenth of that pleasure, as this Art of Planting doth; it giving you one of the noblest Oblectations the world affords; and hath by its infinity of delight, subjected unto it the Spirits of Emperours, Princes and Senators.

While Fortune waited on the Persian State, Translat.
Rapinus.
Cyrus who from Astyages the Great
Himself deriv'd, himself his Gardens till'd.
How oft astonish'd *Tmolus* has beheld
Th' industrious Prince in planting Trees and
Flowers,
Aud watering them imploy his Vacant
hours, &c.

Many more Examples might be here enumerated; but I hope the more Ingenious part of English men will be easily convinc'd of the pleasure

The Preface.

sure of this Exercise, and of the advantage that it will bring to them and the Nation in general. It may be also objected, that the use of Cider being now common, and the planting of Fruit-trees become universal in this Isle, and Cider made almost in every Village, and many Tracts already written that contain in them the most excellent Precepts, Rules, Observations, and Experiments that can be imagined, for the propagating of the Trees, and making this Lignor, That this succeeding Tract may be needless. To which I answer, that although in some part it may seem to be true what is here objected, yet is not the use of Cider fully known, nor the planting of Trees so much encreased, as to amount unto a twentieth part of what in probability it may be in a few years; neither doth one in ten of substantial Housekeepers in the greatest part of the Nation make, or scarce know how to make this Drink. And as for the Books that treat of this Subject, they are but few; and what is mentioned in them of it, is but here and there a little. The most, and all indeed that is written of it well, is in that incomparable Tract of Mr. Evelin (his Pomona at the end of his Voluminous Sylva) which every one that may be capable of a small Plantation, is not willing to purchase. The consideration of all which, did induce me to take upon me the pleasure of prosecuting

The Preface.

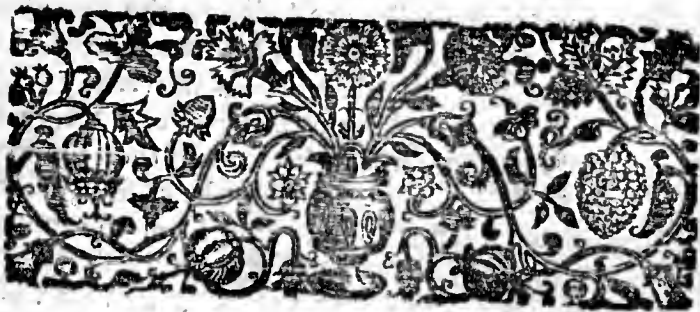
cutting this design of publishing to the world what I had done and observed in, First, The Experimenting the different natures of Trees and Soils, and of making them agree better one with the other than naturally they would do; wherby severall sorts of Fruit may be propagated in such places where otherwise they could not. Secondly, In the manner of grinding Apples, by a new-invented Engine that doth much facilitate the labour and charge formerly expended about it. Thirdly, In the way of fermenting this Liquor, and means of purifying and preserving it; with severall other Rules, Directions, and Observations, more than what are generally known or taken notice of; wherein I have taken as much delight and pains, as the subject and my leisure can afford. And I doubt not but it will yield the Reader content and satisfaction, although there may be severall things inserted that may not seem new, but borrow'd; its so in most Treatises, it being an usual saying, That Nil dictum quod non dictum prius, Every thing hath been discoursed of before; Methodus sola Artificem ostendit. The Method and Manner of performing what hath been discoursed of, is here shewn: and without an intermixture of the same that hath been spoken or written of this Subject, it's impossible to make it compleat. But in that it is so accurt and succinct,

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succinct, that without all peradventure it will not seem tedious to the Reader to read so few lines, that are but introductory to the End its self for which this Tract was written.

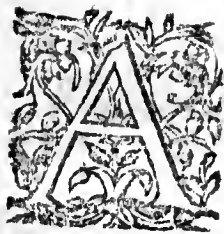
You have not only here presented to you the Art of Propagating the Apple-tree, and preparing the Juice of its Fruit, but some select Observations and Experiments in the Planting and Propagating several other Vinous fruit-bearing trees, and extracting, preparing, and preserving their Juices: And also the best way of making Metheglin out of the fruit and labour of the industrious Bees, and by them extracted and collected from various Plants, or as many would have it, only from the Oaken leaf. And the extracting and decocting the Sap of the Birch-tree, making thereof a cool Summer-Bonello: Together with a brief touch at the composition of Chocolette, Tea, &c. And also a Corollary of the Names and Natures of most Fruits flourishing in this Isle.

CHAP.



C H A P. I.

Of Drinks in General.



AS the Climates and Situations of Countries, and the humours and dispositions of the Inhabitants differ; so have they their various and different Drinks and Liquors, and their Diets, Habits, &c. Which Drinks and Liquors are by them also variously extracted or prepared, and out of different Subjects or Materials. Therefore, before I begin this Discourse, it will not be amiss to give the Reader a brief Account of such diverse Subjects or Materials, out of which
C they

Of Drinks in General.

they are extracted or prepared; that he may observe how industrious the Inhabitants of this Globe have been in every part thereof, (as it were by an universal consent) in searching into the several natures of Plants and Fruits, to exhaust their Blood and Tinctures, to gratifie their Gusts, and please their Fancies; that from the most remote *American*, to the extreamest *Asian*, they seem to accord in this, That that Liquor, out of whatsoever salubrious Matter extracted, which will most intoxicate, is to be highly esteemed of; which in every Country in the World, either some *Root*, *Plant*, *Fruit*, or *Grain* will yield, if by humane Art it be rightly prepared.

S E C T. I.

Drinks made of the Sap of Trees.

The *Palm-wine* is made of the Sap of the *Palm-tree*; which the *Africans* and *Asians* extract, either by plucking off the Flower, and fastening a Pot to the end of the Sprig into which the Liquour will distil; or by boring a hole in the Tree, and hanging a Pot under the same to receive it: which in the *East-Indies* they call *Sura*, in colour
re-

resembling Whey ; and at the first drawing is sweet and pleasant like Wine. This Liquor boiled they call *Terry*, and will keep some time ; but if unboiled, suddenly turns into very good Vinegar. This Wine intoxicates the Brain, and inebriates as other Liquors do : if distilled, it makes Strong-water ; if Raisons of the Sun are infused in it, with some other the like Ingredients, it meliorateth the same exceedingly. Out of one Tree, two Gallons of this Liquor may be drawn in a day, without any damage to the Tree : Yet some have reported, that it hinders the ripening of the Fruit, and that you must expect no Fruit from the Tree out of which you thus extract its blood ; which may be supposed to happen, when too much is drawn, or in too dry or late a Season.

In the *Molucca's* they extract Wine out of another Tree, there called *Laudan*.

In the *Caribbe Islands* is a prickly or thorny *Palm*, out of which is also extracted a *Wine*, after the same manner as before.

So also out of the *Birch-tree* may be extracted a pleasant Liquor, which being necessary and useful, and to be obtained in this Climate, the manner of drawing and ordering it you shall find in the Sequel of this Discourse.

SECT. II.

Of the Juices of Fruits and Berries.

Wine is made of the Fruit of the *Vine*, and is the most common, yet the richest Drink the World affords.

Cider of the Fruit of the *Apple-tree*, and *Perry* of the *Pear-tree*; of more use and advantage in these *Northern* Regions, than the blood of the *Grape*.

Drinks made of the Fruit of the *Cherry*, *Currant*, *Gooseberry*, *Raspberry*, *Mulberry*, *Eldar*, and several other Trees, in this and several other more *Northern* Countries, become very pleasant; as also those made of *Blackberries* and *Strawberries*: their several Preparations are likewise herein treated of.

Coco-Nuts yield also a Milk or Oyl, used in the Countries where they grow for Drink; but being gathered green, they give a very pleasant and thin Juice, which the Natives drink of whilst it is fresh.

In *Negroland* are several Fruits that yield *Wine*, in great esteem among the Inhabitants, as *Sebankou* and *Syby-Wine*, &c.

In *Jamaica* and *Brasilia*, grows the Fruit *Ananas*, on a stalk of a foot long, surrounded

ded with sixteen sharp Leaves, between which is the Fruit like a *Pine-apple*, but much bigger; the innermost pulp whereof melts on the tongue, and is of so delicious a taste, that it exceeds all other dainties: Of this Fruit is made a Drink no way inferior to *Malvasia-Wine*.

Of the *Pomegranate* is extracted an excellent Juice, where plenty of them is to be had.

The *Chineses* make a Drink of a sort of Fruit there, that grows on a Tree beset with Thorns like the *Lemon-tree*: the Fruit is near as large as a mans head, with a Shell over it; the Pap within is reddish, and sour-sweet like unripe Grapes.

Coffee is also made of a certain *Berry*.

In the *Caribbe* Islands, the Tree *Acajon* bears a Fruit like a very fair Apple, of which the Islanders make a Drink very much in esteem among them, being of an excellent taste.

In *Peru* and *Chili* grows the *Unni*, by the *Spaniards* called *Murtilla*, bearing a Fruit not unlike little red Grapes, which are of a tart taste. The Wine pressed out of this Fruit, is clear to the Eye, pleasing to the Palate, and good for the Stomach.

In *Brassilia* is used a Drink called *Pacobi*,

Of Drinks in General.

made of the Fruit of the Tree *Pacobebe*: They also make the Drink *Caoui*, of the Fruit of the *Ocaijba-tree*, which being stamped in a wooden Mortar, and strein'd, it first looks like Milk; but after a few days standing, purifies, and intoxicates the liberal Drinkers of it.

SECT. III.

Of Grains.

From divers sorts of Grains are extracted several excellent Drinks. From our British Grains, as *Barley*, *Oats*, *Wheat*, &c. are extracted *Beer*, *Ale*, and *Mum*.

The *Africans* in *Negro-land* brew their Beer of *Mille*, which they steep in water till it shoots, and then dry it in the Sun, and stamp it to Meal in great Mortars, with whom Mills are not yet in use; then they pour on it boiling-hot water; they make it also ferment with Yeast, imitating thereby our *European* Malt-drink. It is probable this *Mille* is the same with that *Millet* with which the *Dagestan Tartars* make their *Bragga*, which they esteem very delicious, drink freely of it, and grow suddenly drunk therewith.

On the Coast of *Chili* and *Pern* in *America*, the Inhabitants make a Liquor of *Mays*, which grows there in abundance: they ferment it like our *Ale*, and drank moderately, it refresheth; but the Inhabitants usually follow it so close, till they are mad-drunk.

They make also a very pleasant Drink of the Grain *Teca*, dried in the Sun, thrash'd, and parch'd in hot Sand, then ground on a square flat Stone, with a Roller of Stone, and infused into a great quantity of water.

The *Chineses* make excellent Drink of *Rice*, which is very pleasant of taste, and preferred by them before Wine.

In the Isle *Formosa*, not far from *China*, the Natives make a Drink as strong and intoxicative as Sack, out of *Rice*, which they soak in warm water, and then beat it to a Paste in a Mortar; when they chew some *Rice-meal* in their mouths, which they spit it into a Pot till they have got about a quart of Liquor, which they put to the Past in stead of Leaven or Ferment: And after all be kneaded together till it be Dough, they put it into a great Earthen pot, which they fill up with water, and so let it remain for two months; by which means they make one of the most pleasant Liquors a

man need drink: the older, the better and sweeter, although you keep it five and twenty or thirty years.

SECT. IV.

Of the Extracts of Leaves, Stalks, and Juices.

Various Drinks are also made of the Leaves and Stalks of Plants; the principal whereof is made of the Leaves of *Thee*, or *Tea*; and a counterfeit thereof of our English *Betony*; but far inferior to it.

Of the *Sugar-cane* is none of the meanest Drink prepared; for in the *East* and *West-Indies* various Drinks are made of it.

In the more *Southern* parts of *America*, the Natives chew the Herb *Cava*, and put it into a wooden Trough, and add water to it, and mix it well; which they esteem a *Royal Repast*.

Of the Rinds of *Pomegranates*, with an addition of *Cinamon*, the *Persians* make a pleasant Drink.

SECT.

SECT. V.

Of Roots.

Several Drinks are made by many people out of Roots; as the *Æthiopians* make a Drink of the Root they call *Dacha*, by mixing it with water, which causeth Ebriety; which Root serving for eating as well as for drinking, they take great care to propagate.

In the *Southern* part of the *West-Indies*, the *Cassavi-roots*, which serve them in stead of Bread, the Natives prepare (by stamping of it) to make their Drink which they call *Parranow*.

The *Brasilians* prepare their Drink *Aipu* out of the Root *Aipimacaxera*, either by an old toothless Woman chewing the same to a Pap, and spitting it into a Pot, on which they pour water, and afterwards boiling it leisurely, stirring it all the time it stands over the fire; or by boiling the said Root so long till it comes to be like Butter-milk, and then letting it stand till it hath done working; which makes a very pleasant drink.

The same people also press out a Drink from *Potatoe-roots*, which they call *Jetici*.

SECT.

SECT. VI.

Of Mixtures of divers things.

From the mixtures of several Ingredients are many pleasant and necessary Drinks prepared ; among which the several Liquors made of *Honey* may be included , it being by the industrious Bee extracted out of so various Materials, and made use of by most Nations to make their inebriating Liquors withal; which rather than it should fail of that end , some of them add *Opium* to the Composition.

Chocolate is also compounded of several things, and is the most esteemed in *America* above any other Drink whatsoever ; and much in use throughout most of the Maritime parts of *Europe*.

Pale-puntz, here vulgarly known by the name of *Punch*; a Drink compounded of *Brandy* or *AquaVita*, Juice of *Lemons*, *Oranges*, *Sugar*, or such-like ; very usual amongst those that frequent the Sea, where a Bowl of *Punch* is an usual Beverage.

In the *East-Indies* they extract an excellent Liquor which they call *Arak*, out of *Rice*, *Sugar*, and *Dates* ; which is a kind of
Aqua.

Aqua Vite, much stronger and more pleasant than any we have in *Europe*.

Thus having given you a hint of some of the most general Drinks that are in use in most parts of the World, (every Nation having some peculiar or proper Drink which they most affect) also of what, and after what manner, as near as I could from such information as I find, the same are extracted and prepared; to the end that our own Country-men may thereby receive encouragement to attempt the like from those Materials our *British* Isle affords, which I shall in this Discourse endeavour to demonstrate to be as many and as good as are in any place or Country in the world; and that by the true and genuine way or method of ordering the same, a sufficient quantity of many and various sorts of Wines and other pleasant Liquors may be here prepared, not only to suffice our own Inhabitants, but yield a considerable supply to our Neighbours; to the great improvement of this our Country, and the diminution of that unreasonable gain and advantage other Nations make by the trade hither of Drink only.

That the Juices of Fruits

C H A P. II.

That the Juices of Fruits are the best of Drinks, and Universally celebrated.

S E C T. I.

Their Antiquity.

IT appears by the most true and antient History, that the first Liquor our Forefathers used to gratifie their Palates, and delight themselves withall, (besides common Water) was the Blood of the Grape; which was no sooner understood to be so excellent and pleasant a Drink, but it set them at work to plant and propagate that Tree, to dress and order their Vineyards, and to extract and preserve the Juice thereof for their extraordinary Repast.

S E C T. II.

Their Universality.

It also appears from the observation of Travellers and Historiographers, that the Natives

Natives of most of the known parts of the world, have made use of some Fruit or other, naturally growing in their own Countries, as the most delicate of their *Beverages*.

As the Blood of the Grape is prefer'd on the *North-side* of the *Tropick of Cancer*, almost in every part of the *Temperate Zone*, unto the 49 Degree of Latitude, unless where the *Laws of Mahomet* forbid; whose Disciples often transgress that Law even to excess, and much lessen that imaginary sin (as they suppose it otherwise to be) if the Christians dress their *Vineyards*, and prepare their *Wines*.

SECT. III.

The Reasons thereof.

Neither is it without just cause that that *Liquor* is celebrated in those Countries above any other Drink whatsoever, it being so *Homogeneous* to the natures of those people that inhabit there. All *Wines* that proceed from the *Vine* being of a corroborative and mundificative nature, and withall have an exhilarating and vivifying faculty with them, that to those whom the too frequent use hath not abated or dulled the
edge

That the Juices of Fruits

edge of their Virtues, they are rather Cordials or Restoratives, than ordinary Nutri-
ment, or familiar Medicine.

The Juice of the Apple, *Cider*, is for the same cause preferred on this side the 49 Degree of Latitude, where the Bloud of the Grape obtains not that degree of maturity in the Fruit, as in the more hot Countreys: And the Apple being but a pulpy Fruit, not enduring those excessive heats and droughts those Countreys beyond that Degree, and more *Southerly*, are subject unto. It being observed, that in *Normandy*; and the Northern parts of *France*, *Flanders*, &c. their *Cider* far excels their *Wines*: Here in *England* also, *Cider* well made of mature Fruits, not onely excels any *Wine* made here, but the *Wines* that are made in the most parts of *France*, *Germany*, or any other Countrey on this side the 40 Degree of Latitude.

The principal cause of the excellency of these Liquors above any other prepared Drinks, is, for that this Juice or Sap is not only collected out of the Earth by the small fibrous Roots of the Trees, but exhaled by the attracting power of the Sun, into the Branches and Stalks, thence descending into the Fruit, where it is by the continual
ani-

animating heat of the Sun matured. Which natural process of Extraction, Distillation, Concoction, Digestion, and Maturation, far exceeds the Art of Man to imitate, much less to exceed. Wherefore, not, without cause, may those Liquors be worthily preferred to any other Drinks whatsoever: and more particularly and especially, the Juice of the Apple in these more *Northern* Regions, before any other Liquors in what Countrey soever prepared: Not but that those Liquors, in those places where they grow, may be much better than any other produced there: but being transported into a more remote Countrey, and of a different Climate, it begets an apparent alteration in the Drink it self; which, together with the great difference that is between the Inhabitants of either Countrey, very much derogateth from the happy effects that such Liquor might produce, if made use of nearer the place of its first Extraction.

And as the Inhabitants of these *European*, and part of the *Asian* Countreys, do affect, and principally esteem these Juices of the *Grape* and *Apple*; so they of the more remote parts of *Asia* and *Africa*, put a great value on the Juice of *Coco-nut*, taken either

ther before it be quite ripe, when it yields a thin, though immature, yet pleasant Liquor; and when more mature, then a more rich and oylly Repast.

In *America*, no Drink so much in esteem as *Chocolate*; the principal Ingredient whereof is the Nut *Cacao*, which in the vast Regions there subdued by the *Spaniards*, are propagated in such abundance, that the accompt thereof is almost incredible; and for no other use, than to be converted into that excellent *Regallo, Chocolate*.

The delicious Liquor made of the *American* Fruit *Ananas*, is also much in esteem in *Jamaica, Brasilia*, and those parts.

Notwithstanding these Wines or Liquors have obtained the pre-eminence above all other Drinks throughout the greatest part of the known World, yet are there several sorts of more inferiour Fruits that yield very pleasant and wholesome Drinks; (as before may be observed) that can never be advanced to that repute or universal acceptance, as these last mentioned; but may nevertheless be compared, if not preferred to any other Drinks extracted or prepared from any other Subject than Fruit.

The Juices of Fruits being Mature, are
wor-

worthily esteemed to be very grateful to the Stomach, and of easie digestion; being, by reason of their concoction and maturation in the Fruits, become before-hand a *semi Sanguis*, or half Blood, and are not so subject to putrefaction as other Extractions of a meaner Classis; which is also the reason, that with a due ordering of them, by a meer natural Maturation, the most of them will keep in their full purity several months and years; and some of them for many years increasing still in strength, purity, and pleasantness; which no other Extracts are capable of.

CHAP. III.

That Cider, and other Juices of our English Fruits, are the best Drinks for this Country.

SECT. I.

Its Antiquity and Nature.

HAVING tasted a little of those several Dainties that are in most Countries liquedly prepared to please the Palate, I
D hope

Cider the best of Drinks.

hope every English man, or Native of this Isle, on his return hither, will conclude with me, that our British Fruits yield us the best Beverages; and of these Fruits, the *Apple* the best, which is here called *Cider*.

As for the Antiquity of this Liquor in this Country, much might be said, if you will grant that the name *Wine* was formerly, as well as lately, used as a common name to the Juices of several other Fruits besides the *Grape*; there being mention made of several Vineyards that have antiently been in *England*; as that of *Ely*, *Dans Vinea Vimm*, a Vineyard yielding Wine; and that of *Bromwell-Abby* in *Norfolk*, bearing the names of Vineyard to this day.

The name *Seider* being *British*, having some Analogy with the Greek word *Sicera*, is also an Argument that it was a Drink amongst the Antient *Britains*, they wanting Names for new things.

The Tradition that Tyths have been paid for Wines made of certain Vineyards in *Gloucester-shire*: And *Camdens* testimony that there was no County in all *England* so thick set with Vineyards as *Glocestershire*, nor so plentiful in increase; the Wines made thereof not affecting their mouths that drank them with an unpleasant tartness, &c.

and

and adds that to be the reason why many places in that Country, and elsewhere in *England*, are called Vineyards: All these Testimonis may be as well for the planting of Orchards for *Cider*, as Vineyards for *Wine*; the name *Wine* might be then used for that Liquor, as now for other: and the preference they then gave to the Wines of *Gloucester-shire* before other, in not being so tart, is a good Argument that those Wines were *Cider*, because the *Spontaneous Trees* or *Wildings* of that Country might very well yield a better Drink then, than the Apples formerly planted in the Orchards of other parts of *England*; it being but of late years that pleasant Fruit, or good *Cider-Fruit* either, have been propagated in most parts of this Country; and in some places not any to this day.

The name of *Cider*, if from *Sicera*, is but a general name for an inebriating or an intoxicating Drink, and may argue their ignorance in those times of any other name than *Wine* for that Liquor or Juice in the Saxon or Norman Language, either of those Nations being unwilling (its probable) to use a *British* name for so pleasing a Drink, they not affecting the *Britains*, made use of few of their words: But since that, that

Cider the best of Drinks.

Wines have been Imported from Foreign parts in great quantities, the *English* have been forced to make use of the old *British* name *Seider*, or *Cider*, for distinction sake, although the name *Vinum* may be as proper for the Juice of the *Apple* as the *Grape*, if it be derived either from *Vi* or *Vincendo*, or *quasi Divinum*, as one would have it.

Also the vulgar Tradition of the scarcity of Foreign Wines in *England*, viz. that *Sack* which then was Imported for the most part but from *Spain*, was sold in the Apothecaries Shops as a Cordial Medicine; and the vast increase of Vineyards in *France*, (*Ale* and *Beer* being usual Drinks in *Spain* and *France* in *Pliny's* time) is an Argument sufficient that the name of *Wine* might be attributed to our *British Cider*, and of *Vineyards* to the places separated for the propagating the Fruit that yields it.

SECT. II.

Cider preferred to Foreign Wines.

Whether it be from the greater degree of concoction in the Juice of the *Apple*, being thinner dispersed in the body of the Fruit,

Fruit, than that is which is in the *Grape*, or whether it be because the greatest part of the *Wines* usually imported from abroad, are not of their best extraction, or impaired by transportation; the well-made *Cider* of some parts of *England* is to be preferred by the most indifferent and unprejudiced Palates: as the most acute *John Evelyn Esq;* in the Preface to his *Pomona*, hath diversly illustrated, especially by that President of the Challenge of *Mr. Taylor* with the *London-Vintner*, where the *Red-streak-Cider* gained the Victory over the *Vintners* best *Spanish* or *French Wine*, by variety of Judges.

Wine of the *Grape*, although of it self, being well made and preserved, without those too common *Sophistications*, *Adulterations*, *Brewings*, or *Compositions*, is without doubt an excellent Cordial, and taken moderately, much conducing to health and long life: yet the constant use of it as a quotidian Drink, Experience hath taught us, is very injurious to the Drinker. If it be new, that is to say, under the age of a year, or be set into a new fermentation by the addition of new *Wine* or *Stum*, it purges, and puts the blood into a fermentation, that it indangers the health of him

More
wholsome.

that drinks it, and sometimes his life. If it be old *Wine*, which is commonly the best, then the Vintners cunning in preserving it, and making it palatable by his secret and concealed Mixtures, renders it dangerous to be drank either fasting, or in great quantity; many having died suddenly meerly by drinking of such *Wine*: For there is no Drink more homogeneal to the blood than *Wine*, the Spirit thereof being the best Vehicle of any Medicine to the most remote parts that the blood circulates in; therefore if any evil mixture be in it, the more it operates, and is soonest conveyed to the heart and all other parts of the body.

It is recorded by *Pliny*, That *Androcydes*, a noble, sage, and wise Philosopher, wrote unto *Alexander* the Great, to correct and reform his intemperate drinking of *Wine*, whereto he was very prone, and in his fits of Drunkenness very rude; the immoderate drinking whereof is by him affirmed to be very dangerous and pernicious.

As for *Cider*, that we have had the long and constant experience of the making of it, and preserving it for several years in its true and genuine taste; *Cider* of two and three

three years old being not unusual in the *Cider-Countries*, the late Lord *Scudamore* having had a Repository on purpose to preserve it in, at his Seat in *Herefordshire*, and that without any Sophistication or Adulteration, but by the only Art of right preparing and ordering it; by which he preserved *Cider* many years, it still retaining, or rather improving its goodness.

The constant use of this Liquor, either simple or diluted, hath been found by long experience to avail much to health and long life; preserving the Drinkers of it in their full strength and vigour even to very old Age; witness that famous History in my *Lord Bacon's History of Life and Death*, of eight men that but a little before his time danced a *Morris-dance*, whose Age computed together made eight hundred years; for what some wanted of one hundred years, others exceeded. These were reported to be Tenants of one Mannour, belonging to the Earl of *Essex* at that time, and to be constant *Cider-drinkers*. And divers other Presidents of the like nature, *Herefordshire, Gloucestershire, &c.* can furnish you withal.

If it be new and unfermented, it prejudiceth not the Drinker; nor if it be old,

so that its unpleasantsness forbids you not to drink it, but for its unpleasantsness sake.

Its agreeing with our natures, adds much to its Salubrity, because of its innocency, it yielding also a good Spirit, which may probably prove a Vehicle answerable to that of other Wine: At least it may make a very good *Brandy*, which (when the Fruit is grown more common) in plentiful years may be experimented and improved.

More
pleasant.

Although there is no *Liquor, Drink*, nor *Diet* alike pleasant to all, some preferring that dull *Coffee* before any other Drink whatsoever; some *Stale Beer*, others *Fat Ale*, *Mum*; one *Claret*, another *Sack*, before any other Drinks: Yet is there not any Drink known to us so generally palatable as *Cider*; for you may make it sute almost with any humourous Drinker: It may be made luscious, by addition of a good quantity of sweet *Apples* in the first operation; pleasant, being made with *Pippins* or *Gennet-Moyles* only; racy, poignant, oily, spicy, with the *Redstreak*, and several other sorts of Fruits, even as the Operator pleases. And it satisfies thirst, if not too stale, more than any other usual Drink whatsoever.

But

But that which most tempts the *Rustick* More profitable. to the Propagation of this Fruit for the making of this Liquor, is, the facile and cheap way of the raising and preparing of it; for in such years that Corn is dear, the best *Cider* may be made at a far easier rate than ordinary *Ale*; the thoughts whereof add much to the exhilarating virtue of this Drink, and, I hope, will be a good inducement to the farther improvement of it.

Next unto *Cider*, *Perry* Perry claims the pre- cedency, especially if made of the best juicy *Pears* celebrated for that purpose.

The Wines or Drinks made of *Plums*, Juices of other Fruits, *Cherries*, *Currants*, *Gooseberries*, *Rasberries*, yea, and of our English *Grape*, may be so prepared, that they may be more acceptable to our Palates, and more healthy, pleasant, and profitable than those Foreign Wines many are so fond of.

C H A P. IV.

Of the best and most expeditious ways
of Propagating the several sorts of
Fruit-trees for the said uses.

S E C T. I.

Of Propagating the Apple-tree.

THERE is no Fruit-tree in this whole Isle
of Great Britain, that is so universal
as the *Apple-tree*; there being but few pla-
ces, and but little land, wherein it de-
lighteth not: hardly any place so cold or
moist, hot or dry, but it will thrive and
bear Fruit. Neither is there any Fruit-
tree more easily Propagated, nor any that
bears so great a burthen of Fruit, as this
doth: Therefore is the planting and in-
creasing of them more to be encouraged
and promoted than of any other, consider-
ing also the excellency of the Liquor ex-
tracted from its Fruit. For the Propaga-
ting whereof, the first thing to be confi-
dered

dered is, the nature and position of the land wherein it is to be planted.

Although this Isle be stiled the *Queen of Isles*, for its temperature of *Air*, fertility of *Soil*, &c. that we may truly say of her as *Rapinus* of *France*,

*Though to all Plants each Soil is not dispos'd,
And on some places Nature has impos'd
Peculiar Laws, which she unchang'd pre-
serves;*

*Such servile Laws Great Britain scarce ob-
serves:
She's fertile to excess, most Fruits she bears,
And willingly repays the Plowman's cares.*

Yet is there required some Judgment from the Husbandman in placing each Tree or Plant in the proper Soil it most delights in, or in adapting Plants to the nature of each Soil you have to plant; for Trees will strangely prosper in ground that they like, comparatively to what they will do if they are planted in ground wherein they delight not.

*Adapting
Fruits to
the Soil.*

Virgil was of the same opinion, when he sang,

Nec verò terræ ferre omnes omnia possunt, &c.

All

*All grounds not all things bear : the Aldar-
tree*

*Grows in thick Fens; with Sallows, Brooks
agree;*

*Ash, craggy Mountains; Shores, sweet Myr-
tle fills.*

And lastly, Bacchus loves the Sunny Hills.

The *Apple* it self, which is but one kind of Fruit, yet are there several sorts of them that delight in some places, and will not thrive in another: which made the *Kentish-men* so addict themselves to the planting of the *Pippin* and *Codlin*, because no other Apple would prosper so well in that County; which gave them the names of *Kentish-Pippin* and *Codlin*; when in some other places neither of those Fruits will prosper without Art, but are destroyed by that pernicious Disease the Canker. The *Redstreak* also is observed to prosper better, and yield a better Juice in some places than in other, although but in the next Parish.

The same is to be observed in Pears: Summer-Pears will thrive where Winter-Pears will not. Which is the first thing to be considered of, to wit, what Species of
Fruits

Fruits are most natural to the Country or place where you intend to raise your Trees; which may be known partly by observation of the growth of Trees in the Neighbourhood, and (where that satisfies not) by experimenting variety of sorts in your Ground. And when you have resolved what Species to propagate, then select or set out your Ground.

For the distinguishing whereof, there are many Rules; but he that is seated or fixed in any place, and cannot conveniently change his Habitation, must be content with his own: and if any defect or disadvantage be in it, it may be it hath some advantage that another wants. If it lie to the *North*, the Trees bud and blossom the later, and many times the Fruits succeed the better, and is the freer from the injurious *South*-winds in the Autumnal Season.

What sort of Land best.

*For in the Spring desire not too much heat,
Lest the remaining cold your Hopes defeat:
And the Suns kindness then should prove his
crime,
If forward Fruit appear before its time.*

Rapinus.

If it lie to the *East*, it hath not only the advantage of being later budded and blown,

blown, because of the cold *Easterly*-winds in the Spring; but the Fruit ripens the better, the Morning-Sun in the Summer being by much the best; and the Fruits are also freed from the *Western*-winds; which with the *South* are the worst.

Rapinus.

In the end of Spring when welcome heat returns,

When every Garden lovely Fruit adorns,

Sometimes a Tree by sudden Tempests cross;
The whole Years hopes in one short Night has
lost.

If your Land be on a dry or rising ground, you may plant them the thicker; which will cover and shade the ground the sooner, and make them bear the better: the Fruit will also yield a more Vinous Liqueur. If your Ground lie in a cold moist Vale, the sooner may you raise a natural Fence or security about it, to defend your Trees from cold Winds and stiff Gusts, which diversly annoy your Trees and Fruits. The worse your Land is, the more you have for your money; the better it is, the less charge to plant it, and the sooner will you reap the benefit of your labour.

But

But if you have the liberty to chuse what Land you will for planting of Fruit-trees, then for the *Cider-Fruit* chuse a good warm light Rye-land: for the heavier, colder, and moister Wheat-land is not so good, the *Cider* being not so clear nor Vinous.

If the Ground be very light and rich of it self, or so made by improvement, several sorts of Apple-trees, especially the *Pippin*, will be so apt to the Canker, that they will scarce ever be large Trees: Therefore a firm and strong Land is best for Winter or long-lasting-Fruit; but for the ordinary *Cider* or Summer-Fruit, Land cannot be too light: The more it inclines to redness, the better. But

When with due Judgment you would choose a *Rapinus.*
place

Proper, wherein to raise a future Race,
Let it be in the Sun; without his Aid,
The Ground will languish, and the Fruit will
fade.

If the Ground be too hot, dry, shallow, or barren, raise the Land on broad Ridges, *Amend-
ment of
Land.*
that the middle of them may be about twenty or thirty foot distance, according
as

as you intend to plant your Trees: Let the Intervals between the Ridges be about seven or eight foot broad, or more, and the Earth taken up between about a foot deep cast on the Ridges, which will make the ground thicker than before it was, and your Trees you may plant deeper in it than otherwise you could do; where they will thrive very well, as may be perceived on the Banks of some Land in the Hedges, that Apple-trees will thrive better there than on the level Land.

If water cannot be obtained to moisten it sometimes, by small Rivulets running through it, which will highly advance the growth and fertility of your Fruit-trees; Chalk, Marle, or Clay laid and spread on the surface of it, will cool and sadden it, and make the ground very rich, and yield a good Grass, under which the Roots of the Trees will spread with delight.

Fern or any other Vegetable, nay Stones covering such Land, will preserve it cool and moist in the Summer, as well as warm in the Winter.

If the ground be cold, moist, and spewy, endeavour what you can to drain it, either by open Trenches, or close, which are made after this manner. Dig several narrow
Trenches,

Trenches, one between each row of Trees, descending to some Ditch at the lower end of your Ground, and lay in the bottom of it Alder-Frith, or Faggots (some say Beech will last as long) and fill the Trenches again on the said Frith or Faggots, and level your Ground as before; by which means the water will insinuatingly pass through the said wood to the lower side of your ground, leaving the rest the drier: But if you cannot conveniently do this, then raise it as before is directed for your dry land.

For the mixture or composition, any Dung or sandy Soil is very good, so that the Dung, whilst new, come not too near the roots of your Trees.

But if your Ground be of a cold Clay, or strong stiff nature, then the best way is to cast it up as before, tempering it with Sand, or sandy compost, any sort of Dung, or rotten Vegetables; and to plant it with the most hard Apples, *Pippins*, &c, and keep the ground annually plowed or digged to the very stem of the Tree, which will be a means to preserve the Trees from Moss, which Trees in this sort of ground are naturally subject unto.

If Land be subject to be overflown by
E
the

the swelling of Rivers, or other falls of water, it often proves very good for Fruit, so that it be drained again, and the water not suffered to stand too long on it, and the Land not of a cold stiff nature.

*Position or
Situation
of Land to
be planted.*

If your Land decline a little towards the *South-East*, it is esteemed the best Situation of Land to plant Fruit-trees on: First, By reason that in the Spring, *Easterly*-winds keep back or check the Bud, Secondly, For that it hath the benefit of the whole *Anti-Meridian* Sun, which is esteemed the best in the Summer and Autumn, dispersing the cold Dews early from the chile Fruits; the Air being warm'd by the Sun all the day, is sufficient in the evening to preserve and continue the same heat without the Sun-beams. Thirdly, It hath some advantage by this Position from the Winds in the Autumn, that blow from the *South-West* and *West*, usually prejudicial, and sometimes destructive to the Fruits.

*Fencing or
sheltring of
Land.*

If you plant your Fruit-trees in your Hedge-rows, or *sparsum* here and there about your Land, your onely care will be to fence and preserve each Tree from the wrong or injury it may sustain by Cattle, unless you graft on stocks that are already nursed up in the Hedges, naturally defended thereby

thereby from spoil; but if in open places, care must be taken to Bush them, so that Cattle may not rub against them, nor crop them.

If you make a Plantation any where by it self, if it be not otherwise defended by Hills or Trees, you may at the same time as you plant your Fruit, plant other Trees on the confines of your Plantation. If your Ground be moist, then may you plant *Poplar* or any other of the taller sort of Aquaticks: If a dry Land, then *Walnuts*, *Ash*, or any Tree that delights on dry land. For such defence preserves your Trees from blighting Blasts in the Spring, and destructive Winds in the Summer and Autumn.

At the same time also when you plant your Fruit-trees, it will much conduce to the preservation of them when Mature, if you plant a good Quick-hedge of *White-thorn*, which will be a very good Fence by the time that the Fruit-trees come to bear, sufficient to keep out the Cattle from cropping the tender Twigs of your Fruit-trees, and rubbing against their Stems; and unruly people from destroying the Fruit.

SECT. II.

Of the Nursery of all sorts of Fruits.

To obtain as well good Trees as good Fruits, is a great care. Some pretend to raise excellent Fruits from the Kernel of the Apple, which rather carrieth with it the nature of the Stalk the Tree was grafted on, than the Fruit it proceeded from; therefore I shall take little notice of it here. Although many have pretended to have raised some new Species of Fruits by this means, Grafting being by all, as well our Modern Planters as the Antient, concluded to be the best and most expeditious way to preserve the right Species of Fruits, and accelerate their bearing. The choice of the Stock is therefore to be considered; which most agree the *Crab-stock* to be the best, although many affirm that the *Wilding-stock*, or of the *Paradise-Apple*, to be preferred: for a Tree grafted on a *Crabstock*, is of longer duration than any other, the wood being more hard, and less subject to decay, and the Root more naturally spreading in our Soil than any other. It also not onely preserves, but quickens and enlivenens

liven's the Gust of any delicate Apple,
 But if the Apple you intend to Propagate be over-tart, then sweeten it on a *Gennet-Moyle* or *Wilding-stock*, rather than on a *Crab-stock*.

When you are resolv'd on what Stocks you intend to graft, then provide your self with the Chaff or *Mure* of that Fruit you derive your Stock from, and spread it thin over a Bed of Earth dig'd, dress'd, and cleans'd from Weeds; and spread or sift Earth two or three fingers thick lightly over it, that it may be all covered; and so let it lie all the Winter, and in the Spring following you will have plenty of young Stocks appear promiscuously. During the Summer, keep them weeded clean, and the Winter following draw them where they are too thick or irregular, and trasplant them into other Beds well dress'd, as before, in such order as that you may conveniently pass between them to dress, weed and graff them, and there let them stand until they are big enough to graft.

Or you may obtain *Crab-stocks* out of the Woods and Hedge-rows, and plant them in the places where you intend they shall stand.

Observe always, that you make your Se-

minary in as barren Land as, or more barren than the place you intend to remove them into; by which means you may raise a fair Plantation on a mean Soil: Where many have been discouraged by removing of their Trees out of a rich Nursery into a mean Land, blaming the Tree or Soil, when it is indeed their own ill husbandry. The *French Poet* and all good Planters advise the same.

*Warm Air, and moisture are by Apples lov'd:
But if to stony hills they are remov'd,
You must not blame them, if they then decay.*

Meaning a removal into a dry barren stony land from a warm moist soil.

The *Crab-stock* also thrives best when removed from a cold and dry Hilly-land, to a warm and fertile Soil; but those raised from the Seed are the best.

It is to be observed, that the Stocks raised of Seed or Kernels emit a downright Root into the ground, called a *Tap-root*, which in the removal of your young Stocks, ought to be taken away; then will the Roots of your Stocks spread, which will make them the easier to be removed, when they are grafted and fit for transplantation.

on. Also the spreading Root is the best both for the feeding the Tree and bearing Fruit.

Thus having provided your self of Stocks, either of Kernels in your Nursery, or in your Fields, Hedge-rows, or other places of *Crab-Stocks*, either naturally growing or planted there, which having stood a year or two, are fit to be grafted on; Then you must furnish your self with Grafts suitable to your design.

Before you cut your Grafts, consider what Fruits you are most inclinable to propagate. But seeing that my intentions are onely to treat of Drinks; I shall onely mention here such Apples that are proper for *Cider*, although otherwise useful, and to be preferred, in some cases, before the other sorts that are less apt for the Mill. *Choice of Fruits.*

Cider-fruit may be divided into three parts: First, Such that are for making early *Cider*, or for the present drinking. Secondly, Such that are for making the best, rich, Oily, Spicy, and highly-relished *Cider*, and also long-lasting. Thirdly, Such that are useful Fruit for the Table, yet making a very pleasant and acceptable *Cider*.

As for the first Classis, the *Codlin* is the *Codlin* earliest, best bearer, and easiest to be propa-

Of Propagating Fruit-trees.

gated: You may graft them on Stocks as you do other Fruit, which will accelerate and augment their bearing; but you may save that labour and trouble, if you plant the Cions, Slips, or Cuttings of them in the Spring-time, a little before their budding; by which means they will prosper very well, and soon become Trees; but these are more subject to the Canker than those that are grafted.

These, of all the sorts of Apple-trees, agree best in a near Neighbourhood of their own Species; for set them as close as you will, they will thrive, and bear very well: therefore are they fit to plant in Rows, Walks, and Avenues, and make a very graceful and pleasant prospect.

It is usual with some to plash them to Poles, to make a Pallisade-hedge with them; which is not commendable, because they are pithy Trees, and ill endure to be lopt, thriving best when permitted to shoot upright, and bear the more. They delight also in shady Groves or Walks.

Gennet-Moyle.

The next is the *Gennet-Moyle*, which delights most to grow single from its Company; but as for its being grafted or growing of Sets, it is very much like the *Codlin*. This Fruit makes by far the better *Cider*,
and

and is for present drinking, and almost equals the best of *Ciders*.

There are also several other Summer-Fruits that yield very good *Cider*, and fit to be propagated, were they not too pleasant to the taste, tempting idle persons to waste the Fruit, and injure the Trees.

Of the second Classis, is the *Redstreak*, *Redstreak*, which is now the most universally celebrated for its Juice, of any Apple this Island yields: It is one of the sorts of *Wildings* of *Herefordshire*, and for the excellency of its Liquor, is now spread into most parts of *England*. There are several sorts of them, the one more red than the other, and is called the *Red-Redstreak*; another there is that is more pleasing to the Palate than the former.

The *Redstreak* is to be preferred for your Plantation to any other Apple whatsoever, especially remote from your house. First, Because it yields the best of *British* drinks. Secondly, Because the Fruit is harsh and unpleasant, not tempting the Palates of lewd persons. Thirdly, The Tree thrives in as mean Land as any other Apple whatsoever, being a spontaneous Plant at first. Fourthly, It's a constant bearer, being a *Wilding*, enduring (more than the greater

greater part of other Fruit) the severity of the sharp Springs, sometimes destructive to those that are more tender. Fifthly, The Tree bears in a few years after its grafting, recompensing betimes the industry and cost of the Planter; the delay whereof in other Fruits, having been a principal obstacle to the great design of Planting. Sixthly, The Tree is low and humble, and so more of them may be planted in a like quantity of Land, than the taller Trees, which shade the ground more. Seventhly, The lowness of the Trees prevents the sharp winds in the Spring, and the Fruit of them are not so apt to be blown off in the Autumn. Eighthly, This Fruit exceeds all other Apples in the Kitchen, for the time they last.

Golden
Pippin.

But it is observed that the *Cider* made of the *Redstreak* is not in all places alike, although it be a curious liquor in most places excelling most *Ciders*. Yet in some lands other *Apples* may make a better *Cider*, As the *Golden Pippin* being a delicate Apple yields a Juice in many places exceeding the *Redstreak*: So that if your land be rich, inclining to the Pippin Fruit, the Golden Pippin will very well deserve a place in your plantation, being a very
great

great bearer, and the fruit one of the best for the *Table* aswell as the *Mill*.

There is another sort of Apple, which ^{*Westbury*} doubtless is one of the most natural ^{*Apple.*} *British* fruits we have, it's very probable it is in many places in this Isle: but in *Hampshire* near *Peterfield*, known by the name of the *Westbury Apple*, so called from the *Villa* where the old Trees stood that yielded the grafts to its Neighbours. It is a fair green and dark coloured Fruit, having on the sunny side of them some red stripes, the rind or pill exceeding tough, the flesh spongy and not inclining to rot, although rudely handled, if the fruit hang long enough on the Trees untill they are ripe, which will be with the latest, This fruit is not to be eaten by reason of its tough, rough and austere substance and tast until *Christmas*; they may be kept until *Midsummer* following, and are to be prefer'd for any Culinary uses. The Trees are great bearers and thrive in any cold and moist land, and its probable in barren land, it being a natural fruit to this County and endure all weathers. For which properties of being hardy, unpallatable whilst on the Trees (a worse Apple then being not to be found) well bearing, durable, and useful, the

the more ingenuous Neighbours have encreased them. Of which fruit hath been made *Cider* far excelling any *Redstreak* that could be there obtained, and it's probable may exceed any other *Ciders*, so that the fruit be not ground until *December* at soonest, about which time the strong Fibres that are disperst throughout the substance of the fruit are weakned, whereby its toughness and roughness is abated and its Juice more easily separable from the *Murc*, and more maturated by being so long contain'd within its thick Coat. For these hard, durable, rough, and sharp fruits make the worst *Cider*, if ground from the Trees or soon after, and the best when they have been kept untill time hath thoroughly digested their juice.

Deux ans,
or *Fohn*
Apples

The *Deux-an*, so called from its long lasting, continuing neer two years, is an Apple not much unlike the *Westbury* Apple last mentioned, for it is a true old *British* fruit, agrees with all Soils; and where the *Pippin* fruits are so subject to the Canker, that its labour lost to plant them, there the *Deux-an* flourishes even to excess, and its rind so clean that no other Tree is to be compared to it. The Tree is more apt to aspire than any other
Apple.

Apple-tree, its branches grow very uniform, and therefore may be planted near one to the other in Rows, but those Rows at a fair distance: By which way of planting fair and beautiful *Avenues* may be made, yielding fruit aswell as shade; They are great bearers, and hardy against all Winds and Blasts. The fruit so well known to be a hard, sharp and unpallatable fruit from the Tree, that its freed from the dangers sweeter fruit are subject unto; they hang very long on the Trees before they are ripe, and then being laid up until *December* or after, and ground, yield a very delicate *Cider* surpassing most others: And I hope I shall hereafter be able to give an account of its improvement by its long keeping; For such sweet Juices pressed out of such durable fruit, without all peradventure will be much meliorated by time, but this I find, that it will soon ferment, and therefore must be drawn off the Lee in a few days.

This fruit being a common fruit, and in some places but a hedg fruit, and yielding but a thin sour Juice, being ground from the Tree, hath been of late slighted, Newer Fruit like new Fashions taking place and gaining esteem, when in truth there

is scarce a better Fruit to be planted than this *Deux-an*, for the beauty of the Tree and quick growth wherein it excels, its liking all grounds and great bearing, the fruit enduring all weathers, long lasting, its most pleasant Liquor that it yields, and I doubt not, but therein it will also be said to excell, and its various uses in the Kitchen, and its preference at the Table when most other fruits are past.

Others there are also that are very excellent for this use; as the *Elliot*, the *Stoken-Apple*, several sorts of *Musts* and *Fillets*, &c.

*Pippins
and Per-
mains, &c.*

Of the third Classis, are *Pippins* and *Per-mains*, which make a very pleasant *Cider*: but of all Table fruit, the *Gilliflower* and the *Marigold-apple* (sometimes called *Johns Permain*, the *Kate-apple*, and the *Onion-apple*) are to be preferred, especially mixed, bearing with them the marks, *viz.* a Streaky coat, of good *Cider-apples*. The *Golden-rennet*, the *Harvey-apple*, and the *Queening*, are very good *Cider-apples*.

The *Marigold* being laid up for six or eight weeks until it be mellow, and then ground, yields the most luscious and saccharine Juice of any fruit whatever that I have known, which being well kept will doubtless

doubtless prove good *Cider*, when it is at the height of its maturity.

There are some sorts of Land on which *Apple-trees* will not prosper well, and are more apt for the *Pear-tree*; as the cold, gravelly, clayish, wilde, and stony land, on which this Tree, especially the more wilde sort of *Pear*, will thrive exceeding well.

Choice of Pears.

*The Pear, when it has room enough to spread,
Where it has warmth sufficient over head,
If it be seconded by the wet ground,
With Blossoms, and swelling Fruits will be
crown'd.*

Perry being near of kin, for its excellency, to *Cider*, and the *Pear-tree* far exceeding the *Apple-tree* for its greatness and fruitfulness; there having been one very lately, not far from *Ross* in *Herefordshire*, that was as wide in the Circumference as three men could encompass with their extended arms, and of so large a head that the Fruit of it yielded seven Hogsheads of *Perry* in one year, as I was credibly informed.

The *Choakie Pears* of *Worcestershire* and those adjacent parts, or the *Horfe Pear*, and
Bareland

Bareland pear, and *Bosbury-pear*, are esteemed the best for the Press, bearing almost their weight of excellent Liquor. The more coloured any *Pear* is, the better.

Plums.

Plums are not to be rejected from our Plantations of Wine-yielding-fruits, it being presumed that by a right ordering they may yield one of the best Drinks, especially the *Damson*; any of them being easily propagated, and bear well.

Cherries.

In a good mellow Soil, scarce any Tree will yield more of Fruit, than the *Flanders-Cherry-tree*, and that Fruit also plenty of a brisk Vinous Liquor; which well prepared, is worthy of your esteem.

There is great variety of this Fruit, according to which may also the like variety of curious Liquors be made.

Gooseberries, Currants, Raspberries.

Of *Gooseberries*, *Currants*, and *Raspberries*, there is but little variety, the fairest of either being to be prefer'd, yielding the best Juices, and bearing the greatest quantities of Fruit.

S E C T. III.

Of Grafting.

Having resolved on your Fruit, you must select your Grafts of such Trees that are to be grafted from the best bearing Trees, and from such Boughs or Sprigs that are most apt to bear; and, as a *Virtuoso* well observed, from the Tree, the Spring before its bearing year, if it be a Tree that (as many usually do) bears every other year.

*How to
choose
Grafts.*

As for the size, let them be but short, with two or three Eyes or Buds at most, and those the nearer together, the better. Grafts are usually cut a little below the Knot or Joint of the last years growth, because the wood is there hard, and the rind thick, to shoulder well on the Stock; but the smallest top will grow, though of the last years growth only: yet the Grafts of two or three years growth cut short (and the Buds that are likely to blossom broken off) are best on large and well-rooted Stocks, where they make the best shoots, and are not so easily subject to the inconveniencies of the more slender.

F

When

To keep
Grafts.

When once the Leaf is wholly off, and before the Tree begins again to bud, Grafts then cut, may be kept until the Spring or Grafting-time, the ends being stuck in the ground, and transported or carried to any remote place: If the ends be stuck in Clay, or in a Turnip, or they bound up in green Moss, or being wrapped in oyl'd or waxen Leather, the intent being to keep them cool, and from the exsiccating winds: for in frosty and windy weather, Trees taken up and not yet planted, being laid in a Cellar, or such-like place, are preserved, when otherwise exposed to the wind, though much more cold, are destroyed.

Time for
Grafting.

Although you may graft and inoculate almost at anytime of the year, either by beginning early in the Autumn, and by preserving them from the cold, or by keeping your grafts cut and stuck in the ground in the shade, to impede their growth in the Spring, and so graft them on the sappy Stocks, or by budding in Summer; yet the principal times for grafting are the months of *January* and *February*, for *Cherries*, *Pears*, *Plums*, and forward Fruits; and *March* for *Apples*. A milde open weather is best, and most propitious for this work; which if that
invite,

invite, it is not good to stay for worse.

Yet observe, that a Graft sometimes before cut and stuck in the ground, and then grafted at the rising of the Sap, takes better than those that are grafted so soon as cut.

The reason alledged is, because the Graft being separated from the Tree from whence it had its nourishment, and having for some time wasted its sap, when it comes to a fresh supply, more greedily attracts it than if it had never been exposed to such an expence. Which amongst many others is a very good argument, that all Vegetables, as well Trees that shed their leaves in the winter as others, require and have a continual supply and ascent of sap after the leaf is fallen throughout the whole Winter (except it be whilst extream frosts check its motion) to maintain them in their viridity and vegetable life: As appears by the swelling of buds of many Trees in the midst of Winter, &c. The descent of sap in Trees being only a vulgar error.

But the more general rising of the sap here, is upon the approaching of the Sun into our Northern Hemisphere, opening the pores of the Earth, and which by its vital and attractive heat and influence,

dissolves the bonds of that Spirit of the World that flows into all Vegetables, and from them into Animals, to the maintaining of that Universal Harmony that is in the processes of Nature.

Manner of Grafting.

Several ways, in several ages, have been found out for the grafting of one Species of Trees into another, for its melioration; no History mentioning its first discovery, although it has been long practised.

Virgil.

*Et sæpe alterius ramos impunè videmus
Vertere in alterius; mutatamq; insita mala.*

*And oft without impairing we may see
The Boughs of one graft'd in another Tree.*

The most common, and, as may be supposed, the most antient way, is the grafting in the Stock; and that is, either by cleaving the Stock, or grafting in the Rind, or by Whip-grafting.

In the Cleft.

Grafting in the Cleft, is to cut off the Stock at a smooth place at the height you intend; and if the Stock be small, from one to three inches diameter, then cleave it, that the slit may be on the smoothest side of the Stock; and fit your Graft, shouldering it at a Joint or Bud, joyning the inside of the Rinds exactly. The

The Inconvenience this manner of Grafting is subject unto, is, that the Stock being slit the rain is apt to get in and decay the Stock, and sometime the Graft withall: Therefore caution must be used, not only the first year, but until the head of the Stock be covered to defend it from wet by good luteing of it or by Wax which is the best.

But if the Stock exceed three inches diameter, or thereabouts, the best way is to graft in the Rind or Bark, which is done with a Wedge made of Ivory, Box, or other hard wood, made of a flat half-round form, tapering to a point; and force the same in between the Rind and the Stock, until you have made the passage wide enough for the Graft, the end whereof must be cut after the same form with the Rind peel'd off, preserving on as much of the inner Rind as you can, and making the Graft to shoulder well on the Stock. Thus may you set many Grafts round the Stock; and the more there are, the sooner will they cover the Stock.

This manner of Grafting in the Rind hath also its inconvenience. For the Grafts usually make large Shoots the first year, which in case the wind happen to blow

strongly on the opposite side of the Stock to where the Graff is, commonly it is broken off, having as yet no other hold than in the Rind, and being top heavy withall, is easily broken; to prevent which you must nip off the Shoot with your nails, that it aspire not too high, and abate some of the broader leaves, which like sails to a ship give the wind an advantage; by which means the Graff will be more stubborn and able to resist the wind, and the next years Shoots will spread the better, And then the danger will not be so great because that which grows so plentifully at the joyning of the Graff and Stock this year, being but sappy Rind, the next will be Wood.

*Whip-
grafting.*

If the Stock be under an inch in diameter, then the best way is to whip on the Grafts, that is to say, if the Stock be bigger than the Graft, then cut the Stock off at the smoothest place, and a little sloping. Some place the Graff to the upper side of the Slope, and some to the lower, which is the better way, that the Rind or Bark may cover the sooner: on which side soever it be, the Rind must be pared away, beginning easily, and so deeper upwards until you cut to the wood at the top; then pare the end of the Graft accordingly, leaving it
with

with a full and broad shoulder to rest on the top of the Stock, and fit it aptly to the Stock, and bind it on with Hemp, Yarn, Basse, or such-like: but if the Graft and Stock be near of a size, then cut the Graft aslope, and the end of the Stock likewise, and bind them together Rind to Rind.

This is the best way of Grafting, the inconveniencies that attend both the other, here being prevented. For in this the Graff soon covers the Stock which is not impaired by flitting, and the Graff having its Wood as well as its Rind bound to the Stock, is not so apt to break off, as that which is Grafted only in the Rind, nor is the Graff apt to be top heavy, the Stocks being smaller affording not so plentiful nourishment. For where the sap flows most liberally the wood is most soft, and where more thinly, there the wood is harder and best able to bear the Stock.

If the Tree and Stock stand near together, they may be united, by paring away the Rind of both, and binding them together until they are perfectly joyned; then may you cut away the branch that formerly led to the Graft, and leave it to extract its nourishment from the Stock.

By approach.

Luting of
Grafts.

When your Grafts are placed as they ought in their Stocks, then must you apply good Lute or Clay mixed with new Horse-dung (without the Straw) and well tempered, to prevent chapping; which preserves the heads of the Stocks moist, that the Rind or Bark may cover them the sooner; and defends them from the extremities of cold; wet and drought: but if the Stocks be small, a little Soft-wax well emplaistered on them, is easier done, and preserves them better than the other. Always remember to cut the Ligaments off those Grafts you whipt on, about *Midsummer* following.

If you use Wax in Luting your Grafts, take of that sort of Soft-wax that is above a year old, and hardned in keeping, that it may not wax soft by the heat of the Sun, as new soft Wax is apt to do. For then the *Bees* will, by little and little, deprive your Grafts of their defence; but to make your Wax fit for your purpose, put it in a Bason of warm Water, and so from Stock to Stock take it out as you need it, applying it immediately whilst it is warm, you may also with a moderately hot iron sere the edges and closures of the Wax, to prevent the insinuating moisture from getting in.

Some

Some of late have attempted to raise Nurseries or Plantations, by whipping the Graff to a piece of a Root of a Tree of the same species, and so to plant it in the ground, a little lower than the grafting place, that the Earth may cover the wound, that the Root may feed the Graff, as the Stock doth in the former ways. Thus with the Root of one *Crab-tree* cut in pieces, may you raise twenty or thirty *Apple-trees*. And thus may you unite the Graff to a Stock of a different kind, whereby new Fruits may be produced, and the old meliorated; the wound being within the ground, and not obvious to the extreams of the weather. This only is objected, that the Tree grows but slowly, most affecting expedition in these affairs.

New manner of grafting.

For it cannot be expected that a piece of a Root, newly planted, should so readily attract sap as that which hath been fixed before in the ground: and if it doth not, how then can it afford plentiful nourishment to a Graff, which is required in the uniting of the Graff to the Stock? for in in souldring of wounds more radical moisture is required than in an ordinary preservative Circulation. And in this case you have a threefold want of sap or nourishment,

ment, the one occasioned by the remove of the Root: For every plant that hath a Fibrous or branched Root, being removed, although the whole Root be preserved entire, yet demonstrateth a sensible defect of sap at the first, until the Earth be well settled about it: Therefore planting in liquid Earth, like pap, is to be commended. The next want is caused by wounding the Root, for a wound in the Root doth abate the vital sap of the Root and Tree as well as a wound in the branch: for although there be no descent of sap in Trees, yet the Roots or Trunks of a Tree being cut, the sap or spirit of the Tree will expend it self by a retrograde as well as by a direct motion; Therefore the root must be sometime in the ground before its wound be healed, and new Fibres emitted to obtain a recruit of Sap. The last defect is of a ready supply to unite the Stock and Graff, which we may perceive is soon done, where the Stock hath been fixed before the Graffing, yielding plentiful sap; when in other cases where the Stock is but newly planted, the Graff hath been starved for want of nourishment, and rarely makes a fair Tree, unless it agree very well with the Soil. And therefore, whatever
some

Some pretend, this way of Grafting in the Root is not to be commended for this purpose.

Several sorts of Fruits are best inoculated, and some indifferent either way, as *Cherries, Plums, &c.* The time for this work, is from the middle of *June*, to the middle of *August*, as the season of the year is either forward or late. Inoculation.

The buds you are to choose from Shoots of the same years growth; which if by carriage in the Air, or otherwise, they are a little withered, you may revive them by setting them in water, which will make the buds come the cleaner from the wood.

To prepare the Stock, take the cleanest part of the Stock, and cut the Rind athwart, and from the middle thereof slit down the Rind near an inch in length, that both cuts may resemble a T: then cut off the sprig out of which you take your bud a little above it, and about half an inch below it, and slit the short piece of the sprig in your hand in the midst, leaving the bud on one side; then with your Quill in form of a Gouge, beginning above the bud, divide the Rind from the remaining piece of the sprig, so that the bud be firm in the Rind; which take, holding it by the
piece

piece of the stalk of the leaf which is left uncut off; and after you have opened the place in the stock by dividing the Rind from the wood gently, and not too deep, place in the Bud, and close the Rind of it to the Rind above, and the two lappets of the Rind of the Stock over the Rind of the Bud, and bind it over with Woollen-Yarn. Then about a month after observe whether the Bud (over which the Yarn was not to go) be green or not: if it be, then unbind it, and the next Spring cut off the Stock about an inch above the Bud.

Also the slit may be made upwards, and so the Rind at the bottom of the Scutcheon or Bud fitted to the Rind of the Stock below, instead of that above: And it may be perform'd by cutting a square place in the Stock, and fitting into it a square Scutcheon with the Bud in it, and binding it close.

By Layers
or Slips.

Some sorts of Fruits may be propagated by Layers or Slips, as the *Codling*, the *Gennet-Moil*, and the *Creeping Apple*: the *Vine*, *Currant*, and *Gooseberry*, are also propagated by either of these ways.

By Kernels

Several new and good species of Fruits have been raised by Kernels: but for expedition, certainty, and advantage, the other are the better ways.

SECT

SECT. IV.

Of transplanting Trees.

Having raised your Nursery, or otherwise provided your self of a competent number of Trees, and selected your Ground whereon you intend to plant them; consider how to dispose of the Trees to your best advantage: that is, to plant your tall Standard-Trees in such places where you intend to make use of the Land for Grasing; that they may be above the reach of Cattel. But in such places where you can dispence with the absence of Cattel, and use the Land only for the Sythe or Spade, there it is best to plant dwarf or low-grafted Trees, for several reasons, 1. You may plant more of them on the like quantity of Land, because the Shadow of the one Tree doth not reach the ground of the other, as that of the tall Trees doth. 2. The low Trees sooner attain to be Fruit-bearing Trees, and grow fairer than the tall; the Sap in them wasting in its long passage, which in the shorter Trees expends it self soon in the Branches. 3. The lower and broad-spreading Tree is the greater bearer,

*Transplant
ing Trees.*

bearer, by reason the Blossoms in the Spring are not so obvious to the bitter blasts, nor the Fruit in the Autumn to the fierce and destructive Winds. 4. Fruits are more easily gathered from a low than a tall Tree, beating or shaking down Fruit from such Trees, being to be rejected by all judicious Ciderists. 5. Any Fruit on a low well-spread Tree, is better and fairer than that on a tall Tree, by the same reason that the Tree is fairer, that is, that the Sap is not so much wasted in the low and humble Tree, as in the tall and lofty.

This way of planting dwarf-Trees is but lately in use, deriving its original from France, whence the Poet advises,

*In open plains on which the warm Sun lies,
There let your Trees aspire. In grounds enclosed,
Let a dwarf-race of Fruit-trees be dispos'd,
Whose boughs are round and short: not bodies tall.*

Let not any one think it a disparagement to our Nation, to imitate the excellencies of any other; nor think that our Forefathers were so wise, as to know all things; every race of Mankind, and every
age

age endeavouring to improve the Actions of the former, do assuredly discover something better than what was before; or at least bring into practise that which before they concealed. The same Poet advises you to

*Follow these precepts rather much, than those
Which our own Antient Husbandmen im-
pose.*

*The former age must all its claims resigne,
Now all these Arts in perfect lustre shine.*

Yet is there caution to be used in the raising of Fruit-trees from dwarfs. For if you let them spread too much near the ground, those under branches rob the upper of their nourishment, and make them incline to the Canker: Therefore yearly take away those lesser over-dripped sprigs or branches, that the other master boughs may prosper the better; preventing nevertheless their too high aspiring, by topping the upper shoots.

Although you may remove a Tree any time of the year, and yet so that it may grow: Yet if you design to remove your Trees that they may prosper well, and that you may choose your time; the most proper

*Time for
planting
Trees.*

per season is at the fall of the Leaf, or when you perceive that the Sap doth no longer sensibly ascend, so as to afford nourishment to the leaf; which is usually about the end of *September*: and so you may continue removing all the Month of *October*, and the beginning of *November*, before the more cold weather prevents you: yet if the weather be open, you may remove till the Trees begin to Bud.

Observations in transplanting.

Before you take up the Tree, it is good, with a Marking-Stone, or piece of Chalk, or such-like, to mark one coast of every Tree, either *East, West, North, or South*, as you please; that when you plant them again, you may remember to plant that marked side to the same Coast it tended unto before: which was antiently advised by *Virgil*,

*Quinetiam Cœli regionem in cortice signant ;
Ut quo quæque modo steterit, quâ parte calores
Austrinos tulerit ; quæ terga obverterit axi,
Restituant.*

Also Heavens quarters on the Bark they score,
That they may Coast it as it was before,
Which

*Which Southern heat susteyn'd which view'd
the Pole.*

And doubtless is very necessary in Trees that are large; the smaller, or such that have grown in close Nurseries, being not capable of any considerable alteration from any Aspect of the Heavens.

Here also note, That in case a Tree, as it stands before removal, hath the benefit of the *East* or *West*-Sun more than of the *South*, then where you plant that Tree give that side, that before had that advantage; the like again in its new place: which although it varies from the former positive directions, yet not from the reason of it.

Fælix qui potuit rerum cognoscere causas.

Having thus marked your Trees, take them up with as large Roots as you can, especially the spreading Roots. Therefore it is best to keep the Spade from coming too near the Tree: and when you have surrounded the Tree at a good distance, endeavour to raise as much Earth as you can with the Tree; but if it be to carry far, shake it off.

In the planting of your Trees, abate the down-right Roots, leaving those that spread: for it is observed, that the more the Root spreads, the more the Branches; tall Trees usually extending their Roots deepest, as *Virgil* observed of the *Æsculus*,

— *quæ quantum vertice ad auras
Æthereas, tantum radice in Tartara tendit.*

*How much to Heav'n her spreading Branches
shoot,
So much towards Hell extends her fixed
Root.*

Of those Roots you leave, prune only the ends by cutting them like unto a Hinds foot on the under-side, they will put forth new Roots the better.

In case Trees have lain some time out of the ground, or been carried in the wind that their Roots seem to be dry, set them over-night in water, immersing only the Roots; and it will very much revive them. Or when you plant them, after you have filled an indifferent quantity of Earth, cast on a Pail or more of Water, as the largeness of the foss requires; which not only quickens the Root, but makes the Earth adhere

adhere to the Roots, which otherwise would ly light and hollow about them: the Air much incommoding the Root of any Plant whatever.

According to the nature of the ground or depth of the Mold, so make your hole more or less deep wherein you plant your Tree: if it be a cold or springy ground, then plant near the surface of it, and raise the Earth at some distance round the Tree; but in any ground, plant not too deep: for you may observe in many Plantations, Trees thrive best where the Roots run near the surface, and not at all where planted deep. The Roots of themselves naturally tending either wide or deep, as they find nutriment, although you plant them shallow; but if you plant them deep, it's against the nature of Roots to tend upwards, although sometimes it may so happen, but rarely.

It is good to dig the hole or fofs deep and wide, and to fill the bottom with good Mold, either the Turf or paring of Land, or well-tempered Street-dirt, or the Sediment of hasty Currents that settle in bottoms of Pools or Ditches, or rotten Vegetables, or burnt Earth, or any thing that will either mend or alter the ground, and that is proper for your Trees: fill it to such a conve-

nient height, that you may plant your Tree on the top of it ; and then add good Mold about the Root, and dilute it with Water, as before is directed. Then level the Earth about the Tree, so that it may not be too high to injure its bark, and so that the water may rather fall towards, than from the Tree.

After you have placed your Tree to your Mind, and covered the Roots with good natural mould, Then take a Wheelbarrow full or two of Street dirt, or dirt tempered by the trampling of Cattel, more especially of hogs, and cover the loose ground about the Tree, and pat it smooth with the back of your Spade plaister like inclining towards the Tree; this may be laid two or three inches thick, and in breadth two or three foot round from the tree, By which means the loose earth will be preserved moist, and the weeds prevented from too sudden a growth. This coat being in imitation of broad Stone or planck which, laid round about a newly planted Tree, adds much to its thriving.

If you plant Standards, and in an open place, it is convenient to stake them the first year, so that you be careful to prevent galling them, by interposing a small wisp of
Hay

Hay between the Tree and stake, and planting the stake leaning towards the coast you expect the greatest Winds: but the continuing the Stakes for several years, ruins many a good Tree, for the Tree will expect it always after; which weakness in a Tree may be remedied by lopping of it, and then let it stand without staking, and it will gather greater strength in the ground than before.

Prune the Heads of some sorts of Trees that have but small Pith, as *Apple-trees*, *Pear-trees*, &c. when you remove them, to proportion the Branch and Root as near as you can: but *Walnut-trees*, *Cherry-trees*, *Plum-trees*, &c. that have a large Pith, are not to be top'd, onely some of the Side-branches may be taken away.

Plant all Trees as near as you can into a better Mold than the place you remove them from; but if you cannot observe this, yet mend the Earth in the Foss wherein you plant your Tree, that it may by degrees be inured to a worse Soil.

If you have a desire to remove a Tree in the Summer-time, that you cannot obtain at any other more convenient Season, take of the Earth you digged out of the Foss you intend to plant your Tree in, and

Of Propagating Fruit-trees.

mix and temper it well with an equal part of Cow-dung, and as much Water as will make it into a liquid Pap; fill the Hole almost with this, and then let the Root of the Tree gently sink into it; cover it over with dry Earth or Turf: This Tree will prosper very well.

This is a good way to plant a Tree at other times withall, but then you need not use so much Cow-dung.

As for the distance of Trees, it ought to be according to the nature of the Tree and Soil. If it be a large spreading Tree, and a rich Soil, forty foot is a good distance; if a *Redstreak* or such-like dwarfish short-liv'd Tree, twenty foot is enough between them, especially if the ground be but indifferent.

Always observe, that the greater the distance, the better the Sun meliorates the Fruit; and if the ground be good, the better do the Trees thrive; and the poorer or drier the ground is, the Trees being thick, the better they shadow it, and the more do the Trees prosper.

If you design a Plantation of many sorts of Fruits in one Plot, then may you plant your *Apples* and *Pears* the farther apart; and between them, or in subordinate rows
by

by them, may you plant *Cherry-trees*, *Plum-trees*, and such-like; and next unto them *Filberds*, *Currants*, *Gooseberries*, &c. so that if ever the greater Trees spread far, by that time the lesser may be decayed: if those do not, these may be renewed that no part of the Plot may be fruitless.

In case any Tree happen to decay, having stood long in that place, so that its Roots have attracted and exhausted the strength of the Earth appropriate to that Species of Fruit; In the room of such Trees remember to plant one of another Species, as an *Apple-tree* in the room of a decayed *Cherry*, & sic de cæteris; by which means the Roots of the latter Tree shall find new matter to maintain their Plant, that was not exhausted by the former; most Land being weary in time of one Plant.

After your Trees are planted, if you design them for dwarf or spreading Trees, then as they spring, and are apt to mount upwards, with the Nails of your fingers may you nip off the tops of the aspiring Branches; which makes the side-boughs spread the better, checks the Sap, and thereby causes the Tree to Fructifie the sooner, and the better. This way of pruning

*Of pruning
Trees.*

ning in the Summer, is easier and better for the Tree than in the Winter, because the Sun heals the wound whiles the Branch is tender.

In pruning Fruit-trees, be cautious of cutting off the small Sprigs, which are the more apt to bear Fruit; it being too usual for ignorant Plantersto beautifie their Trees by taking off these superfluous Branches, as they term them, whereby they deprive themselves of the Fruit.

After your Trees are planted and pruned, it's good to keep the ground open about them, by digging or plowing it yearly; which conduceth much to the advancement of the growth of them, and their preservation from Moss and other Diseases.

Culture mends bitter plants; they then who break

*The surface oft nest up; who most their Rake
And forked tools about the Roots employ;
They, the best fruits, and noblest Trees enjoy.*

This is a Winter-work: answerable unto that, in the Summer may you spread Fearn or other Vegetables about them, especially whilst they are young; it preserves their Roots cool and moist: both
which

which ought to be done at a good distance from the Trunk; it being a vulgar error to dig or soil near the Tree only, the former being of little effect, the latter injuring the Bark; for the Roots that gather nourishment, and feed the Tree, are those that are fibrous and remote, seeking new and fresh nourishment, the greater being onely for conveyance of it to the Trunk.

Swine which are pernicious to all Gardens, yet are profitable in an Orchard, Therefore after your Trees have gained strength enough to bear the rubbing of these Cattel, you may keep your *Swine* in your Orchard all the Winter season unring'd, by which means your Orchard will not only be thoroughly digg'd, but enriched by the excrements of those diggers: in the Spring you may level it over again, which will exceedingly conduce to the fertility of your Plantation.

Thus *Swine*, which never were accounted useful whilst alive, may now become the best improvers of your Orchards: repine not at the loss of your Grass, that will not be so much prejudiced as your Fruit meliorated.

SECT.

SECT. V.

Of the Propagating the Vine.

Virgil.

Altera frumentis quoniam favet, altera Baccho;

Densa magis Cereri, rarissima quæq; Lyæo.

Since one Corn best affects, the other Vines;
To Ceres sad, to Bacchus thin inclines.

*Soil for the
Vine.*

A rich light sandy ground agrees best with this noble Plant: if the bottom be Chalk or Gravel about two foot under, it's not the worse; if it incline much to Brambles, it will be kind for the Vine, the flourishing of that Plant being a true mark of the aptness of the ground for this. The richness of the Soil is not so much to be desired, as the heat and driness of it; for a short Vine, and full of Knots or Joynts, is most prolifick, and fittest for our Climate.

*Situation
of the
Vineyard.*

Bacchus loves the Sunny Hills, says Virgil. The declivity of a Hill towards the South is much to be preferred to a level; a little to the East or West is not bad: if it be defended by Hills on the North and North-East

East Coasts from the severity of those Winds, it will much add to the early maturity of your Grapes. Also, a lofty Situation is not so much infested with Mists, Fogs, and cold Dews, noxious to the Grape, as are the lower grounds; and enjoyeth more of the benefit of the Sun, and is drier; which is very advantageous in maturing this Fruit, not at all affecting moisture.

The Ground being turfie, and having not been lately broken up, may be burnt in June or July, which will much enrich and lighten the Land; as is now practised in remote Countries, and was in former Ages, else Virgil, as to barren Land, would not have said,

Preparation of the Ground for the Vine.

— *sape etiam Steriles incendere profuit agros, Atque levem stipulam crepitantibus Urere flammis.*

To burn dry Stubble, and the barren Fields In crackling flames, oft handsome profit yields.

Then in December or January trench in the Ashes of your burnt Land, which may be

be spread in the beginning of the Winter, before any great Rains come, lest they wash in the salt or richness of them into the ground onely under or near the heaps, and so make the ground unequally fruitful.

Be sure to make your Ranges from *East* to *West*; for the Sun will the better shine in between the Plants in the former and latter part of the day, and at noon in the Summer-time the Sun will shine over the Ranges; so that they will enjoy the benefit of the Sun all the day by this means.

Sorts of
Vines.

Having thus prepared your Ground, make choice of the best sorts of *Grapes* that are most suitable to this Country, of which the early *White Muscadine* is esteemed the best; but there are several other sorts, as the *Parthey-grape* which is early ripe, the *Muscadella*, a white Grape not so big as the *Muscadine*, and the small black Grape, by some called the *Cluster-grape*, by others the *Currant-grape*, Also there is a *New White Grape* ripe before any of these, which grows in his Majesties Garden at *St. James's*, which Mr. *John Rose* highly commends for a Vineyard.

The *Frontiniac* Grapes, especially the white, are late ripe, but in hot years yield a most

a most delicate fruit, fit to add a flavour to the Wines of other, they are great bearers and yield fair fruit.

Any Cuttings almost of the Vine will grow in a cool moist Ground; therefore it is good to raise a Stock of them beforehand, against the time you plant your Vineyard. Also cuttings of Vines that have a little of the old wood on them, will easily grow where you intend to place them for good; but Layers are the most certain.

*Choice of
Sets.*

Mark your Ranges, that they may be about three Foot distance the one from the other, and dig a Trench for every Range about a Foot wide, and a Foot deep, clean in the bottom, and upright on the sides; Then fit your Plants, Layers, or Sets of Vines, so that you leave not above two or three eyes of the young wood upon them; Then Plant them about two Foot apart in the bottom of the Trenches, so that the Roots lie across the Trenches; then cover them three or four inches with the Mould, that the top of the Sets may be even with the edge of the Trench: then cover the Plants all along in the Trenches with Litter or Stubble of a reasonable thickness, to preserve them from dry and piercing

*The man-
ner of
planting
them.*

piercing Winds, and from parching Heat; all which are injurious to them the first year of their planting: be sure to leave the tops of the Plants uncovered.

To Dress;
Prune, and
Govern the
Vineyard.

After they are thus planted, they require your care in *Hawing* them constantly, to prevent the weeds from seeding; and to raise the loose Earth about your young Plants by little and little, as you pass by them.

The first Pruning is to be in *December* or *January* next after your planting; at which time you must cut off all the young Shoots close to the old Set, except only one, which you must leave; and which should also be the strongest and most likely to prosper; and to that likewise should you leave but two or three Knots or Joynts.

In *May* following, when the Vine buds, then rub off all the young Shoots or Suckers, save only such that come forth of the Joynts of the young Wood you left in *January*; and continue your *Hawing*, to preserve your Vineyard free from Weeds, adding still fresh Earth to your Plants as you pass by them.

In the Winter following, Prune your Vineyard as you did the last, leaving still the best Branch or Shoot to each Plant, and
about

about three or four Joynts or Knots. This second Winter dig your Vineyard, and lay it all level, being careful that you touch not any of the main Roots of your Vines with your Spade.

In this third Summer, your Vines will begin to bear; to which end you must provide Props of *Hazel*, *Ash*, or *Oak*, about four Foot in length, placed behind your Plant. Propping
of Vines.

In *May* rub off all the Suckers, leaving only such as proceed from the Knots of the last year, and that are likely to bear Fruit. Then those Shoots that come from those Knots, bind to your Props; and when the Fruit is of about the size of *Raddish-Seed*, nip off the Branches about a span above it with your Fingers, which is much better than to cut them. And in the heat of the day, for then their wounds will the sooner heal.

The fourth year observe the same method, for then may you expect the compleat fruit of your labour; remembering that in every Winter you leave but one, and that the strongest shoot or Branch for a Standard, and not above four or five Foot high, cutting all the rest close, unless you find any that are very strong, to which
you

you may leave three or four Knots or Joynts, that the Branches that proceed from them (at least the strongest) may serve for Standards for the ensuing year. So that the Exchange of old for new Shoots, may very much advance the encrease of your Fruit.

You may bind them with small and tender *Osters*, or the Rind of the *Willow*, such as you can most easily obtain.

In *August*, when the Grapes begin to ripen, nip off such Shoots and Leaves as too much shadow them, yet leaving a thin skreen of Leaves to preserve them from the scorching Sun, the cold Dews, and the cool Breezes.

Remember yearly to cut off the old, and advance the new Shoots, and to tie them to the Props about half way from the Ground; and then turn the top of your Vine to the next Prop, and tie it to that, and so successively, which will resemble a Row of Arches.

of Manu-
ring or
Dunging
the Vine-
yard.

As you find your Ground to degenerate and grow poor, which most hot Land is apt to do, you must supply it with Manure, which must be good rotten Dung, and mixt with Lime if you can, laid and spread over your Vineyard, that it may

may lie all the Winter, that the Vertue of it may be washed into the Earth to the Roots of your Vines; and then dig it in the Spring, when you dig your Vineyard; but by no means let not any new Dung come near your Vines, which will too much dry up and burn your Land, and is injurious to all Fruit-bearing Trees, as we before observed: which labours of raising young Branches from the old Roots, and renewing and amending the Mold by stercoration, reiterate and continue for many years.

Many persons have opportunities to plant Vines against Walls, Houses, Barns, &c. which will not only bear much more of Fruit, but more early ripe, having many advantages above the open Vineyard. For the pruning of which Trees, observe, that on every Sprig you cut off in your Winter-pruning, where you would have Fruit the succeeding year, you leave two or three Buds: for out of those Buds, especially the second or third, proceeds the Clusters. Also observe to cut off the Branch aslope on one side, or under, that the Rain rest not on the Pith of the remaining part of the Branch; the Rain oftentimes perishing the Pith to the lowermost Bud. And

*Of pruning
the Vine a-
gainst a
Wall.*

forget not to leave every year some new Branches or Shoots, and to cut off some of the old: renovation of the Branches being in this Tree very necessary, especially if it be old.

To cure the bleeding of the Vine.

If the Vine be cut late, it will be apt to bleed, by which in warm and moist weather it looseth much of its Sap or Blood, although in cold or dry Weather it stops, and no great injury to the Tree, it stopping of its own accord, the wound of its self healing, when the forwardness of the Spring hath thickned the Sap; unless such wounds or bruises be great, and happen to your Vine about the end of *March*, or in *April*, then they are dangerous: to cure which, if it should so happen, you must dig at some distance round the Root of your Vine, with caution not to impair the Root; and cast in a good quantity of cold Water, which not only checks (by its sudden coldness) the too liberal rise of the Sap, but plentifully supplies the wast that is made of the Sap or Blood (which the spreading Roots with difficulty before had attracted) until the increase of the Spring thickens the same.

Currants.

This Tree is very easily propagated, and delights in a good free Land, and will prosper

per and bear very well, if the Ground under it be kept free from Weeds, and other vegetables, and sometimes digg'd.

There is hardly any Tree delights more in the Shade than this: even under the drips of Trees will it prosper very well. But against the North side of a House, or other high wall, it will prosper exceedingly, and aspire to near fifteen Foot high, and spread very broad, being tacked as other Wall-Trees usually are; and bear very fair and good Fruit, much better than on Standards or in the Sun.

These are easily propagated, as are the *Currants*.

Gooseberries.

This Fruit delights in the Shade; and the colder the soyl, the better will this Tree thrive and bear in it.

Raspberries.

Thus having given you some more than ordinary Observations and Experiments for the Raising, Grafting, Transplanting, Pruning, and renewing your Orchards, Plantations, and Vineyards, with these sorts of Cyder and Wine-Fruit-bearing Trees, we will conclude with a translate of *Rapinus*, a little varied.

From Planting new, and Pruning aged Trees,

The prudent Antients bid us never cease.
 Thus no decay is in our Vineyards known,
 But in their honour we preserve our own.
 Thus in your Orchards other Plants will
 rise,
 Which with your Nurseries will yield sup-
 plies
 That may again your fading Groves re-
 new.
 For Trees, like Men, have their Successi-
 ons too.

SECT. VI:

Of the Diseases of Fruit-Trees, and their cure.

Vegetables, as well as Animals, have their Diseases and Infirmities, which not only weaken, but totally destroy them; which more usually assault the Fruit-bearing Trees more than any other; and the finer and better any Fruit is, the more is its Tree subject to these Diseases and Infirmities;

The Canker The chief whereof is the *Canker*, which assaulteth the best Fruit-trees, as of Apples the *Pippin*, *Golden Rennet*, &c. of Pears the

the *Wardens* of all sorts, *Burgamet*, &c. *Cherries* and *Apricocks*, penetrating the midst of the Branches, and sometimes destroying the whole Tree. This Disease happens from several causes, as from the twisting or bruising a Branch or Limb (which usually happens in Wall-trees, by plying them to the Wall) and somewhat resembles the Windshake in an Oak; the cure whereof is to cut off such Branch: also galling the one Limb against another, which you may prevent by pruning, and cure by cutting off the parts affected. But that Canker is the most inveterate and incurable, that proceeds from the Soil; as either being too rich,

*For as a Tree due nourishment may want,
So too rich Soil destroys the tender Plant,*

Rapinus.

which if you know not how to sterilize, then observe what sorts of Fruit are free from that Disease in the ground, (for all sorts of Fruit-trees are not subject to it in any ground whatsoever) and propagate them only.

Or by being too light; for Trees planted on heavy or sad Land, are not so prone to this Disease, as in light and warm Land;

which may be corrected by abating much of the Earth about the Roots of the Trees, and applying cold, sad and heavy dirt or settlings in Ponds about them, and more especially Earth much trodden by Swine, and mixt thereby with their Dung and Urine, and by cutting off the cankered Branches. This by Experience hath cured cankered Trees, and may as well prevent the Disease. Or through defect of nourishment. For in case there be too many Suckers, or under Spriggs or Branches, they commonly rob the more flourishing limbs of their due Sap; and if the Tree, whilest young, be too apt to blossom and bear Fruit, those extractions of Sap from the Tree usually produce the Canker.

The raising of Stocks from *Crab-kernels* in the same Land, and grafting on them, is a good prevention of this Disease; for this Stock doth better digest the sweet and nutritious Juice that sometimes causes this Disease, than the soft and spongy *Apple-stock*; to whom also the Juice is more homogeneous, than to a stranger, removed into it out of a more barren Soil. Vain therefore are all the Cuttings, Parings, Slicings, Emplastrings, and Applications that are voluminously prescribed for the cure of this Disease,

From

From the Stock usually spring many *Suckers.* Suckers, which extract too much nourishment from the Tree; which must be taken off dextrously from the Root, and may be prevented by grafting on good Stocks raised from Kernels; for Trees proceeding from Suckers, are always subject to this Disease, which the Canker, usually attends.

If Trees are Bark-bound, it either signifies that the ground is hard and bound about the Roots of them, or that they are planted too deep: The remedy then is known only with this addition; That you may slit the Bark down with your Knife, about the Spring-time. *Bark-bound.*

I have known Trees of my own planting that have been removed from a better, though into a good Soil; and after they have stood two or three years with small growth, and seemingly Bark-bound, yet when they came to take to the ground and spread their Roots, they made large Shoots, and the Bark of it self slit open in many places, as though it had been slit with a Knife, therefore the best care is in the Soil and shallow planting.

Cold, and untill'd, and unmanured Land, *Moss.* oftentimes produce Mossie Trees; which

by digging, or constantly applying Vegetables at the Roots of your Fruit-trees, or by keeping Swine in your Orchard, may be prevented. The same also may, in some measure, be rubbed off with a Hair-cloth after Rain.

Snails.

Fruit suffers much from Snails, which are to be taken off in moist weather, mornings and evenings; but most to be destroyed in the Winter, by Boards, Tiles, or such-like, set hollow against Walls, Pales, or the Stems of Trees, under which they will resort for shelter; whence you may take them by heaps.

Caterpillars.

Destroy the Webs or breed of Caterpillars in the Spring, and burning them.

Birds.

Although the Birds destroy much Fruit when ripe, and are to be scared away and destroyed, as every one knows, yet they do not that injury as the Bulfinch doth at the Spring to the Buds of several sorts of Trees, as the *Sweet Apple-tree*, all sorts of *Plums*, *Currants*, &c. which by Birdlime are taken, and your Trees secured, or else deterr'd by a dry Hawk perching in the midst of the Tree; or by strowing of Hemp-seed on the ground near the Trees, which will allure the birds down, where by a draw-net, or by shot, you may dispatch

patch them. Or by making an Artificial Hawk with a piece of Cork, about the breadth of one hand: and of the wing feathers of Poultry, to fix into it two wings and a tail, that being hang'd aloft by a small Wire of about four Yards in length, fixed in the head of your Hawk, the other end on the top of a long slender rod or pole, fixed or set up in the middle of the Tree, that the Hawk may be clear of all boughs: Thus will every breath of Wind, mount your Hawk, which will play in the Air and make its Stoops, so that not a Bird will settle on the Tree, under, or near it. This far exceeds all Clacks and other devices to scare away the bold Bulfinch, or the other timorous small Birds.

There are many other Diseases and Infirmities incident to Fruit-trees and Fruits, but these are the principal and most injurious, and most difficult to cure.

CHAP.

C H A P. V.

Of making Cider and other Liquors
of Apples and other Fruits.

S E C T. I.

Of gathering and preparing Apples, &c.

After you have thus brought your Plantation to perfection, that you can gather Fruit enough of your own to make *Cider* or other Liquors, according to the nature of the Fruit; the first thing to be considered of, is its Maturity; there being much *Cider* spoiled in most parts of *England*, through that one general error of gathering of Fruit before its due Maturity. For there is scarce any Fruit in the world, but yields very different Liquors, according to the different degrees of Maturity of the same Fruit. As the Juice of the *Cocoonut* whilst green, is a pleasant thin Drink, but when through ripe, becomes a rich Oyl or Milk: So the Juice of our *European* Fruits which,

Of the
ripeness of
Fruit.

which, when most mature, yields a pleasant Drink; if pressed before, yield but a crude and sowre Liquor.

This error or neglect (occasioned partly because the severall sorts of Apples ripen not at the same time, or that the Wind prevents their hanging long enough on the Trees, or the gross ignorance of the Operator, or his covetousness of having more Liquor than otherwise he should expect) hath not onely been the occasion of much thin, raw, phlegmatick, sowre, and unwholsome *Cider*, but hath cast a reflection on the good report that *Cider* well made most rightly deserves.

Therefore, in case your Fruit be not ripe all at one time, select such sorts that are of a like degree of Maturity, and according to the quantity of them, proportion your Vessels; For you were better make it at several times, than spoil your whole Vintage.

Or if the Winds should beat down many of your Apples, and you are unwilling to spoil or loose them, you may let them lie dry as long as you can before you grinde them, that they may obtain as great a degree of Maturity as they can; and let that *Cider* be thoroughly fermented before it be barrel'd,

Of making Cider.

rel'd; according to the Rules hereafter set down, and not kept too long, to acquire too much acidity,

Let not any think that they advantage themselves any thing by mixing unripe with ripe Fruit, or by grinding their Apples too soon; for they were better lose a part of their *Cider*, than spoil the whole.

To prevent which ill effect, let your Fruit be through ripe; which is known, First, By the colour of them, if you are acquainted therewith, else that may deceive you; some Apples appearing brighter before they are ripe, than others when full ripe: the same may be observed in *Pears*, and especially *Cherries*; some sorts requiring twelve or fourteen days throughly to maturate them after they seem to be as ripe as the ordinary *Flanders*. Secondly, By the smell, most *Apples* and *Pears* casting a fragrant Odour when ripe, and is a very good sign of their maturity, although some *Apples* and *Pears* have but little smell; and yet make excellent *Cider*. Others also have a strong mellow scent, as several early Summer Fruit, and yet yield a sharp liquor unless cautiously made. Thirdly, By the blackness of their Kernels, which when they are of that colour, it doth signifie
that

that the Fruit is inclining to be ripe; for after the Kernels are black, the Fruit ought to hang on the Trees some time to perfect their Maturity; the Liquor within them being better digested and concocted by the vertue of the Sun on the Tree, than by any Artifice whatsoever afterwards.

On the other hand, be cautious of letting Fruit hang on the Trees too long, lest they grow pulpy, which some Summer-Apples and Pears are apt to do: it so unites the Juice with the fleshy part of the Fruit, that it is difficult to separate the one from the other.

When your Fruits are in a good condition as to Maturity, and the weather fair, then gather them by hand; which if your stock be not greater than your number of hands, is a much better way than to beat or shake them down; but if your stock exceed, then shake them down, so that the ground be dry. For this purpose low Trees are to be prefer'd, as before was observed.

*Gathering
of Fruit.*

If any of your Fruit happen to be broken, lay them by themselves, an ordinary bruise not much injuring the Fruit; but where the skin is broken, the Spirits exhale, for the bruises beget a fermentation, after which

which the Spirits first rise, being, where the skin is whole, detained.

In some parts of *England* their ignorance, or rather laziness, is such, that they scarce bestow the gathering of their Fruit to keep for their Table; how then can you expect their care for *Cider*?

*Hoarding
of Apples.*

Some do prefer the grinding of Apples immediately from the Tree, so soon as they are thoroughly ripe, because they yield the greater quantity of Liquor: They also pretend, though erroneously, that the *Cider* will drink the better, and last longer than if the Apples were hoarded.

But if you intend to have your *Cider* pleasant and lasting, let them lie some time in a heap out of the Sun and Rain, and on a dry floor, on dry Rye, Wheat, or Oaten-straw is best, until they have either sweat out, or digested a certain crude Phlegmatick humour that is in most of our Fruits: the same you may observe in Nuts and all sorts of Grain. The time for this, must be refer'd to your discretion; some prescribing a month or six weeks, others but a fortnight: Be sure not to let them lie too long lest they grow pulpy, which will very much incommode your *Cider*, although some are of another opinion; *In medio virtus*: from

ten to twenty days are the best times: the harsher the Fruit, the longer the time.

The greatest inconvenience of pulpy Fruit is, that at the first pressure it yields less *Cider*, and that thicker than that which proceeds from fruit less pulpy. But the *Cider* of pulpy fruit is to be preferr'd. The right way of managing it you shall find in this Treatise.

Let them not lie on a Floor of ill favour, nor on Deal-boards; but with Straw under them, lest they contract an ill relish, which an Apple will do in a sweat: nor let them lie abroad, as some will do, except on dry ground, and in dry weather, and covered. Although rain can do them no more hurt than fair Water mixt with the *Cider*; yet every sort of Apple will not bear it. And the lying of Fruit abroad in the rain and cold dews, makes the *Cider* flat and dull.

For, from the due time, place and manner of hoarding of the Fruit, is oftentimes the *Cider* very good, which otherwise might have proved very bad.

By hoarding only of your Windfalls for some time, or until the time that it was expected they should have been Ripe in, doth very much meliorate the *Cider* made
of

of them, which otherwise might have been very bad.

Thus when your Fruit is duly Ripe, gathered, and preserved, it is ready for the Mill.

SECT. II.

Of Grinding of Apples.

One great impediment in the improving of this most excellent drink, hath been the want of a convenient way of grinding or bruising the Fruit. It having been the usage or custome in most places of *England*, where but small quantities of this Liquor hath been made, for the Operators to beat their Fruit in a Trough of Wood or Stone, with Beaters like unto Wooden Pestles, with long handles. By which means three or four Servants or Labourers might in a days time beat twenty or thirty Bushels of Apples: some part thereof into a Jelly, being often under the Beaters, whilst other part of the Fruit by its slipperiness escapes the Beaters; much of it also by dashing being wasted: yet by this means
are

are made very great quantities of *Cider* in several places.

But where the Fruit increased; that this way became too tedious for the *Ciderist*, the Horse-Mill was and is still much in use, Grinding for the whole Parish: That is, by placing a large Circular Stone on edge in a round Trough, made also of Stone, in which the Fruit is put, and Ground by the single upright Stone moved round by a Horse, as the Tanners Grind their Bark; in which Mill may be Ground sometimes three or four Hogsheads a day; and some are so large, that they Grind half a Hogshead at a Grist.

These Mills are very chargeable to make for any one that hath but an ordinary Plantation; and to carry your Fruit to a Parish-Mill, and bring back your *Cider*, &c. is troublesome, if at any distance: And the *Cider* made therein, accused of an unpleasant taste, acquired from the Rinds, Stems, and Kernels of the Fruit which in these Mills are much bruised:

Some have taken the pains to Grate Apples on a Grater made of perforated *Lat-tin*, such that House-wives use to Grate Bread on; Others, to beat them on a Table with Mauls: but these ways are to be re-
I
jected

Of making Cider.

jected as idle and useles, where you have any considerable plenty of Fruit.

To remedy the inconveniencies, trouble and expences in those several ways that have been hitherto used, you may erect a Mill, the Ichnography whereof, you have in the following Figure.



The

Fig: I.

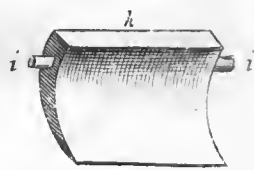
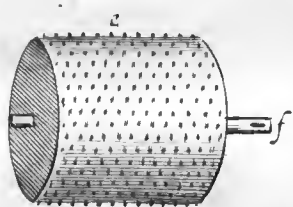
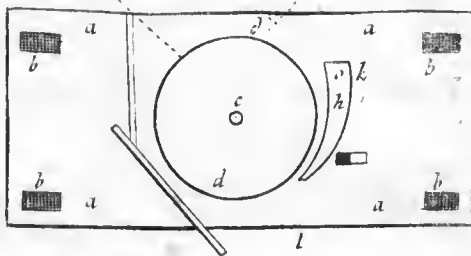
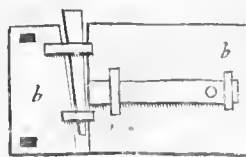
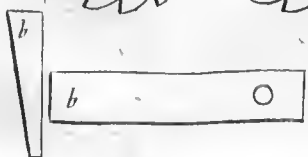
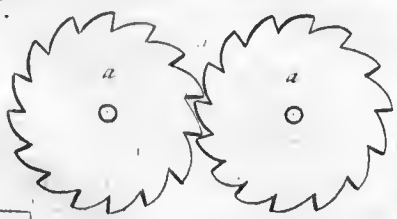


Fig: II.



*The Description of the Ingenio or
Cider Mill in Fig. 1.*

L Et there be two Planks *aaaa*, of about three Foot in length or more, and about sixteen Inches in depth, in case your Cylinder or Roll be but one Foot Diameter, else according to the Diameter of your Cylinder, that there be about two Inches above and below the same. If your Planks will not bear the breadth desired, they may be enlarged by addition of a piece of the same thickness, without any inconvenience. Let the Planks be about two and a half, or three Inches thick, and made to quadrate each to other. Let there be four Mortoises in each Plank, as at *bbbb*, for four Transomes, to keep the two sides at an equal distance, about half an Inch wider than the length of the Cylinder, that it may have the more liberty to move easie without Grating. The four Transomes may be pinn'd fast into that Plank that is next you when you turn, and their Tenons made long at their other ends, that they may be two or three Inches without the other Plank, that they may be key'd

key'd at the farther side, the better to take to pieces when occasion requires.

c Is the Center of the Cylinder: in each Plank exactly one against the other, there must be a hole for the Axis to run in, which ought to be strengthened with a small Plate of *Iron* or *Brass*, to prevent wearing.

d d Shews only the Circumference of the Cylinder, which at *e* appears more plainly, being made of solid *Oak*, or *Beech*, the dryer the better, and freer from shrinking, of about a Foot or eighteen Inches in length; and if a Foot in length, then eighteen Inches in Diameter; if eighteen Inches in length, then a Foot in Diameter; after which rate you may vary as you please, This Roll or Cylinder must be turned exactly on its Axis, which must be made of Iron of about an Inch square, and fixed through the Center of the Cylinder: then turning it on that Axis, with a turning Gouge and Chisel, will cause it to run true; which is principally to be observed. The Axis must extend beyond the Cylinder six or seven Inches at the one end, where it must be flatned an Inch or two, with an Eye, that the Hand-wheel may be key'd on there, as at *f*.

This Cylinder after it is placed between

the two Planks in its Frame, must be knock'd full of small Peggs of Iron, of about three quarters of an Inch in length, made flat, and tapering like a Wedge, as at *g*. They must not stand or appear a full quarter of an Inch aboye the superficies of the Cylinder: for the shorter they are, the finer will your Pulp or Murc be; and the higher, the courser: you may place them in such order, that the one may stand against the space last preceding, in a Quincunxial Order; about four hundred of them will serve for a Cylinder of a Foot in length, and of the like Diameter, and so after that rate for a greater or lesser. Thus will this Cylinder be made rough to Grind your Apples as fine as you please. Then cut a piece of Wood of the length of the Cylinder, and about a fourth part of its Circumference, hollow almost to the Circumferential line of the Cylinder, as at *b*: this piece must have a Pin at each side, near the upper part of it, as at *i*, which must have holes in the two Planks for them to move easie in, as at *k*. The use whereof is to keep the Apples close to the rough Cylinder, that they may be thoroughly Ground; this is also govern'd by a moveable Transome that extends from the one Plank

Plank to the other, through the Mortoifes at *l*, which Mortoifes are made broad, to admit of Keys to force the Regulator or piece of Wood nearer or farther as you please.

The prickt lines shew the Boards that descend from the Hopper or Bin, to direct the Apples to their work.

Note, that the greatest inconveniency that ever hapned in several years experience of this *Ingenio*, was, that mellow Apples being Pulpy and light, would stick to the Cylinder; that it would much impede the Operation; which is easily prevented by making the Cylinder smooth, and placing the Pegs of Iron not too near, but leaving sufficient spaces; that when the Cylinder is wet with the Juice of the Apples, the Pulp may fall from it in its motion; which it will easily do, and the better, if the Pegs be not flat headed: always observing, that the distances or spaces of one Row, may be filled or supplied in the next two or three Rows, that the Apple may not wear in Ridges.

It hath been also found by experience, that the moveable piece *b*, being placed so much under the Cylinder, did hinder the pulp from falling off the Cylinder:

Of making Cider.

Therefore I have placed it higher, and took away the piece I set above it, and when the Apples were mellow, laid a great quantity of Fruit in the Hopper, or Bin, the weight of which kept the Fruit close to their work; by which means this single Roll Mill made not only a quick dispatch of the Fruit, but ground them exceedingly well.

By this *Ingenio*, have been Ground very fine, sometimes five, and sometimes eight Bushels of Apples in an hour, and with no harder labour, than that two ordinary Labourers may, the one feeding, and the other grinding, hold it, by interchanging, all the day, with ease and delight.

But if your Stock be so great, that this small and easie *Ingenio* will not dispatch them fast enough, or that you intend it for a general use; Then may you make your Planks the longer, and place two Rolls or Cylinders.

To the first or nether Roll, you may make, either one handle to turn it, or if you please, you may by letting the spindle come through at both ends have two handles, that by two men turning of it, a greater dispatch may be made. This way of the double Cylinder appearing to be the
most

most natural and efficacious way hath occasioned many and various experiments towards the perfecting of it. At the first, about seven years since, I made the two Rolls smooth, which would not by any means take the Apple, then I made them rough by cutting small Grooves, which by placing the Rolls at some distance, caused the Apples to pass through them, which only bruised them into big pieces: Then by the Wedges made for that purpose, I placed the Rolls nearer, and caused the same broken Apples to pass through again; at which second time they came very finely ground. But this double Labour, although far exceeding any former old way, yet seemed not to be the utmost perfection of this *Ingenio*, and so caused my self and several others to whom I had imparted those experiments and observations I had made about it, to try what farther might be done, to make this Curious *Machine* more useful and facile; Whereupon several at the same time discovered this very way that is now in use, which is as followeth,

Let the Cylinders or Rolls be about eight or ten Inches Diameter, and about ten Inches in length; Let the Teeth be about

two

two Inches, or two Inches and half distance, so that they may be capable to take in an Apple of an Ordinary size; Let both the Cylinders or Rolls be so near of a size, or rather the handle Roll the bigger, that the number of the Teeth in both being equal and cut streight, they may not interfere the one with the other. Let the Teeth be cut bellying or rounding so that in the turning the Rolls they may shut even in every place alike, according to *aa*, in the second Figure.

By this means whatever fruit you throw in, the Teeth take them and reduce them to a pulp, in case you set the Rolls near enough, for the nearer they are the finer will they grind, and the farther apart the courser, but then will they make a quicker dispatch; and for mellow Fruit, it is not very material that they be finely ground. You must be sure to keep the Mill constantly fed by hand, and not overcharged, least it choak and soon tire the Grinder.

Some make the nether or handle Roll, lesser than the other, as the first about six Inches Diameter, and the farther about twelve Inches, with double the number of Teeth to the former. by which means the Mill will go much easier than the other way.

In

In both these, the Axis of the farther Cylinder or Roll must be moveable, pieces of Wood or Iron being made in the Inside of the Planks, to be Wedged nearer or farther as occasion requires: Those of Wood being represented by *b b.* in the second Figure, and those of Iron by *c,* in the same Figure.

The only person that by long experience hath attained to the true and exact way of making these *Ingenio's,* with great variety, is Mr *Henry Allen* a Cabinet-maker, at the sign of the Cabinet in *Exeter-street,* near the *Strand, London.* He not only makes them compleat after the Methods here prescribed, but with several other additions as well for expedition, as ease; Having one sort so compleat that it will throughly Grind and dispatch fruit enough (by one mans labour in turning) to make near twenty Hogsheads of *Cider* in a day, and of duration, the Rolls being made of *Lignum Vitæ,* and the rest for the most part of Iron and Brass, that it will last an Age.

He hath several by him of every sort, curiously made and without any defects, and suitable to every mans occasion.

Although your habitation be far from *London,* yet is it better to have your Mill from

from an experienced Artist, than confide in dull Country-workmen, who either out of ignorance or envy, it being a Novel, make this so useful an Engine become of little advantage to you.

This *Ingenio* may be made to be driven by strength of Water, where your house stands near some Current, by an undershot wheel fixed to the Axis of the Cylinder or Roll extending it self eighteen or twenty four Inches from the body of the Mill. Or in case your Water be not strong enough to drive it with an Undershot Wheel, a small Spring raised high enough to drive an Overshot Wheel of eight or ten Foot Diameter, will Grind a great quantity of Fruit in a day, having one to serve and feed it. And the less water, or but little raised, will serve where the single Roll or Cylinder is used, that going much more easily than the double.

On any River may be fastned by an Anchor and Cable a Barge, Lighter, or other Vessel, overthwart which may belaid a Beam or Axis, at each end whereof let there be a Wheel of Floats, and about the middle of the Axis may you cut Teeth, as in the eleventh Figure, and make another Roll to answer it; in case your Current
be

be strong, you may make the Teeth the longer, and the other Roll answerable, and the more Apples may you add at a time in the feeding of it, by means whereof, the Apples of a whole Parish or Town, or more, may be ground without any other labour than attendance. The one end of the Floating Vessel may serve to contain the Fruit, the other the Vessels for the Pulp, the Press, &c. Such a Machine placed in the River of *Thames*, near *London*, would turn with every Tide, and dispatch vast quantities of Fruit that are usually beaten up for Cider in the three Moneths of *September*, *October*, and *November*, in and near that City.

As for the handles of the hand Ingenio's or Mills, it is very convenient that there be a Wheel, as in the Frontispiece of this Book may be discerned; and that the handle be near two Foot from the Center: for the larger and heavier the Sweep is, the better and more easily doth it dispatch the harder or tougher Fruit.

It is also convenient the Far end of your hand Ingenio be fixed against some post or wall, that it may endure sudden jerks without displacing it; For its loose standing is a great impediment to a quick operation.

Also

Also in the double Roll'd Mill, you must be sure to add Boards under the Rolls, both on the sides and at the ends, to convey the Pulp into the Vessel placed underneath for the receiving of it: For otherwise will the quick motion of the Rolls dissipate the Pulp to waste, which now will be entirely conveyed into the Receiver, which may be either a Tub or Kiever, or else a square Chest made long and deep, of Elme well jointed, and fit to shove in at the end under the Mill, on two Rolls made on the lower part of the Tressells or Frame on which the Mill stands for that purpose; when this Receiver is full, it is easily drawn out, and when emptied, easily shoved in again.

*Piking
of Fruit.*

When you bring your Apples to the Mill, as you fill them up, cast by all such that are green and unripe, rotten, or otherwise naught, and all Stalks, Leaves, &c. that may injure your *Cider*; for it is better to want a small quantity of your liquor, than to spoil the whole.

Some are of opinion, that Rottenness in the Apple injureth not the *Cider*, but that a convenient quantity of rotten Apples mixt with the sound, is a great help to the fermentation and clarification of the *Cider*.

But

But I presume, they mean such Apples only that have been bruised in gathering, shaking down; or carrying, which will by lying become rotten, and (the skin being whole) be not much the worse, onely the *Cider* will retain a smack of them: yet let me advise, that you admit not them amongst your *Cider* that you intend for keeping, but rather make *Cider* of them for a more early spending: for others affirm, that one rotten Apple corrupts a whole Vessel; which I suppose is intended only of the putrid Rottenness.

When your Apples are grinding, it is not necessary to grind them very small, For if they are not very small ground, you will have but little the less of *Cider*, (although the contrary be commonly believed) because in the more vulgar way of grinding or beating, much of the Apple escapes unbruised, unless the whole be very much beaten or ground.

After your Fruit is ground, 'tis good to let it stand 24. or 48 hours, according as your time or conveniency will admit, so that it be all together, or in good quantities in large Vessels; for standing thus, it not only undergoes one degree of fermentation or maturation, but acquires colour,
much

much commended in *Cider*, and also causes the lesser parts of the Apple unbruised, easily to part with its Juice in the Press: although the general advice be, to press it immediately from the Mill.

You may leave a passage open in the bottom of your Vat, wherein you keep your bruised Apples, during the time of its being therein. Some of the *Cider* may spontaneously distil into a Receiver placed under it; or you may have a false bottom in the inside full of holes, that the greater quantity may be had, which may run through some Tap or other passage into your Receiver.

Which *Cider* so obtained, far exceeds that which is forc'd out; as the Wines of *France* that are unpres'd, are by much prefer'd to those that are pres'd; and live Honey that distils of it self from the Combs, is much better than that which remains, and is afterwards pressed out.

*The Cider
Press.*

As for your Press, there is no form yet discovered that exceeds the Skrew-press, of which sort there are very large, that a Hoghead may be pressed at once; and as some report, that a Hoghead or two runs out commonly before the Apples suffer any considerable pressure.

In

In those large Presses, the usual way is to press it in Straw; by laying clean Wheat-straw in the bottom of the Press, and a heap of bruised Apples upon it; and so with wisps of Straw; by twisting of it, and taking the ends of the Bed of Straw, with it you go round your heap of Apples, which are to be encreased, until by winding round the Straw, and addition of Apples, you have raised it two foot or more; as your Press will give leave: then apply your Board and Skrew over it, and you may press it dry in form of a Cheese, which is the most expeditious way; and most for advantage, of any way yet known; for a small single Mill, after the form before described, will grinde in one day, as much as a man can well press in a good Skrew-press in another day: Some of these large Skrew-presses are made of two Skrews, and some but of one: but in case your stock be but small, a less Skrew, and of much less price may serve; made after the form of that in the Frontispiece; and in stead of Straw, you may have a Basket or Crib well made; and put Straw round it in the inside, to preserve the Pulp, which would otherwise either run through, in case the passages be wide, or choak them, in case they be nar-

row; or a Hair-bag placed in a Crib or Frame made under the Skrew, to preserve the Bag from tearing.

In your pressing, in case you intend not to use your Pulp afterwards for the making of *Water-cider*, usually called *Purre*, or *Ciderkin*, then is it best to press it as dry as you can; but in case you resolve to add water to your Mure, and to press it again, then you need not press it too hard; for your *Cider* will then be the worse, and so will your *Purre* or *Ciderkin*: For the last squeezing is the weakest, and makes your *Cider* the rougher; and if any thing will, that gives it a woody taste, unless it be prevented in the easie grinding.

Some commend the Flail-Press, being made after the manner of a Cheese-Press, with heavy weights or stones, at the end of the Flail, which near the Fulciment or Center, hath great Force on the Matter to be pressed, and as the pulp yieldeth its Juice, so this weight followeth it, untill it be pressed as well as by this means it can be done, and that without any constant attendance, which is required in the Skrew Press; and the Liquor thus gradually expressed, descends more clear, than that which is forced out suddenly by the Skrew; but

but this way is not for expedition, nor to press it dry, unless it stand long.

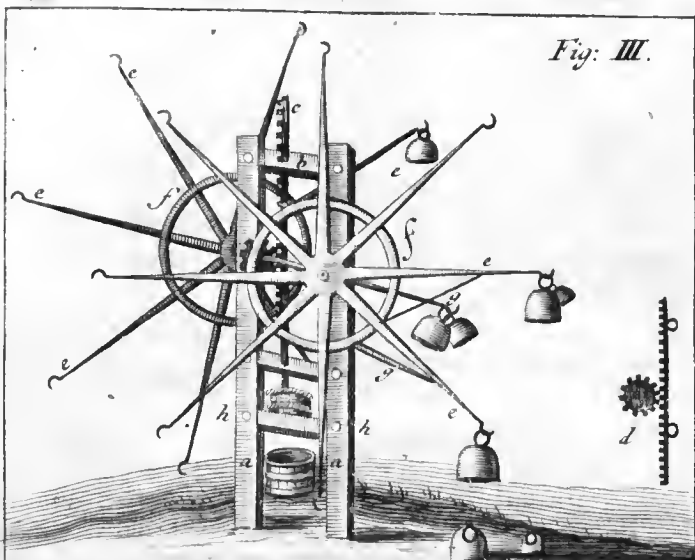
But if you are willing to decline the Skrew, you may make a Press that shall Press gradually, as doth the Flail, and much more expeditiously, and may be made to equal the Skrew-press for nimbleness and quantity, and without all peradventure, will make the pulp, especially of mell fruit, yield its Liquor finer than that from the Skrew.

The way is thus.



K 2

Let



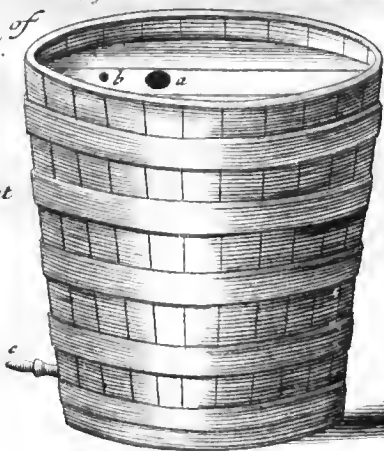
The Forme of
the Vessell.

Fig. III.

a { the Bung
hole.

b { a small Vent
hole.

c the Tap.



Let there be two posts fixed in the Ground, as *a a*, about three foot apart. Let there be two Transomes well Tenanted into them, as at *b b*, which may be about two Foot or more apart; Through the middle of which may be made two Morttoises to let down the tooth'd Iron Bar, or Rod, *c c*. The Bark or smooth side whereof must bear against Brass, or against two Trundles or Rolls of Iron or Brass, to make it slide up and down easily; between the Transomes, let there be an Axis of Iron, of about an Inch and half Diameter, or more, having two round places filed against the two posts; Let there be a Nut or toothed Wheel in the middle of it, of about four Inches Diameter, and an Inch in Thickness, or near thereupon: there may be twelve Teeth on it, or about that number, according to which size and distance, let the Teeth in the upright Bar or Rod be cut, so that the advantage in distance may be on the Nut, because that is the Mover, and the upright Bar the Moved. Then let the Axis, with its Nut on it, be so placed into the two upright posts with Staples and Brasses at each end, that it may move at a fit distance, that by the Teeth of the Nut, the upright Bar may be elevat-

ted or depressed at pleasure. This inside work may be plainly discerned at *d*. The nearer the Nut is placed against either of the Rolls that are placed in the Transomes, the less will the upright Bar be apt to bend.

Let each end of the Axis it self beyond the upright posts, to be fixed into the Center of Wood, resembling, the Nave of a Wheel, into which the Leavers *e e e*, must be fastned.

Let there be eight Leavers, or more, on each Center so placed, that the Leaver on the one side may be against the Space in the other. There may be a Ring of Wood, as at *f, f*, made to preserve them at their true distance, and that all may bear their proportionable burden, though the weight be bit on one or two. This Ring may be placed at about two Foot from the Center.

For a farther strengthening of the Leavers, in case they be made slender, or the weight too heavy for them, you may add Stays of Wood, or small Iron, as at *g, g*, and so may continue them to every Leaver.

You may have in a readines by you several weights of Stone, Iron, or Lead, with Rings, Cords, or other Fastnesses to them,

to

to the quantity of three or four hundred weight; or more, some of half an hundred, others less.

The lower end of the Toothed Bar must be fixed into a Follower of Wood, under which, when it is raised to its height, at about two Foot distance must be placed a large Bench, made of a thick planck, of five or six Inches thick, and fixed at both ends to the upright posts, as *b, b*. On which you may place your matter to be pressed.

Then with your hand move your Leavers, until it presseth hard or tough; then hang on a weight on the end of one of the Leavers, having a hook of Iron to that purpose fixed at the end, and so on another of the other side. And as the Liquor flows from the Pulp, so will that shrink and the weights move downwards; then may you add more on the next upper Leaver, and as they sink you may take them off from the under, and apply them to the upper. And whilst these weights are doing your work, may you otherwise employ your self, until they need removing.

It is a very great strength that these Leavers have in them, being thus placed, and may be made to equal in force any Skrew for this work; and hath these advantages

above it. That it requires not so constant attendance as doth the Skrew; then where the Fruit is over-ripe, or pulpy, it presseth out more gradually that Liquor, which with a sudden force it will not so easily part withal. You may also place more under this Press at a time, than under the Skrew, so that in bigness it be proportionable, because it may stand longer in the Press, and be more easily managed until it be dry pressed. And (which is a principal advantage) the Liquor will descend more fine out of pulpy Fruit, by this gradual way, than out of a more violent forcing Skrew, pulpy Fruit usually emitting a thick Juice, if suddenly forced from it.

In case your Leavers be but five or six Foot in length, they will easily move round without being hindred by the ground; but if you make them longer, you may abate the ground on each side of the posts proportionably, more conveniently than you can raise the Press.

SECT.

SECT. III.

Of purifying your Cider.

As your Vessel fills under your Press, pour it through some Streyner into a large Vat, only to detain the gross pieces of Apple, &c. from intermixing in the Vat; from whence most prescribe to tun it immediately into the Barrels wherein it is to be kept, lest its Spirits should evaporate: which is a mistake; for if a Cloath onely be cast over the Vat or Tun, it is sufficient to preserve it; for there is in it a wilde Spirit, that if detained, will break any Vessel whatever that you shall strictly enclose it in; therefore to waste that, is no injury to your *Cider*.

Now when it is in your Tun or Vat, it ought to be there fermented, and in some degree purified, and from thence pure separated from the impure, and so Tun'd into the Vessels wherein it is to be preserved, that the dregs may not pass with it, which will very much incommode your *Cider*.

In order to which, it is to be understood, that the juice of ripe pulpy Apples, as *Pippins*,

pins, Renetings, &c. is of a syrropy and tenacious nature, that whilst it is cold, doth deteyn in it dispersed those particles of the Fruit, that by the pressure comes with the Liquor, and is not by standing or frequent percolations separable from it; which particles, or flying Lee, being part of the flesh or body of the Apple, is (equally with the Apple it self, when bruised) subject to putrefaction: by which means, by degrees, the *Cider* becomes hard or acid; but if it be pressed from other Apples, as *Readstreak, Gennet-moyle, &c.* that more easily part with their Liquor, without the adhesion of so much of the pulp, and which is of a more thin body; This Liquor shall not be so subject to reiterated fermentation, nor so soon to acidity; because it wants that more corrupt part that in the other comes with it.

For *Wine, Ale, Beer,* and other Liquors, in every degree that they tend to acidity, they become more clear, by the precipitation, of the more gross parts that are first subject to putrefaction by the vertue and heat whereof, the Spirits are chased away; and so in time, as those corrupt particles were more or less in it, is the Liquor sooner or later become Vinegar.

As

As *Beer*, whereof *Vinegar* is intended to be made, is never fermented, nor the feces precipitated at the first, as it is when it is to be preserved for drinking. And *Claret-wine* percolated through *Rape*, or the acid *Murc* of *Grapes*, becomes a *White Vinegar*; so that the precipitation that is in both those Liquors, happens by reason of their becoming acid.

If therefore you intend your *Cider* shall retain its full strength and body, and to preserve it so for any considerable time, endeavour to abstract from it that flying *Lee*, or *Materia Terrestris*, that floats in it (as sometimes it does in *Must* pressed from *Grapes*, that hath in it more of an active principle than that from *Apples*) lest your *Cider* be thereby impaired.

Neither is it to be imagined, that that sort of *Cider* that is of that tenacious nature as to keep up its *Lee*, is therefore stronger than that which more easily lets its subside; any more than that thick small unfermented *Ale*, should be stronger than that which hath more of the Spirit or Tincture of the Mault, and well defecated; or that *Wine* should be smaller than *Cider* for the same reason.

Now

Now rightly to understand the cause of this detention of Lee in the body of the Liquor, you are to consider, that there are several sorts of Fruits that yield a clear and limpid Juice, as a *Grape*, and a *Common English* and *Flanders Cherry*, and some others; and other sorts of Fruits that yield a more gross Juice, as a *Raspberry*, *Black-Cherries*, *Plums*, and some others: and that there are some Fruits that yield a very thin and clear Juice at a certain degree of maturity; which a little after, when more ripe, it becomes more thick and gross; as a *Gooseberry*, *Currant*; and some species of *Apples* and *Pears*.

In the *Grape*, and *English* and *Flanders Cherry*, the cause that the Liquid part so easily parts from the more solid, may be from the great inequality in the proportion of the parts, the liquid being the more, and overcoming the lesser: which in the other, *Cherries*, *Raspberries*, and *Plums*, the contrary happens, that much of the Pulp adheres to the Liquor.

Also in the other Fruits, as *Gooseberries*, *Currants*, and some *Apples* and *Pears*, by the length of time, a thorow maturation causes a solution of the more gross parts, being of themselves tender; which makes them

them so acceptable to the *Palate*; which in Fruit more insoluble doth not so happen; yet may the Juice of those Fruits that thus may be extracted more pure and limpid, be more excellent, and be preferr'd to those more gross, as it usually happens, because of the difficulty of defecation.

— One principal help to purifie any Liquor, or to provoke fermentation, is warmth, as is vulgarly practis'd amongst Housewives, who in fermenting both Bread and Beer, preserve it warm during that operation. For any liquid Body, wherein fermentation is required, by warmth becomes more thin, that it easily admits of a separation of the feculent parts; and like unto a glutinous Body, the colder it is, the thicker it is; and doth not so easily part with its Feces.

It having been experienced that Wine in the Must, before it hath begun to ferment, being stopt close in a Vessel and let down, into a Well or River, will for a long time retain its sweetness, without any sensible fermentation; by reason that the coldness of the ambient body the Water, (the like happens from a cold Air) checks the Spirits, that they cannot act as they do in fermentation.

There-

By warmth
only.

Therefore warmth is a principal means to accelerate fermentation, as hath been sometimes tryed in *Cider*, by heating a small portion of it scalding hot, and casting it into the Tun on the new Must, stirring it together, and covering it over, hath caused a good fermentation, and separation of its Lee, making it much more fit for preservation, than if it had been Barrell'd without any fermentation at all. It hath been also observ'd, that cool Cellars detract the fining of *Cider*: And that *Cider* expos'd to the Sun, or other warmth, hath more easily fermented, and become fine, for the reasons aforesaid.

The *Germans* have Stoves in their Vaults, which they heat very hot, or else make fires before every Vat; by which means the Must of their Wines ferments vehemently; after some days they Rack it, the same way may be observed for *Cider*, whilst it is new, but if it hath stood long and then served thus, it must soon be spent.

By *Isinglass*

But to ferment and purifie this *British* Wine, or any other *Vinous Liquor* effectually, you may take of *Gluten piscis*, *Water-Glew*, or *Isinglass*, as it is usually termed, about the proportion of three or four Ounces to a Hoghead; beat it thin on some Anvil

Anvil, or Iron-wedg; cut it in small pieces, and lay it in steep in *White-Wine* (which will more easily dissolve it than any other Liquor, except *Vinegar*, *Spirits*, &c. that are not fit to be used in this Work) let it lie therein all night; the next day keep it some time over a gentle Fire, till you find it well dissolved; then take a part of your *Cider*, or proportion about a Gallon to twenty Gallons; in which boyl your dissolved *Water-glew*, and cast it into the whole mass of Liquor, stirring it well about, and covering it close. So let it stand to ferment, for eight, ten, or twelve hours, as you please; during which time, the *Water-glew* being thinly and generally dispersed through the whole Mass of Liquor, and assisted by the warmth and pertenuity of it, precipitates a part of that gross Lee, that otherwise would have decayed it, and raiseth another more light part of it; as a Net carrieth before it Leaves or any other gross matter in the Water through which it is drawn, and leaveth not any part of its own Body in the purified Liquor, to alter or injure the Substance or Taste of it. Which, when you observe that it hath done working, you may draw out at a Tap below from the Scum, or may first gently take

take off the Scum as you please. Or you may use it thus, Steep your *Isinglass* in hard *White-Wine*, enough to cover it, after twenty four hours beat the *Isinglass* to pieces, and add more Wine, and four times in a day squeeze it to a Gelly, and as it thickens add more Wine; when it is reduced to a perfect Gelly, Take about a pint or a quart to a Hoghead, and take three or four Gallons of the *Cider* you intend to fine, and mix well with your Gelly, and put it into your Vessel of *Cider*, and beat it with a Staff. This cold way is much better than the other, for boyling of part of the *Cider* makes it apt to decay the sooner.

This Liquor thus gently purified, may you in a full Vessel well closed, preserve a long time, if you please, or draw it and bottle it in a few days, there being no more *Lee* in it than is necessary for its preservation.

A small quantity of quick Lime cast into a Vessel of new Wine, will make it ferment, not only by reason of its warmth, but by reason of a quick Salt that is in it, which without doubt will have the same effect upon *Cider*, as may the powder of *Calcined Flints*, *Alabaster*, *White Marble*, or *Roch-Alluni*.
The

The Shavings or Chips of *Fir*, *Oak*, or *Beech*, are great promoters of purification, or fermentation. Therefore new vessels cause a quick fermentation, but be sure they are well scalded before you use them, least they occasion too violent a fermentation, and make your *Cider* acid.

But if your *Cider* hath stood long, and will not be fine, as oftentimes it so happeneth; then take *Isinglass* about an ounce to an Hoghead, and steep it in about two quarts of *Cider* a day or two, untill the whole be reduced to a Gelly, which by standing warm, it will easily do. Then draw off about a Gallon of the *Cider*, and mix the Gelly (being cold) thoroughly with it, and put the whole into the Vessel of *Cider* at the Bung, and with a splitted Staff stir it well together, and in a day or two it will be fine, without any prejudice to your *Cider*.

This very way or Method of purification will serve in all sorts of Liquors, and is much to be preferred in the Juices of Fruits, to that vulgar way of making them ferment by the addition of Yeast or Tosts therein dipp'd, as is usually prescribed; that being but an acid Excitation to Fermentation, all things tending to Acidity being (as much

as may be) to be avoided in our operations.

This way also is better than the tedious ways of percolation, and racking from Vessel to Vessel; which wasts not only the Spirits, but substance of the Liquor it self, and leaves you but a thin and flat Drink, hardly ballancing your trouble.

*Drawing it
off with a
Siphon.*

After you have thus purified your Liquor in what Vessel soever, and are unwilling, or cannot well draw it out at a Tap near the bottom, as is usual, You may draw it from the feces over the brim of the Vessel, by a *Siphon* made of *Latton*, or of *Glass*, which is the best, because you may observe by your Eye, what impurities ascend, and avoid them by raising or depressing your Instrument at your discretion. The *Siphon* is after this form, the one end three or four Inches longer than the other, and the hollowness of the Pipe in bigness according to the use you intend to put it unto, whether out of a great or small Vessel.



To make this *Siphon* of *Glass*, furnish your self with a *Glass* pipe of what size and length you please, and make a *Charcoal* fire in some open place, lay down your *Glass* pipe on the *Charcoal*, so that
the

the fire may be near the middle of it, remember to lay the pipe on the Coals before they are very hot, that the Glass may heat gradually as the fire kindles, when the fire burns clear, and the Glass is become red hot, then take both extreams in your hands and bend it to what form you please, holding the bended part over the heat, that it may not cool suddenly, but by degrees, to prevent breaking. Thus may you bend any part of it to make it suit with your occasions.

Liquors thus purified, leave behind them on their superficies, and at bottom, a great quantity of gross and impure feces; which if from *Cider*, you may cast on the press'd *Murc*, to meliorate your *Ciderkin*, or *Water-Cider*, if you intend to make any.

These impurities, which are in great plenty in pulpy Fruit, and also in *Rasberries*, *Currants*, &c. are the principal cause of the decaying of those Liquors by their corrupt and acid nature, exciting the more vivous parts to a continual fermentation, as is evident from the effect, and from the breaking of Bottles (wherein this *Lee* remains) on the motion of a Southerly Air.

After your Liquors are thus purified and drawn off, they are to be enclosed in some Vessel for some Weeks or Months, according as the nature of the Liquor or your occasions will permit or require. Before that be done, it will not be amiss to insert some observations concerning Vessels.

SECT. IV.

Of Vessels for the keeping and preserving of Cider.

It hath been no small occasion of the badness of this Liquor, and thereby giving it an ill name, that it hath been usually ill treated, and entertained (after it hath been indifferently well made) in ill-shaped, corrupt, faulty and unsound Vessels; Vinous Liquors being full of Wild Spirits that easily find Vents, through which the Air corrupts the whole remaining Body, and also more easily, especially the *Cider*, like the Apple, attracting any ill favor from the Vessel. Therefore care is to be taken about the choice of them.

It hath been observed, that the larger any Vessels are, the better Liquors are preserved in them. In some foreign Countries

tries Vessels being made, that one of them will contain many Hogsheads of Wine; which being therein in so great a quantity, is preserved much better than if divided into lesser Vessels.

Also the form of a Barrel hath been found to be very material: although the vulgar round Barrel be most useful and necessary for Transportation from one place to another; yet is the upright Vessel, whose Ribs are streight, and the head about a fourth or fifth part broader than the bottom, and the height equal to the Diameter of the upper part, the best form to stand in a Cellar. The bung-hole of about two Inches Diameter, is to be on the top, with a Plug of Wood turn'd round exactly to fit into it, near unto which must be a small Vent-hole, that after the *Cider* is tun'd up, and stopt at the Bung, you may give it Vent at pleasure; and that when you draw it forth, you may thereby admit Air into the Vessel. This form is preferr'd, because that most Liquors contract a Skin or Cream on the top, which helps much to their preservation, and is in other forms broken by the sinking of the Liquor, but in this is kept whole; which occasions the freshness of the Drink to the last. This form

is described before in the III Fig.

It is also observed, that a new Vessel made of Oak, tinges any Liquor at the first with a brown Colour; wherefore it is convenient thorowly to season your new Vessels with scalding water, wherein you may boyl Apple-pumis if you please, before you put your *Cider* in them; which when so season'd, are to be preferr'd to any that have been used; unless after *Canary*, *Malaga*, or *Sherry* Wines, or after *Metheglin*; which will much advance the colour and savour of your *Cider*: but Vessels out of which *Strong-Beer* or *Ale* have been lately drawn, are to be rejected, unless thorowly scalded and season'd as before, which then will serve indifferently well, nothing agreeing worse with *Cider* than *Malt*; for of *Cider* or *Water-Cider*, boyl'd and added to *Malt*, hath been made a Liquor not at all grateful. Small-Beer-Vessels well scalded, are not amiss: *White* or *Rhenish-Wine*-Vessels may do well for present drinking, or for a Luscious *Cider*, else they are apt to cause too great a fermentation.

A good *Ciderist* will have his Vessels wherein he puts his pulp or ground fruit, wherein he presses and tuns his Liquor, and wherein he makes his *Ciderkin*, all of them

them appropriated to that use. The Taverns will furnish him with large Casks very proper for these uses.

For the using of these Vessels, between the *Cider* seasons with Beer and Ale, not only prejudiceth the *Cider*, but the using of them, for *Cider* injureth very much the next Brewing of Ale or Beer.

If your Vessels be musty, Boyl Pepper in Water after the Proportion of an Ounce Curing musty Cask. to a Hoghead; fill your Vessel therewith scalding hot, and so let it stand two or three days; or else

Take two or three Stones or more of Quick-lime to six or seven gallons of Water, which put into a Hoghead, and stop it close, and tumble it up and down till the Lime be thoroughly slak'd; but the best cure is to take them to pieces, and pare away the film that is in the inside, and when aired set them together again.

To make your Cask pleasant to receive so delicate a Guest, as your choicest *Cider*, Scenting of Cask. You may scent it as the Vintners do for their Wines, Thus, Take of *Brimstone* four Ounces, of *Burn'd Allum* one Ounce, and of *Aqua Vitæ* two Ounces; Melt these together in an earthen pan over hot coals, then dip therein a piece of new Canvas,

and instantly sprinkle thereon, the Powders of *Nutmegs*, *Cloves*, *Coriander* and *Anniseeds*, This Canvas set on fire, and let it burn in the Bung-hole, so as the fume may be received into the Vessel.

Bottles.

Glas-bottles are preferr'd to Stone-bottles, because that Stone-bottles are apt to leak, and are rough in the mouth, that they are not easily uncork'd; also they are more apt to taint than the other; neither are they transparent, that you may discern when they are foul or clean: it being otherwise with the Glas-bottles, whose defects are easily discern'd, and are of a more compact metal or substance, not wasting so many Corks.

*Grinding
Glas Stopples.*

To prevent the charge of which, you may, with a Turn made for that purpose, grind or fit Glas-stopples to each Bottle, so apt, that no Liquor or Spirit shall penetrate its closures; always observing to keep each Stopples to its Bottle: which is easily done, by securing it with a piece of Packthread, each Stopples having a Button on the top of it for that end. These Stopples are ground with the Powder of the Stone *Smyris*, sould at the Shops by the vulgar name of *Emery*, which with Oyl will exquisitely work the Glas to your pleasure.

First

First grind them rough with coarse *Emery*, then make them smoother with fine,

So if the mouths of your Bottles be uneven (as usually they are) you grind them smooth, with a wooden plug in a Turn, and polish them smooth, by which means the Corks may be preserved.

The only Objection against this way of Closure, is, That not giving passage for any Spirits, the Liquors are apt to force the Bottles; which in Bottles stopt with Cork rarely happens, the Cork being somewhat porous, part of the Spirits, though with difficulty, perspire.

If Glas-bottles happen to be musty, they are easily cured by boyling them in a Vessel of water, putting them in whilst the water is cold, which prevents the danger of breaking; being also cautious that you set them not down suddenly on a cold Floor, but on Straw, Board, or such-like. If your Glas-bottles be foul, you may cleanse them with hard Sand or small Shot roll'd and tumbled up and down in them with water, which will also take away the mustiness from them.

SECT. V.

Of Tunning, Bottling, and preserving
Cider.

Barrelling
of Cider.

Having your *Cider* purified and prepared in the Tun, and your Vessels seasoned and thoroughly dried, and fix'd in their places, then Tun it up into them until the *Cider* be within an inch or less of the top of the Vessel, that there may be space for a Skin or Head to cover it. Be sure to leave the Bung open, or only covered two or three days, that the *Cider* may have liberty to finish its fermentation; but if it be so clear that it will not again ferment, and that you are willing or intend to keep it long, put in unground Wheat after the proportion of a Quart to a Hoghead, which will give it a head sufficient to preserve it. This artificial head is only where an admission of Air may probably be into the Vessel.

Other artificial *Lees* there are, that may serve for *Cider* as well as for hungry *Wines*. As a decoction of Raisins of the Sun, or the Shavings of Refine Fir-wood; but the

the best addition to preserve it, is the new *Lees of Spanish Wines*.

After you have thus closed up your Bung, you ought yet to leave open the small Vent-hole only loosely, putting in the Peg, lest otherwise the wilde Spirit of the *Cider* force a passage, as I have known it a week after its tunning to have heav'd up the head of the Barrel almost to a Rupture; which by the easie stopping this Vent, and sometimes opening it, may be prevented until you find it hath wasted that wilde Spirit. For the Vulgar advice of barreling up *Cider* from the Press, and then stopping it close, is pernicious to this Liquor, many having spoil'd it by this means: the Spirits seeking for a vent will find it, and the more they are pent, the longer will they be before they are expended; which vent being neglected by the *Ciderist*, becomes a passage for the best Spirits of the *Cider* many times, to its absolute spoiling.

The vulgar opinion of the sudden decaying or flatning of *Cider*, is to be rejected, scarce any Drink being more easily preserv'd than this; and though much of its Spirits be lost, yet out of its own body, whilst new, may they be again reviv'd, it
suffering

suffering much more by too soon detaining its Spirits, than by too lax a closure.

Cider pressed from pulpy or through ripe or mellow fruit, having lain long in hoard, is not so apt to emit its Spirits as the other, and so is more easily preserved.

Stopping of *Cider* with Clay, if you design to keep it long, cannot be good, it having so strong a Spirit that it will easily raise it on every *Southerly* Air; nothing being better than a wooden Plug turn'd fit to the Bung-hole, and covered about with a single Brown-paper wet, before you wring it into its place.

*Bottling of
Cider.*

Drawing of *Cider* into Bottles, and keeping it in them well stopt for some time, is a great improver of *Cider*. This is done after it is thoroughly purified, and at any time of the year: if it be bottled early, there needs no addition, it having body and Spirit enough to retrieve in the Bottle what is lost in the Barrel; but if it hath been over-fermented, and thereby become poor, flat, and eager, then in the Bottling, if you add a small quantity of Loaf-sugar, more or less according as it may require, it will give a new life to the *Cider*, and probably make it better then ever it was before, especially if it were but a little acid, and not eager. When

When your *Cider* is thus bottled, if it were new at the bottling, and not absolutely pure, it is good to let the Bottles stand a while before you stop them close, or else open the Corks two or three days after to give the *Cider* air, which will prevent the breaking the Bottles against the next turning of the wind into the *South*.

The meaner *Cider* is more apt to break your Bottles than the Richer, being of a more eager nature, and the Spirits more apt to fly, having not so solid a body to detain them as the Rich *Ciders*. Observe, that when a Bottle breaks through the fermentation of the *Cider*, to open your Corks and give vent, and stop them up again a while after, lest you loose many for want of this Caution.

Great care is to be had in choosing good Corks, much good Liquor being absolutely spoiled through the only defect of the Cork; therefore are Glass Stopples to be prefer'd, in case the accident of breaking the Bottles can be prevented.

If the Corks are steep'd in scalding water a while before you use them, they will comply better with the mouth of the Bottle, than if forc'd in dry: also the moisture of the Cork doth advantage it in detaining the Spirits. There-

Therefore is laying the Bottles sideways to be commended, not only for preserving the Corks moist, but for that the Air that remains in the Bottle is on the side of the Bottle where it can neither expire, nor can new be admitted, the Liquor being against the Cork, which not so easily passeth through the Cork as the Air. Some place their Bottles on a Frame with their noses downwards for that end; which is not to be so well approved of, by reason that if there be any the least settling in the Bottle, you are sure to have it in the first Glafs.

Placing the Bottles on a Frame, as is usual, or on Shelves, is not so good as on the ground, by reason that the farther from the earth they stand, the more subject they are to the variation of the Air, which is more rare in the upper part of a Cellar or other Room, than in the lower; and a few inches will occasion a great change, unless in a Room arched or vaulted with Stone: but where Room is wanted, this inconvenience may be easily born withal.

Setting Bottles in Sand is by many not only made use of, but commended, although without cause, it not adding that coldness to the Bottles as is generally expected,

pected, being rather of a dry and temperate quality than cold; if there be any convenience in it, it is because it defends them from the too sudden changes of Air into heat or cold, which in open and not deep Rooms it is often subject unto.

The placing of Bottles in Cisterns of Spring-water, either running or often changed, is without all Peradventure the best way to preserve *Cider* or any other Vinous Liquors. A Conservatory made where a recruit of a cool refrigerating Spring-water may conveniently be had, will so long preserve *Cider* until it be come to the strength even of *Canary* it self. Bottles let down into Wells of water where Pumps are, that the frequent use of Buckets may not injure them; or little Vaults made in the sides of Wells near the bottom, may supply the defect of Spring-water in your Cellar. The reason why Water is to be prefer'd for such a Conservatory, is, because the closeness of its body admits not of a sudden rarefaction of Air, as other Materials do, but is generally of an equal degree of coldness, and that colder than commonly the Liquor is that is preserv'd; which so condenseth its Spirits, that they seek not any exition or expansion,

expansion, but acquiesce in their own proper body, where they multiply and become more and more mature, by vertue of that innate heat the Liquor received whilst in its Fruit. For by the same reason that cold detains or suppresseth the Spirits before fermentation that they cannot act, now after fermentation doth it keep in the pure and genuine Spirit, otherwise apt to exhale, which purifieth and enricheth the Liquor so preserved. *Quære* whether the warmth that is in Wells or deep Springs; in frosty weather, incommode not these Liquors? Also *Quære* whether these cool Conservatories prevent not the breaking of Bottles stoppt with Glas Stopples, by the condensing power of the water. My self being destitute of any opportunity to make those experiments, cannot at present resolve these *Quæries*.

In some places the conveniency of Water may easily be had for such a Refrigeratory, both for the constant supply of cool Spring-water, and for its evacuation again, which is as necessary as its supply: and in many places the Ciderist may command a Spring from some place a little distant from his Refrigeratory, but cannot so easily be rid of it again; which must be as well considered.

sidered of as the other. Therefore if you can conveniently make a Cistern in the bottom or on the side of your Cellar that will hold water, either of Stone or Brick well cemented, and if of Brick, plaistered with Plaister of Paris, or with a Cement made of Linseed-oyl and Lime newly slaked, with a little Cotton-wool beat into it, and can, as occasion requires, supply it with a descent of cool Spring-water; your way to evacuate the same, will be with a small Hand-pump, such as they usually use in small Vessels at Sea, and may be had in Maritime Towns at an easie rate, with which you may pump your Cistern or Conservatory dry once a week, oftner or more seldom, as the warmth or coldness of the Air seems to require; and supply it again from your Spring, or in defect thereof from some Well or Pump, whence you draw your Water for other occasions. But if your Cistern be made in the Ground under your Cellar, you need only lay your Brick or Stone in Clay well tempered, and laid thick under the Brick or Stone, and on the sides of the Cistern.

Where you have not the conveniency of Water, or are unwilling to be at the expence, as in some places it may require, of

M

making

making such Conservatories; there the best way is to dig Vaults in your Cellars, under the Level of the bottom, or to make Niches in the Walls near the Ground, and in them place your Bottles leaning: for the more they are remote from the Air, and the more encompassed with Stone or Earth, the cooler they will continue, and the less subject to the inconveniencies that happen from the mutability of the Ambient Air.

To accelerate maturity in your Bottle-drink, you may place them above Stairs in some Room warm'd by the Beams of the Sun; which will much hasten its maturity, and is easier performed than any Agitation can be: but thus it will not long continue, and caution must be had to your Bottles.

Binding down the Corks of your Bottles in case of danger, is not so much to be commended, as well fitting them in by full Corks; because the Liquor were better fly the Cork than break the Bottle, which must be, in case the Cork be tyed down, and the Liquor not well qualified.

*Boyling of
Cider.*

In many places they boyl their *Cider*, adding thereto several Spices, which makes it very pleasant, and abates the unfavory smack

smack it contracts by boyling, but withal gives it a high Colour. This way is not to be commended, because the Juice of the Apple is either apt to extract some ill favour from the Brass or Copper, we being not acquainted with any other Vessels to boyl it in, or the feces or sediment of it apt to burn by its adhering to the sides of the Vessel, it being boyl'd in a naked Fire.

But if you are willing to boyl your Cider, your Vessel ought to be of *Latten*, which may be made large enough to boyl a good quantity, the *Tin* yielding no bad Tincture to the Liquor. The Vessel also ought to be broad and open, for the more expeditious wasting of the aqueous and Phlegmatick part of the Liquor, which first flies, in case the Must be newly taken from the Press, and the Apples ripened on the Tree, ground as soon as gathered, and pressed as soon as ground: For it is not the boyling only, but the sudden wasting of the Phlegmatick part, that meliorates the remainder; the Spirits in all Liquors retiring and contracting themselves before Fermentation, as in all Musts; And after Fermentation the Spirits become Volatile, which is the reason that most Liquors are

most pleasant after fermentation, and then also are they capable of yielding their Spirits by Distillation. Putrefaction succeeds fermentation, and sometimes where there is no fermentation, and then the Spirits contract themselves again: such as are left, for it is the loss or want of part of the Spirits that begetteth putrefaction, whence *Vinegar*, &c. is produced. For observe, how much soever you wast in this evaporation of any sort of Must, or new Wurt, by so much is that which remains the stronger; and will subsist the longer, having a greater proportion of Spirits, to the body that contains it; so that you need not be so intent to procure Ebullition, as expence of the meaner part of your Liquor. Also you may place this *Latten* Vessel in another Vessel of Water, or in a thin Bed of Ashes, to prevent the too fierce heat of the naked Fire; also you may keep it stirring, which will expedite the Operation. Before it be quite cold, you may ferment or purifie it to what degree you please.

This *Cider* thus boyl'd and purified, to the expence of the one half, will keep very long, and be exceeding rich and strong, and not so ill qualified; as hath usually been, in case you use caution in the operation,

ration, which is to be preferr'd to those Spicy Additions.

It many times happens, that *Cider* that hath been good, by ill management or other accident becomes dead, flat, sowre, thick, muddy, or musty; all which in some sort or other may be cured.

*Restoring
of decayed
Cider.*

Deadness or Flatness in *Cider*, which is often occasioned from the too free admission of Air into the Vessel, for want of right stopping, is cured by grinding a small parcel of Apples, and putting them in at the Bunghole, and stopping it close, only sometimes trying it by opening the small vent, that it force not the Vessel: but then you must draw it off in a few days, either into Bottles or another Vessel, lest the *Murc* corrupt the whole Mass; which may also be prevented, in case you press your Apples, and put up only the new Must that comes from them on the decayed *Cider*. The same may be done in Bottles, by adding about a spoonful or two of new Must to each Bottle of dead *Cider*, and stopping it again. *Cider* that is dead or flat will oftentimes revive again of it self, if close stopt, upon the revolution of the year and approaching Summer.

But *Cider* that hath acquired a deadness or flatness, by being kept in a Beer or Ale Vessel, is not to be revived, the smack of the Beer or Ale being the only cause of it, and always predominates.

Honey or *Sugar* mixt with some Spices, and added to the *Cider* that is flat revives it much; let the proportion be according as is the distemper that requires it.

If *Cider* be acid, as sometimes it happens by reason of the immaturity of the Fruit, too nimble an Operation, too great a Fermentation in the Vessel, or too warm a Situation of your Vessels wherein it is kept; this sometimes becomes pleasant again, in case its Lee be yet in the Vessel, as is supposed by a second operation on it, but in case it doth not, if you add about a Gallon of unground-Wheat to a Hoghead of it, it will very much sweeten it, and make it pleasant. The same effect will two or three Eggs put in whole, or a pound of *Figs* slit, produce, as is reported. But the surest remedy is Bottling it with a Knob of *Sugar*, in proportion according to the occasion.

Wheat boyled till it begin to break, and when cold added to the *Cider*, but not in too great a quantity, and stirred into it, help-

helpeth it much; the like doth *Cinnamon Canes*, but the Vessel must be stopt close in either.

There is some difference between a sharp or acid *Cider*, and a *Cider* that is eager or turn'd. The first hath its Spirits free and volatile, and may easily be retri'd by a small addition of new Spirits, or some edulcorating matter; but the latter hath part of its Spirits wasted, and part retired, that all additions are vain attempts to recover it.

If your *Cider* be Musty, which happens either from the places the Fruit lay in before Grinding, or from the Vessel through which the Pulp or Must hath past, or that the *Cider* is contain'd in; the Cure thereof is very difficult. Although in some measure the ill savour of it may be corrected by *Mustard-Seed* ground with some of the same *Cider*.

Thick *Cider* is easily cured at what Age soever, by exciting it to a fermentation, either by the addition of *Mustard* made with Sack, or by the addition of new Pulp or Must, or of rotten Apples; Or (which will do it when all fails) by purifying it with *Isinglass*, or Fish-glew, as before is directed.

Racking of *Cider* is much commended by some, but the operation is tedious, troublesome, and costly, by reason of the change of Vessels of different sizes, the latter being to be less than the former: And therefore not to be endured amongst true *Cider*-ists, Purifying the Liquor before Tunning, being much to be preferred.

Preserving
Cider by
Sulphur.

If the Vessel before *Cider* be tunned up into it, be fumed with *Sulphur*, it much conduceth to the preservation of this or any other kind of Liquor: which may be done by dipping a Rag in melted Brimstone, prepared after the same manner as before is prescribed for Scenting the Cask, and by a Wire letting it down into the Vessel, being fired, will fill the Vessel full of smoak; then take it out and immediately Tun up your Liquor, which gives it no ill taste nor favour, and is an excellent preserver of your health, as well as of the Liquor.

But the better way for this operation is, by making a little Earthen pot wherein to burn your Brimstone, so prepared as before; the cover of it to extend in a Pipe about two Foot for your Mouth, and another Pipe to go out of the side of the Pot into the Bung-hole of the Vessel, in which
the

the *Cider* is put to be preserved: about half way deep into the Liquor, put your Rags dipp'd in Brimstone, into the pot, add Fire to it, cover your pot, blow at your Pipe, which will encrease the Fire, and drive the Fume into the middle of the Liquor in the Barrel, and also fill the Vacancies of the Vessel; Then stop it close, by which means the *Cider* is impregnated with the Spirit of *Sulphur*, which will give it no alteration, save only for its salubrity and duration.

Other ways there are for making these Matches. As to the melted *Brimstone* you may add *Cloves*, *Cinamon*, *Mace*, *Ginger*, and *Coriander-Seeds*,

Or thus, *Brimstone*, *Orras* Roots and *Mastick*, of each a like quantity melted all together, and long narrow pieces of new Canvas drawn through it, being lighted and put in at the Bunghole, or used as before with the Pipe, keeps the *Cider* long clear and good and gives it a pleasant tast.

It is evident, that *Cider* by time changes its greenish Colour, for a bright yellow, inclining to redness.

SECT.

SECT. VI.

Of making Water-Cider.

It is observ'd that many sorts of Apples thorowly mature, will endure some addition of Water, without any prejudice to the Drink, especially in the Island of *Jersey*, where they frequently give it a dash. This dilution is only with Apples of a mellow and rich Juice, and is necessary to help its clarification; the *Cider* it self being of too glutinous a substance, and they not acquainted with any other way of attenuating it.

If your Apples be pulpy or mellow, they will yield their Juice with difficulty, unless water be added; but you may press them easily at first, and extract a small quantity of the richest Juice, and then add of boyled Water to the remaining pulp, which after forty eight hours standing, will yield you so rich a Liquor that shall exceed most *Ciders* drawn from newly ripened Fruit.

To some sorts of Fruit that are of themselves acid, crude, or of a thin Juice, dilution is very improper; but if the Water
be

be boyl'd, and let stand till it be cold, it will be the better; that abating much of its crudity.

Water mixt with the Fruit in the Grinding, incorporateth better with the *Cider*, than if added in the Vessel; and if mixt in the Vessel, better than if added in the Glass. By the Addition of Water can no other advantage be expected than the encrease of the Liquor, as we usually make more Small Beer than Strong, of the same quantity of Malt, for the ordinary expence in Oeconomy.

After you have pressed out your *Cider*, you may also put the *Murc* up into a large Vat, and add thereto what quantity you think convenient of boyl'd Water (being first cold again:) if about half the quantity as was of the *Cider* that was pressed from it, it will be good; if as much as the *Cider*, then but small: let this Water stand on it about forty-eight hours, and then press it well. That which comes from the Press, Tun up immediately, and stop it up, you may drink it in a few days. This being the most part Water, will clarify of it self, and supplies the place of Small-Beer in a Family, and to many much more acceptable.

*of making
Ciderkin
or Purrc.*

You

You may amend it by the addition of the Settling or Lee of your *Cider* that you last purified, by putting it up on the Pulp before pressure, or by adding some over-plus of *Cider*, that your other Vessels will not hold, or by Grinding some falling or refuse Apples that were not fit to be added to your *Cider*, and pressing it with this.

This *Ciderkin* or *Purre* may be made to keep long, in case you boyl it after pressure, with such a proportion of Hops as you usually add to your Beer that you intend to keep for the same time, and it will be thus very well preserv'd; but then you need not boyl your Water before the adding it to your Murc.

SECT.

SECT. VII.

Of Mixtures with Cider.

There is not any Liquor that hath less need of Mixtures than *Cider*, being of it self so excellent, that any addition whatsoever maketh it less pleasant: but being so necessary a Drink for the preservation of health, and tending to Longævity, it may be the most proper Vehicle to transfer the vertues of many *Aromatick* and *Medicinal Drugs, Spices, Fruits, Flowers, Roots, &c.* into every part of man, beyond any other Liquor whatsoever.

You may make *Hippocras* of *Cider* thus, Take of *Cardamoms, Carpobalsanium*, of each half an Ounce, *Coriander-Seeds* prepared, *Nutmegs, Ginger*, of each two Ounces, *Cloves* two Drachmes; bruise and infuse them two days in two Gallons of the richest sweetest *Cider*, often stirring it together, then add thereto of *Milk* three pints, strain all through an *Hippocras* Bag, and sweeten it with a pound of *Sugar Candy*.

With it may be made *Juniper-Cider*, by the addition of the *Berries* dried, six, eight, or ten to each Bottle in the bottling
of

of it, or else a proportionable quantity in the Barrel: the taste whereof is somewhat strange, which by use will be much abated.

Ginger may be added with good success, it making the *Cider* more brisk and lively than otherwise it would be.

Cloves and *Cinamon* added; not onely gives it a fine *Aromatick* flavour, but tingeth it with a fine colour.

But the best addition that can be to it, is that of the *Lees* of *Malaga Sack* or *Canary* new and sweet, about a Gallon to a Hogshhead; this is a great improver and purifier of *Cider*.

Dried *Rosemary* may be added in the Vessel, and doth not make it very unpleasing.

Wormwood imbib'd therein, produceth the effect that it doth in *Wine*.

The Juice of *Currants* preserv'd simply, without any Sugar or Water, a few of the cleer drops of it, tingeth and matureth early *Cider*, which to some might otherwise seem too luscious.

The Juice of *Rasberries* preserv'd, or the *Wine* thereof, gives an excellent tincture to this *Liquor*, and makes it very pleasant, if the *Cider* be not too new or too luscious.

For

For cooling Tinctures to *Cider*, the Juice of the *Mulberry* is to be preferr'd.

And next to that, the Juice of the *Blackberry*; both ripening about the time of making *Cider*.

Elder-berries are much commended by some to be pressed amongst your Apples, or the Juice of them added to your *Cider*.

But the best way of mixing this Juice with *Cider*, is to take a pot of *Elder-berries*, when ripe, with household bread, let the pot hold about a Gallon of them or more and be covered; Then strain out the Juice which will be thin and clear, and bottle it up for use; two or three Spoonfuls of this mixed in a quart Bottle of *Cider* at the bottling, makes it of a fine Red colour, pleasant to the tast, and endowes it with all the Medicinal vertues of the *Elder-ber-ry*. This way of baking or decocting of Soft Fruits is very effectual, in extracting their Juices.

The *Clove-July-Flower* dried and steep'd in *Cider*, gives it an excellent Tincture and Flavour.

Thus may the Vertues of any dried Flowers, Leaves, Roots, &c. be extracted and convey'd into our bodies by the most pleasant Vehicle that can be obtained.

SECT. VIII.

Of making other sorts of Wines or Drinks of Fruits.

Of making Perry.

Besides *Cider*, there are many other curious Drinks that may be prepared out of our British Fruits: As *Perry*, whereof there is a great quantity made yearly in several places of this Kingdom; and its operation so much like unto that of *Cider*, that we need say the less in this place.

Pears should not be too mellow when they are ground, for then they are so pulpy, that they will not easily part with their Juice.

If *Crabs* be mixt with *Pears* in grinding, it very much improves the *Perry*; the proportion must be with discretion, according as the sweetness of the *Pear* requires.

Perry, if well made, and of good *Pears*, will keep equally with *Cider*. The *Bosbury-Pear* is esteemed the best to yield lasting *Perry*.

Although the Planting of Vineyards in this Island is not so much in use as in the more *Southerly* Countries, nor are our seasons so constant for the maturation of the

the Fruit of the Vine, as they are in Continents of the same Latitude; yet may we propagate this Plant to a good effect in some warm Situations, and especially on the sides of Buildings, Walls, &c. and where there are any store of them, very good Wine may be made of the great plenty of their Liquor; and much better than any of the French Wines usually imported here, in case caution and skill be used in its preparation.

When you perceive your *Grapes* to be plump and transparent, and the Seeds or Stones to come forth black and clear, and not clammy, and the Stalks begin to wither, then gather them, for they cannot be over-ripe; neither will Rain or Frost injure them, so that the weather be dry some time before gathering.

The time of gathering Fruit.

Cut them off from the Branches, and not pull them, and in the Moons decrease; preserving them from bruises as much as you can.

Here in this cold Country they are seldom all of a ripeness, and the Stalks contain something of crudity in them; therefore it would not be lost labour to cull or separate the more ripe from the less, and from the Stalks, before you press out your

Making of the Wine.

N

Wine;

Wine; by which means some have had Wine comparable with the best French Wines that are press'd from the *Grapes* promiscuously; and this *Wine* thus made of selected *Grapes*, will last several years, as hath been experienced.

When your Wine is tunned, leave a part of the Vessel void or empty, and stop it up close immediately, and that very well, lest it lose its Spirits; which vacancy you may again supply after ten or twelve days with other Wine that hath been also fermented: which repletion must be reiterated as oft as there is occasion.

*Making of
Claret.*

If you intend to make *Claret*, you must let your *Murc* or *Chaff* of the Red or Black *Grape*, abide in the Must six or eight days, or as you will have it, more or less, ruff or tinctured, before you press it out; but in the interim be sure to cover your Vat close.

North-winds are reported to be very bad for the sowing of Wines; therefore be careful to keep them from it.

*Purifying
of Wine.*

To purifie Wine, take the thin Shavings or Planings of *Beech*, the Rind being peel'd off, and boyl them in water to abate the rankness of them; then dry them thoroughly; and with these may you purifie Wine:
about

about a peck will serve a Hoghead; which Chips will serve often times, being washed, dried, and preserved.

Some meliorate their Wine by pressing *Raisins* of the Sun with the *Grapes* a little plumped before-hand, or by boyling half the Must an hour together, scumming it, and adding it hot to the other half: this meliorates that half that is boyled, and causeth a fermentation in the other; but this is left to farther experience.

With well-ripened *Grapes*, diligent sorting them, easie pressure, and well purifying and preserving its Juice, *Wine* may here be made in goodness and duration equal to the best and most *Southerly* French Wines that are usually imported hither, as hath been divers times experienced for several years successively, by one that hath produced excellent *Wine* of several years preserving.

For against a Wall *Grapes* will ripen very well in most years, and the best of them separated from the more immature, and from the Stalks, yield a luscious Juice; and those gently bruised yield a thin Must, that hath of it self but little of the flying *Lee* in it; and that also being percipitated or taken off, the *Wine* will not be so apt

to ferment; which is the principal cause of its sudden decaying. This *Wine* preserv'd in your Refrigeratory, will continue good for several years; its Spirits thereby multiplying and heightning, that makes it equal to those *Wines* that received a far greater degree of maturation in their Fruit more expos'd to the perpendicular Beams of the Sun.

*Cherry-
wine.*

There is scarce any Fruit more easily propagated than the *Cherry*, nor any Fruit that bears more constantly and plentifully, that is a tall and Orchard-Tree: the Fruit whereof yields a fine acid, pleasant Juice, and mix'd with the more fat and luscious Wines of *Spain*, make a very good Wine, by the addition of Sugar whereby to preserve it.

Or the Juice it self, gently pressed from the Fruit, may, by a convenient addition of Sugar, make a very pleasant Wine, and durable, if boyled together; but in the boyling caution must be had, lest it attract some ill favour from the Vessel.

*Plum-
wine.*

This Fruit is also easie of Propagation, and no doubt but some of the more Juicy sort of them, especially the *Damson*, would yield an excellent Liquor, but scarcely durable unless boyl'd with Sugar, and well puri-

purifi'd, or else the Sugar boyl'd beforehand in water, and then added: the Juice of the *Plum* being of a thick substance, will easily bear dilution. This is easily experimented where *Plums* are in great plenty.

The *Red Dutch-Currant*, or *Corinth*, *Currant-wine.* yields a very rich and well-coloured Juice, which if suffered to hang on the Trees six or seven weeks after they are red, will yield a Vinous Liquor, which is to be diluted with an equal quantity of water boyled with refined Sugar, about the proportion of one pound to a gallon of your Wine (when mixt with the water) and after the Water and Sugar so boyled together is cold, then mix it with the Juice of the *Currants*, and purifie it with *Isingliss* dissolv'd in part of the same Liquor, or in *White wine*, as is before directed for the purifying of *Cider*, after the rate of an ounce to eight or ten Gallons; but boyl it not in a Brass Vessel, for the reasons before-mentioned. This will raise a Scum on it of a great thickness, and leave your Wine indifferent clear, which you may draw out either at a Tap, or by your *Siphon*, into a Barrel, where it will finish its Fermentation, and in three weeks or a Month become for

pure and limpid, that you may bottle it with a piece of Loaf-Sugar in each Bottle, in bigness according to your discretion; which will not only abate its quick acidity that it may as yet retain, but make it brisk and lively.

At the time you Bottle it, and for some time after, it will taste a little sweet-sowre, from the Sugar, and from the *Currant*; but after it hath stood in the Bottles six or eight weeks, it will be so well united, that it will be a delicate, palatable, rich Wine, transparent as the Ruby, of a full Body, and in a *Refrigeratory* very durable; and the longer you keep it, the more *Vinous* will your Liquor be.

By the letting your *Currants* hang on the Trees until they are through ripe, which is long after they are become red, digests and matures their Juice, that it needs not that large addition of Sugar, that otherwise it would do, in case the Fruit had been gathered when they first seem'd to be ripe, as is vulgarly used, and the common Receipts direct. Also it makes the Liquor more spirituous and *Vinous*, and more capable of duration, than otherwise it would be, if the Fruit had not received so great a share of the Sun.

The

The *Gooseberry-Tree* being one of the greatest Fruit-bearing Shrubs, yields a pleasant Fruit, which although somewhat luscious, yet, by reason of its gross Lee, whereof it is full, it is apt to become acid, unless a proportion of Water sweetned with Sugar (but not with so much as the other acid Liquors) be added unto it; this Liquor of any other will not bear a decoction, because it will debase its colour from a Wine colour to a brown not pleasant in Whitish Wines or Liquors.

*Gooseberry-
Wine.*

There is no Shrub yields a more pleasant Fruit than the *Raspberry-Tree*, which is rather a Weed than a Tree, never living two years together above-ground. Nor is there any Fruit that yields a sweeter and more pleasant Juice than this, which being extracted serves not only to add a flavour to most other Wines or Liquors, but by a small addition of Water and Sugar boyl'd together, and when cold, added to this Juice, and purified, makes one of the most pleasant drinks in the World.

*Raspberry-
Wine.*

Having given you a taste of most Wines made by pressure of the Juices out of the Fruits. You may also divert your self with the blood of the Grape, or any other of the before-mentioned Limpid Liquors,

*Apricock-
Wine.*

Clove-
Juliflow-
er Wine.

ting'd with the flavour and spirituous haut-
gust of other Fruits that cannot so easily
and liberally afford you their Juices. As
of the *Apricock*, which steep'd in Wine,
gives the very taste of the Fruit; also *Clove-
July-Flowers*, or other sweet-scented Flow-
ers doth the like. You may also make experi-
ment of some sorts of *Peaches*, *Nectarines*,
&c. what effect they will have upon those
sorts of drinks.

SECT. IX.

*Of making some other Drinks, or Wines
usually drank in this Island.*

Besides such Drinks or Liquors that are
commonly made of the Fruits of Trees or
Shrubs, there are several other pleasant,
wholsome, and necessary Drinks, made of
Trees, Leaves, Grains, mixtures of several
things, that are not to be omitted or want-
ing in your Conservatory to make it com-
pleat.

As *Metheglin* or *Hydromel*, that is pre-
pared out of *Hony* extracted by the dili-
gent Bee out of several Vegetables, be-
ing one of the most pleasant and univer-
sal Drinks the Northern part of *Europe*
affords,

affords, and was in use among the Antients that inhabited these colder Countries, before Wine or other Vinous Liquors became so generally used; and is yet in several cold Countries the most excellent Drink that they have of their own making, where Wines and other Vinous Liquors are not so easily nor well prepared. The Subject whereof it is made, *Honey*, being to be had in every part of *Europe*, from the most Southerly parts of *Spain, Italy, &c.* to the most Northerly. It being affirm'd by *Historiographers*, that there is *Hony* within the *Arctic-Circle*, or *Frozen Zone*.

Those that liv'd formerly in the more Southern parts (as *Pliny* reports) made a Drink compounded of *Hony* and tart Wine, which they term'd *Melitites*, by the addition of a Gallon of *Hony* to five Gallons of their Wine, making thereof, no doubt, a very pleasant Liquor: to which *Virgil* seems to allude, when he sings

*Dulcia mella premes; nec tantum dulcia
quantum*

*Et liquida, & durum Bacchi domitura sa-
porem.*

Hony

————— Honey you may press,
 Not only sweet, but shall be purely fine,
 And fit to qualifie your sharpest Wine.

This Drink was also called *Oinomel* by *Dioscorides*, and others in that Age.

In *Sweedland*, *Muscovia*, *Russia*, and as far as the *Caspian* Sea, they make great store of this Drink, and *Meth*, which is a smaller sort of it, made of the worst *Honey*, and of the refuse of all the rest.

This *Metheglin*, or *Hydromel*, they prefer in those cold Countries before any other Drinks, preparing it diversly to please their Palates; The best receipt whereof that I have observed to be made by them is thus.

They take *Rasberries* which grow plentifully in those parts, and put them into fair Water, for two or three Nights (I suppose they bruise them first) that the Water may extract their taste and colour. Into this Water they put of the purest *Honey*, in proportion about one pound of *Honey* to three or four of Water; according as they would have it stronger or smaller. Then to give it a fermentation, they put a Tost into it dipp'd in the Dregs or Grounds of Beer; which

which when it hath set the *Metheglin* at work, they take out again, to prevent any ill Savour it may give; if they desire to ferment it long, they set it in a warm place; which when they please to hinder or stop, they remove it into a cool place; after it hath done fermenting, they draw it off the Lee for present use; to add to its excellency, they hang in it a little bagg wherein is *Cinamon*, *Grains of Paradice*, and a few *Cloves*. This may do very well for present drinking. But if you would make your *Metheglin* of the same ingredients, and to be kept (time meliorating any sort of Drinks) you may preserve your Juice of *Rasberries* at their proper season. And when you make your *Metheglin*, decoct your *Honey* and *Water* together, and when it is cold, then add your Juice of *Rasberries* which was before prepared to keep, and purifie your *Metheglin* by the means before prescrib'd, or ferment it, either by a Tost dipped in *Yest*, or by putting a spoonful of *Yest* unto it, to which you may add the little bag of *Spices* before mentioned. Then let it stand about a Month to be thoroughly purified, and then bottle it, and preserve it for use, and it may in time become a curious Drink.

They

They also steep *Rasberries* in *Aqua-Vite* twenty-four hours, and add that to their *Hydromel*; which is a great amendment of it.

The same people also extract the Juices of *Strawberries*, *Mulberries*, and *Cherries*, and make the same use of them in their *Hydromel*, as they did of the *Rasberries*.

Many Receipts are handed from one to another, for the making of *Metheglin* or *Hydromel*, wherein are several green Vegetables prescribed to be used, as *Sweet-Bryar Leaves*, *Thyme*, *Rosemary*, &c. which are not to be used green, by them that intend to make a quick, brisk and lively Drink; green and crude herbs dulling and flattening the Spirits of the Liquor to which they are added, as you will find if you add green *Hops* instead of dry to your Beer: neither will any green herb yield its vertue so easily as when dry. But Spices and *Aromatick* herbs are very necessary to add a flavour to the *Metheglin*, and abate its too luscious taste.

It is usually also directed, that the *Metheglin* when boyling should be scummed; to take off the filth that ariseth from it in the decoction: which is not
so

so necessary as it is pretended to be; for that scum remaining behind, will be of use, and a help to its fermentation, and makes the Liquor afterwards to become the more limpid; and doth not unite again with it, as is vulgarly believed, it being a *Maxime* in *Philosophy*, that *Feces* once separated, will never re-unite.

So that if you take *Honey*, *Live-Honey*, that naturally runs from the Combs, (and that from Swarms of the same year is the best) and add so much *Hony* to clear Spring-Water, that when the *Honey* is dissolved thorowly, an Egg will not sink to the bottom, but easily swim up and down in it; Then boyl this Liquor in a Brass, or rather Copper Vessel, for about an hour or more; and by that time the Egg will swim above the Liquor, about the breadth of a Groat, then let it cool; the next morning you may barrel it up, adding to the proportion of fifteen Gallons an ounce of *Ginger*, half an ounce of *Cinnamon*, *Cloves* and *Mace* of each an ounce, all grossly beaten; for if you beat it fine, it will always float in your *Metheglin*, and make it foul; and if you put them in whilst it is hot, the Spices will lose their Spirits. You may also if you please add a little spoonful of Yest at the Bung-hole

hole to encrease its fermentation, but let it not stand too cold at the first, that being a principal impediment to its fermentation; as soon as it hath done working, stop it up close, and let it stand for a Month, then draw it into Bottles, which if set in a Refrigeratory, as before was directed for *Cider*, it will become a most pleasant Vinous Drink, dayly loosing its luscious taste; the longer it is kept, the better it will be.

By the floating of the Egg you may judg of its strength, and you may make it more or less strong as you please by adding of more *Honey*, or more *Water*.

By long boyling it is made more pleasant and more durable.

of Birch-
Wine.

As well in these Northern parts of *Europe*, as in many places of *Asia*, and *Africa*, may we extract the Blood of Trees themselves, and make them drinkable. The delicacy of our Liquors made of Fruits and Grains, very much abates the eager prosecution of such designs, yet the pleasantness and salubrity of the Blood of several Trees, have given encouragement, to some *Virtuosi*, to bestow their labour and skill on them, and not in vain, The *Sycamore* and *Wallnut-Trees* are said to yield excellent Juice, but we in *England* have not had
so

so great experience in any, as in that of the *Birch-tree*.

Which may be extracted in very great quantities where those Trees are plenty, many Gallons in a day may be gathered from the Boughs of the Tree by cutting them off leaving their ends fit to go into the mouths of the Bottles, and so by hanging many Bottles on several Boughs, the Liquor will distil into them very plentifully.

The season for this work, is from the end of *February* to the end of *March*, whilst the Sap rises, and before the Leaves shoot out from the Tree; for when the Spring is forward and the Leaves begin to appear, the Juice, by a long digestion in the Branch, grows thick and coloured, which before was thin and limpid. The Sap also distills not in cold weather, whilst the *North* and *East*-winds blow, nor in the night time, but very well and freely when the *South* or *West*-winds blow, or the Sun shine warm.

That Liquor is best that proceeds from the Branches, having had a longer time in the Tree, and thereby better digested and acquiring more of its flavour, than if it had been extracted from the Trunk.

Thus

Thus may many Hogheads soon be obtain'd: Poor people will (where Trees are plenty) draw it for two pence or three pence the Gallon. To every Gallon whereof, add a pound of refined Sugar, and boyl it about a quarter or half an hour; then set it to cool, and add a very little Yest to it, and it will ferment, and thereby purge it self from that little dross the Liquor and Sugar can yield: then put it in a Barrel, and add thereto a small proportion of *Cinnamon* and *Mace* bruised, about half an ounce of both to ten Gallons; then stop it very close, and about a month after bottle it; and in a few days you will have a most delicate brisk *Wine* of a Flavour like unto *Rhenish*. Its Spirits are so volatile, that they are apt to break the Bottles, unless placed in a Refrigeratory, and when poured out, it gives a white head in the Glas. This Liquor is not of long duration, unless preserved very cool.

Instead of every pound of Sugar, if you add a quart of Honey and boyl it as before, and adding Spice, and fermenting it as you should do *Metheglin*, it makes an admired Drink, both pleasant and medicinable.

Ale brewed of this Juice or Sap, is esteem'd very wholesome.

I cannot pass by naming this famous Li-
 quor *Chocolatte*, that was in a manner Meat
 and Drink to a great part of *America*, and
 is very much used in most parts of it. The
 principal Ingredient is the Kernel of the
Cacao-nut, a Fruit growing in those parts
 very plentifully, yet in so great esteem a-
 mongst them, that it was amongst the Na-
 tives as their Coin.

There grow sometimes thirty or forty
 of them in a husk. The nature of them is
 astringent, yet strengthening and nourish-
 ing. This Kernel being ground fine by a
Molinet, and so reduced to a Liquidity
 gives it the name of *Chocolatte*, *Atte* in the
American Language signifying Water.

To this Fruit they add *Achiote*, which
 is made of red Kernels or grains growing in
 round Husks on a Tree there by decocting
 them to a Pap, whereof they make Cakes.
 Also they add *Maiz*, a Grain growing in
 that Country; and *Macaxochite*, a kind of
 Pepper, which tempers the cooling pro-
 perty of the other Ingredients: They mix
 therewith the Flowers of the Tree *Xochi-
 nacatlis*, and *Tlixochitlc*, and a Gum that
 drops from a Tree they call *Holquahuitle*,
 which have excellent virtues with them;
 of all which the *Americians* compose a plea-

fant Drink, by decocting the same in Wine, or Milk, or other Liquidities: And without question, *Kernels, Grains, and Flowers* may here be found, that may make a counterfeit of it in taste, and equal to it in virtue. *Quære*, whether the Kernel of the *Wallnut* may not supply the defect of the *Cacao*, if well ground.

Notwithstanding that objection, that the Kernel of a *Wallnut* will retain its taste amongst whatever other materials it be used; Yet may time wear out that taste, and render it more pleasant, as we may observe in the savour that proceeds from Malt burn'd on the Kiln, &c. that the Beer or Ale will become more pleasant by keeping it, so will Tobacco that is hot in the mouth become more mild by age.

Various are the ways that the *Americians* use in Compounding the Cakes to make this excellent Liquor, as was observed by that great Scrutinist Mr *Gage*, in his Survey, of the *West-Indies*, where some put into it black Pepper, which he saith is too hot and dry; but the long red Pepper called *Chile* is good, which although it be hot in the mouth, yet in the operation is cool and moist.

Some compound with it, *White Sugar,*
Cinamon,

Cinamon, Cloves, Anniseed, Almonds, Hazel Nuts, (or rather *Filberds*) *Orejuela, Bainilla, Sapoyall, Orange-flower-water,* Some *Musk,* and as much of *Achiotte* as will make it look of the colour of a Red brick. But for the due proportions of these ingredients they must be added according as the nature of those that are to receive it requires: For some or other of these ingredients being of another nature than is the Nut it self, may be so increased in proportion that it may over ballance whatever inconvenience or ill effect may be occasioned by the Astringent nature of the Nut.

There is no doubt but our *Wallnuts* or *Filberds,* with the same correcting Ingredients, may make an excellent Liquor, near, if not equal, to the famous *Chocolatte,* *Wallnuts* and *Filberds* being cleansed from their Pill or Rind that covers them, are of an oily nature, and astringent as is the *Cacao.* We want only the knowledge of those things that are mentioned here by the names of *Orejuela, Bainilla,* and *Sapoyall,* or what may supply their natures and properties.

Another Receipt is in the same Survey delivered to this effect, To every hundred of *Cacao Nuts,* take two Cods, or Pods, of

Chile, a Handfull of *Anniseeds* and *Orejuela's*, and two of the Flowers called *Mechasuchill*, (by which its probable is intended *Tlilxochitle*, for great differences we find in the names of such things that are proper to that Country, which are written according to the various apprehensions of the language of those Natives by the Relators) or *Banilla*, or instead of this, six *Roses* of *Alexandria* beat to powder, (*Alexandrian Roses*, I have not heard of, but if *Austrian* *Roses* are here intended, they are of a dark red colour on one side of the leaf, like unto the Flowers of the *Tlilxochitle*) two drams of *Cinnamon*, of *Almonds* and *Hazel Nuts* (or *Filberds*) of each a dozen; of white *Sugar* half a pound; and of *Achiotte* enough to give it colour. If you desire to have a high scent with it, then you may use *Cloves* and *Musk* and *Orege Flower Water* in it, which are much used in the *West-Indies*, but some leave them out.

Some put in *Maiz*, or *Paniso*, a grain there growing, which is windy, and added only to encrease the Bulk of it, for the Makers and Sellers advantage.

Cinnamon is esteemed one of the best ingredients; it is hot and dry in the third degree, provokes *Urine*, comforts the *Kidneys*

neys and Reynes of those that are troubled with cold Diseases, and is good for the Eyes, according to this *Distich*,

Commoda & Urinae, Cinamomum, & Renibus affert

Lumina clarificat, dira Venena fugat.

Cinnamon helps Urine, cleanseth the Eyes, Purgeth the Reynes, from it all Venome flies.

Achiotte is piercing and attenuating, good for shortness of Breath, and stoppage of Urine; and therefore a very excellent corrector of the *Cacao*, or of *Wallnuts*, or *Filberds*.

The meaner sort of *Indians* make *Chocolate*, only with *Cacao's*, *Achiotte*, *Muiz*, and a few *Chiles*, with a little *Amiseed*; where the proportion of *Cacao's* exceeds all the other Ingredients. In this are *Achiotte* and *Chile* the great Correctors of the *Cacao*.

In the Confection of these Cakes all the Ingredients are to be dryed (except the *Achiotte*) and beaten, or ground in a Stone Mortar, or on a broad Stone; but you must be cautious that you over dry them not, lest you waste their Spirits or oily parts.

Of making other sorts of Wines.

The *Cinnamon*, *Pepper*, and *Anniseed*, may be first beaten, each of them by it self apart, and then the Nuts by little and little beat, always stirring them.

Then mix all the Ingredients together, and beat them warm, but not hot, and mix the *Achiotte* with them in the beating.

You must remember to searce all the Ingredients except the *Cacao*, and the *Achiotte*.

In this warm mixture you will find all to be almost Liquid, then make it up, and when it is cold it will be hard; As it cools you may either make it up in *Rolls*, or in *Molds* made for that purpose, or you may drop it on paper in small round *Cakes*, it will stick to Earth or Wood.

There are very good *Rolls* or *Cakes* of *Chocolatte* made in *England*, yet are the *Spanish* esteemed the best, because they are supposed to have the most skill and experience, and having the Materials in constant returns from *America*, but I have found but little difference between the best *English* and the best *Spanish*.

To adapt this for your *Pallate*, it may be done several ways, some slice or scrape it fine, and boyl it in water, only with a little *Sugar*; others mix half *Water* and
half

half Milk, and boyl it, and then add the powdered *Chocolatte* to it, and boyl them together. Others add Wine and Water: every way is very good; but be sure whilst it is boyling, keep it stirring, and when it is off the fire, whirr it with your hand Mill, That is, it must be mixt in a deep pot of *Tin, Copper, or Stone*, with a cover with a hole in the middle of it, for the handle of the Mill to come out at, or without a Cover. The Mill is only a *knop* at the end of a slender handle or stick, turned in a Turners Lathe, and cut in Notches, or rough at the end; they are sold at the Turners for that purpose; This being turned between your hands, whilst the pot is over the fire, and the rough end in the Liquor, causes an equal mixture of the Liquor with your *Chocolatte*, and raises a head or froth over it; then pour it out for use in small dishes for that purpose.

The proportion of *Chocolatte* to your Liquid matter, must be referred to your discretion, where there is only water more, and where water and milk less; you must add a convenient quantity of Sugar in the mixture. These Cakes of *Chocolatte* being kept in a dry place, will keep many years without any damage, but moisture is very injurious to them.

Tea

In *China*, plentifully grows a Plant they call *Thea*, on a Shrub much like unto our *Mirtle-tree* which bears a Leaf, that the *Chineses* gather in the Spring one by one, and immediately put them to warm in an Iron Kettle over the fire; then laying them on a finelight Mat, roll them together with their hands. The Leaves thus roll'd are again hang'd over the fire, and then roll'd closer together till they are dry, then put up carefully in Tin Vessels, to preserve them from moisture, Thus they prepare and preserve their best Leaves that yield the greatest rates, but the ordinary they only dry in the Sun; but in the shade is doubtless much better, the Sun having a great power to attract the vertue out of any Vegetable after its separation from its Nourisher.

Boyl a quart of clean water, and then add to it a few of these dry Leaves, which you may take up at once between the tops of your fingers, and let them thus stand in a covered Pot two or three minutes, in which time the leaves will be spread to their former breadth and shape, and yield their bitter, yet pleasant taste. This Liquor you may, if you please, edulcorate with a little Sugar, and make it an acceptable Drink. It's

It's probable some English Plants may yield a Leaf that may, thus ordered, make a pleasant and wholesome Drink. Several do use the Herb *Betony*, *Sage*, and other Herbs, after the same manner.

Mr *Gage* in his Survey of the *West-Indies* commends a Drink they there call *Atolle*, which is made of the Flower of *Maiz* boyled thick, with some addition of *Chile*, or long Pepper, *Cinnamon*, *Sweet-water*, *Amber* or *Musk*, and *Sugar*. The Flower of any of our *English* Grains, may, thus ordered, make a pleasant Drink.

CHAP:

C H A P. VI.

Of the profits that may arise from propagating and preparing the said Trees and Liquors, with the uses and vertues of them.

S E C T. I.

Of the profits arising thereby.

WE all very well know that *Advantage* is the great Mark aim'd at by most, and the Haven to which the greater part of mankind steer their Course. It is that which makes the toil and labour of so many ingenious and industrious men become easie and pleasant to them, and makes the Husbandman wait with so much patience for his long expected Crop; so that it is the profit and advantage that is to be expected from these Plantations that must encourage our Country-men to undergo the pains and expence that these will necessarily require; part of which advantages are before already in general toucht

tought at, but the more particular those which are most to be respected.

I am unwilling to trouble you with so exact an account as may be taken, how many greater and lesser Trees should be planted on an hundred or one thousand Acres of Land, at so many foot and inches distance, like what of late hath been published to the world, by an account to an *Acorn*, how many of them will plant one thousand Acres of Land at a foot distance, &c. having more of nicety than discretion in it; only you may conclude, that one hundred *Apple-trees* may be planted in an Acre of ground at about twenty foot distance; which is a good size for the *Red-streak*, that Tree never growing very large: the greater distance you plant them at, the fewer will be required: Consideration also must be had to the goodness of the Land; a dry hungry Soil requiring more Trees than a more liberal, because the Trees will rarely be very large; and the more they shadow the ground, the better, as before was observed.

The Rates and Prizes of Planting one hundred of these Trees, are also easily to be computed; you may have them at the Gardeners, brought home, planted, and staked,

ked, if they require it, for about five pound the hundred.

The yearly profit of the Herbage or Tillage of this Acre of Ground for the first seven years after planting, may well be employed in digging about the Roots of the Trees, carrying of convenient and proper Soil or compost for them, and maintaining the Fences, paying Duties, &c.

At seven years end, these one hundred Trees may, one Tree with another, yield a bushel of Apples each Tree: for although it is not to be denied, but that some of them may have perished, and others, as yet but young, raised in their places, yet may some of these Trees at seven years growth bear two or three bushels, and some a bushel and a half, which may in the whole make one hundred bushels, which at six pence *per* bushel is fifty shillings; the Herbage then will be worth at least twenty shillings *per annum*, although the Ground were worth less before it was planted: The eighth or ninth year your Trees may, one with another, and one year with another, yield you at least two or three bushels on a Tree, and sometimes more; which at so low a rate, your five pound first expended, and the forbearance of the profit

fit of your Land, and interest of your Money for seven years, will bring you in at the least five pound *per annum*, the Herbage being still allowed for the maintenance of your Plantation.

But if a good Fruit-year happen, and your one hundred Trees yield you four or five hundred bushels of Fruit, and those worth twelve pence or eighteen pence the bushel, it will, in one year, more than retaliate all your past labour, charge, and loss.

The like Calculation might be made of the profits arising from the propagating of several other sorts of the before-mentioned Fruits; but he that understands the method of planting them, will easily compute the advantage.

SECT. II.

Of the Uses of the said Vinous Liquors.

Besides, those well-known Uses of the Drinks before discoursed of, they are capable of being converted unto other very necessary Uses at such times as either the Countrey is full stocked with it, or that
you

you have any of it that may not be so pleasant and drinkable as you desire.

of making
Brandy.

For then you may, after due fermentation, extract *Spirits*, vulgarly called *Brandy*, in great plenty, and very excellent, quick, and burning.

It being usual for *Cider*, when old, to burn over the fire as *Claret*, or other French wine: for the older any Liquor is, if well kept, the more *Spirits* it yields. *Cider* also hath been observed to yield an eighth part of good *Spirit* at an indifferent age; but if close kept in a Refrigeratory for a year or two, it will yield much more.

Also some sorts of *Cider* yield a greater plenty of *Spirits* than others.

In *France* they make a very considerable advantage of the *Spirits* they distil out of their bad Wines, and refuse-Grapes; which may as well be done here out of our bad *Cider*, and especially out of a Liquor that may be pressed out of *Crabs* when thorow Ripe, and Mellow; it being observed, that the roughest Fruit yields the most *Spirits*.

Perry is observed to yield more *Spirits* than *Cider*, although *Perry* be the weaker Liquor and thinner of body. The same is observed of *Nants* Wines, although smaller than those of *Bordeaux*, yet yield more

more and better Spirits; the reason may be, that they part with their Spirits more easily, having thinner bodies; as some thinner *Cider* made of ordinary Fruit, breaks more Bottles than the Rich *Red-streak*.

Besides the great advantage that may be made as aforesaid, of the unpalatable Li-^{of making}quors. In case they have lost their Spirits, as it is usually term'd, or rather that their Spirits are contracted or fixed, that they rise not in distillation from the more Phlegmatick parts; Yet will these, or the most part of these Vinous Liquors make *Vinegar*, as hath been often experimented.

Take *Cider* good or bad, and put it up-^{Vinegar of} upon the *Rape*, as the *French* do their bad *Cider*. Wines, and it will produce excellent *Vinegar*, such that bears the name of *White-Wine-Vinegar*, and shall have a good colour and taste.

Take the Juice of *Red-Currants* through ^{Currant} Ripe, and add thereto an equal quantity ^{Vinegar.} of Water, and let it stand in the Sun about three or four weeks in a Barrel with the Bung-hole covered with a Tile-Shard only: then draw it off its Lee, and you have a delicate red *Vinegar*, fit for most Culinary Uses; you may make it of the Juice alone,

alone, without any addition of Water: but I have observed the mixt to be the sharpest. This also may you pass through the *Rape*, or a few *Malaga-raisins* old and rotten will serve, and doubtless it will be much the better.

Rape.

The *Rape* our Vinegarists make use of, they have out of *France*, it being only the Husks of Grapes close pressed, which have contracted an acidity, and is of the nature of *Leaven*, or *Yest*; which used in an overgreat quantity, ferments even to an acidity. It is yet, I suppose, to be experimented, whether our *English* Grapes, or some other Fruit, will not make a *Rape* equal in vertue to the *French*, which is somewhat difficult to obtain.

SECT.

SECT. III:

Of the Medicinal Vertues of Fruits, and Drinks made of them.

It is not to be expected that I should here give you an exact account of the effects these Fruits and Wines have on humane bodies, it more becoming a Graduate in the Medicinal Science. But to abate what any may enviously object against the salubrity of them, and to encourage our Country-men in the use of them, I shall here give you what have been generally observed to be the virtues of severall of our Country Fruits and Wines.

As to Gardens and Orchards themselves, *of Gardens and Orchards.* they have been esteem'd the purest of humane pleasures, and the greatest refreshments of the Spirits of man: for the exercises of planting, grafting, pruning, and walking in them, very much tendeth to Salubrity, as also doth the wholesome Airs found in them, which have been experienced not onely to cure severall Distempers incident to our nature, but to tend towards the prolongation of life.

P

For

For nothing can be more available to health and long life, than a sedate quiet minde, attended with these Rurall delights, a healthful Air, and moderate Exercise, which may here be found in all seasons of the year.

*Thrice happy they who these delights pursue,
For whether they their Plants in order view,
Or overladen boughs with props relieve.
Or if to forreign Fruits new names they give,
If they the tast of ev'ry Plum explore,
To eat at second course, What would they
more?*

*What greater happiness can be desir'd,
Than what by these diversions is acquir'd?*

Rapinus.

*Of Apples
and Cider.*

The Fruits of the Earth, and especially of Trees, were the first Food ordained for man to eat, and by eating of which (before flesh became his meat) he lived to a far greater age, than since any have been observed to have lived. And of all the Fruits our *Northern* parts produce, there's none more edible, nor more wholesome, than Apples; which by the various preparations

rations of the Cook, are become a part of our Table-entertainment almost throughout the year, and are esteem'd to be very temperate and nourishing.

They relax the Belly, which is a very good property in them; but the sweet more than the sharp.

They help Concoction, eaten after meat with a little Bread: you may be confident that an Apple eaten after supper, depresseth all offensive vapours that otherwise would offend the Head, and hinder sleep.

Apples roasted, scalded, or otherwise prepared, according to the skill of the Operator, are good in many hot Diseases, against *Melancholy*, and the *Pleurisie*; the decoction of them also with the Pulp thinly mixt, cures the painful *Strangury* or difficulty of *Urine*, and *Running of the Reins*; and edulcorated with Sugar, is good to abate a tedious *Cold*.

But *Cider* is much to be preferr'd, it *of Cider*, being the more pure and active part separated from the impure and feculent; and without all peradventure, is the most wholesome Drink that is made in *Europe* for our ordinary use, as before is observed.

For its specifick Vertues, there is not any Drink more effectual against the *Scur-*

vy. It is also prevalent against the *Stone*, and by its mundifying qualities, is good against the Diseases of the *Spleen*, and is esteem'd excellent against *Melancholy*.

of Pears.

Pears are near of a nature with *Apples*, and are of as great use in the Kitchen and Conservatory: they nourish more, especially the *Warden*, which baked, and well sweetned with Sugar, is held to be one of the best Restoratives to a Consumptive man.

of Perry.

The Wine made of them is more full of Spirit than that of the *Apple*, and esteem'd a greater Cordial.

of Grapes

The uses and virtues of *Grapes* and their Wine, are so generally known, that it's needless to mention them.

of Quinces.

Although *Quinces* yield no Vinous Juice pleasant to the Palate, yet are they not to be rejected in our Plantation or Vineyard, for their excellency in the Kitchen and in the Conservatory.

These Fruits, any ways preserved or prepared, are an excellent astringent and corroborating Medicine.

of Cherries.

The *Cherry* is a most innocent Fruit, and rarely hurts any, unless eaten in too great a quantity.

The Wine made of them is a very pleasant and proper Wine for the Summer-season, cooling, strengthning, and stirring up a good appetite to Meat.

Plums are useful in the Kitchin, and of Plums. many sorts of them excellent to preserve.

Eaten raw, are cooling, and hurt not, unless in too great a quantity.

The Wine of them being well purified, is near in virtue to *Cherry-wine*.

Our English *Currans* are sharp, but very of Currans. cooling, astringent, and corroborating, and very wholesome, eaten raw: eating too many of these, is not to be feared, they wearying the mouth before they satiate the stomach.

The Wine that is made of them is one of the most pleasant and wholesome Wines made in this Isle; its specifick Virtues are not yet vulgarly known, but questionless excellent against the *Scurvy*.

Gooseberries are cooling, and open the of Gooseberries. Belly; the like vertue may be expected from its Wine. There is no Fruit more innocent than this, rarely injuring any by the over-eating of them.

They are for a long season useful in the Kitchin, few Families being ignorant of their worth.

of Ras-
berries.

After several other Summer-fruits are past, *Rasberries* come in use for a fine cooling repast; their Wine being one of the pleasantest Liquors that can be obtained, and the most proper for the Autumnal season, before *Cider* is become palatable.

of Straw-
berries.

Strawberries are a pleasant cooling Fruit, and the distill'd Water of them excellent against the *Stone; Gravel, or Strangury.*

of Apri-
cocks and
Peaches.

Apricocks and *Peaches* are not so commendable in this cold Climate for their Medicinal Virtues, as they are for their pleasant taste, and excellency in the Kitchen and Conservatory.

of Mal-
berries.

Unripe *Mulberries* crude or dried, are of an astringent quality; but if through ripe, they relax. The Juice of this Fruit is Anti-scorbutical, and therefore used to wash the mouths of such that are affected with that Disease.

of other
Fruits.

Figs, Walnuts, Filberds, Medlars, &c. are not within the limits of this discourse, therefore I need not trouble the Reader with any thing of them.

of Meth-
eglin.

Metheglin, as it is in strength, so it is in virtue, warming, animating, and mundifying; restoring lost Appetite, openeth the Stomach, softneth the Belly; is good against the *Consumption* of the Lungs, and
all

all Coughs and Colds; against *Quartan Agues*, and all Diseases of the Brain, as *Epilepsies*, *Apoplexies*, &c. it cureth the *Yellow Jaundies*: and there is no better Drink against the severe pain of the Gravel in the Reins, or Stone in the Bladder; neither is there any Liquor more conducing to Long Life than this and *Cider*, as the many Drinkers thereof can witness.

The Vertues of the Liquor or Blood of the *Birch-tree*, have not long been discovered, we being beholding to the learned *Van Helmont* for it; who in his Treatise of the Disease of the *Stone*, hath very much applauded its virtues against the affects of that Disease, calling the natural Liquor that flows from the wounded Branches of that Tree, the meer Balsom of the Disease of the *Stone*. Ale brewed therewith, as well as the Wine that is made of it, wonderfully operates on that Disease.

of Birch-wine.

Also *Birch-wine* is a great opener, and reputed to be a powerfull Curer of the *Ptisick*.

Chocolatte is a very great Restorative, comforting and cherishing the inward parts, and reviving natural strength, and hath a wonderful effect upon Consumptive and antient people, being drank hot in a morning.

of Chocolatte.

It is good in all Colds and cold Distempers, and having so equal a mixture of so many ingredients of great virtue, there is scarce any Distemper that proceeds from an error in the first or second digestions, but may, by the use of this Liquor, or rather diet, be in some measure corrected if past; or absolutely prevented, if taken and used before-hand, being so homogenous to most natures, and injurious to none. The too powerful virtues of some of them being checkt in their operation by their moderate Correctives: insomuch that this Medicinal diet or repast doth deserve the esteem of a *Panacea* or general Medicine for most distempers that attend us (sometimes to our Graves.) As for Colds, it is well known, they are the first Causes of most Diseases in Man, discomposing the whole Microcosm; In which Distemper little of Shop Medicine is to be used, and a better than *Chocolatte*, is not yet Discovered.

of Thea.

The Virtues of *Thea* are very much applauded, throughout the Countries where it is so much drank, against all affects of the Head, and obstructions in the Stomach, of the *Spleen* and the Reins.

It drieth up all vapours that offend the Head, and annoy the Sight.

It

It digesteth any thing that lieth heavy on the Stomach, and restoreth lost Appetite.

In brief, it is confidently affirmed throughout the vast Regions where it is plentifully drank, that the drinkers of this Liquor are never troubled with the *Stone* or *Gout*.

The Virtues hereof are more largely discoursed of in the several Histories of those parts where it is propagated, and in a Paper printed by Mr. *Thomas Garway* in *Exchange-Alley*, near the *Royal Exchange* in *London*, the principal Promoter and Disperfer of this Leaf and Liquor.

A



*A Corollary of the Names and
Natures of most Fruits grow-
ing in England.*



His Tract of the propagating of Fruit-Trees, and extracting, preparing, and preserving their Vinous Juices, cannot be compleat without some account of that variety of Fruits this Country produceth; which is a task beyond my ability exactly to perform; every County, and many parts of each County, producing some sort or other of Fruit not known in the next; or at least giving them other names, so that you cannot expect any exactness herein. Only a Catalogue of the most general and useful kinds that are either fit for the Table, Kitchin, Confectionary, or the Press, with some short Notes or Observations on their specifick natures or virtues.

SECT.

SECT. I.

Of Apples.

There is no Fruit growing in *England*, more useful or profitable than the Apple; whereof there are many sorts.

The *Aromatick* or *Golden Russeting* hath no compere, it being of a Gold-colour Coat, under a Russet hair, hath some warts on it, its Flesh of a yellow colour, its form of a flattish round. This Fruit is not ripe till after *Michaelmas*, lives over the Winter, and is without dispute the most pleasant tasted Aple that grows; having a most delicate Aromatick hautgust, and melting in the Mouth.

The *Orange-Apple*, so called from its likeness in colour and form to an Orange, deserves the next place, having a fine rough Gold-coloured coat, resembling the Golden Pippin, only fairer; lives long, and is of a very pleasant tast.

The *Golden-Pippin* is, as was said, smaller than the *Orange-Apple*, else much like it in colour, tast, and long keeping.

The *Russet-Pearmain* is a very pleasant Fruit, continuing long on the Tree, and in the

the Conservatory; partakes of both *Russeting* and *Pearmain* in Colour and Taste, the one side being generally *Russet*, and the other streak'd like a *Pearmain*.

The *Pearmain*, whereof there are two or three sorts, is so excellent an Apple, and so well known, that no more need be said of it; only the larger sort is more pulpy than the smaller, and keeps not so well; neither is the *Summer-Pearmain* so good as the *Winter*. They are all very good *Cider-Apples*, but not to be preferr'd to your *Cider-Plantation*, being no great Bearers.

Pippins, which are of several sorts, take their name from the small spots or pips that usually appear on the sides of the Apple. Some are called *Stone-Pippins*, from their obdurateness. Some are called *Kentish-Pippins*, because they are a Fruit that agrees well with that soyl; others are called *French-Pippins*, having their original from *France*; the *Holland-Pippin* from the same cause, and the *Russet-Pippin* from its *Russet* hew. They are generally a very pleasant Fruit, and of a good Juice, fit for the Table, Conservatory and Kitchen; but not so fit for our *Plantation* for *Cider*, as the more ordinary Fruit, being but tender bearers.

The *Kirton-Pippin* is one of the best sorts of Table-Fruit of that season, which is from *Michaelmas* to *Alhallantide*, and yields very good *Cider*.

The *Carlisle-Pippin*, the *Bedford-Pippin*, and the *Bridgwater-Pippin*, are much commended for excellent Table-Fruits.

The *Golden-Rennet* is a very pleasant and fair Fruit, of a yellow Flesh, a good bearer, and yields a very good Juice, and to be preferred in our Plantation for all occasions.

The *Lincoln-Rennet* is preferred by some before any of the other Rennets.

The *Leather-Coat*, or *Golden-Russeting*, as some call it, is a very good Winter-Fruit, living long, and of a good firm and yellow Flesh.

The *Green-Russeting* is a tough and hard Fruit, long lasting, and of a very pleasant hautgust.

The *Red-Russeting* is of a lesser size, an excellent Apple, and long lasting.

The *John-Apple*, or *Deux-ans*, so called from its durableness, continuing two years before it perisheth, is a good relisht sharp Apple the Spring following, when most other Fruit is spent; although there are some Pippins will out-live them. The

Deux-

Deux-ans are fit for our *Cider-Plantation*: Although they are a dry Fruit, yet they yield a very good Juice, and not so little as may be imagined, and that very good and pleasant, so they be not ground before *January*; they are great Bearers.

The *Marigold-Apple*, so called from its being marked in even stripes in the form of a *Marigold*; sometimes the *Onyon-Apple*, from the reddish brown Colour, resembling a well-coloured *Onyon*; sometimes called the *Kate-Apple*, and sometimes *Johns Pearmain*, or *Joanes Pearmain*, from its likeness to a *Pearmain*) is a very good Fruit, long lasting, and fit for the Table, Conservatory, Kitchen or the Press, yielding a very good Juice, and to be propagated in your *Cider-Plantation*, bearing every other year, even to admiration; the intervening years but a few, There is another sort of them that are called *Summer Marigolds*.

The *Harvey-Apple*, and the *Round-Russet-Harvey*, are both excellent Fruits for the Table; and were they great bearers, no doubt but they would yield excellent Liquor.

The *Queen-Apple*, those that are of the Summer, are excellent *Cider-Apples* mixt with other, being of themselves sweet. The

Winter-

Winter-Queening is a good Table-Fruit.

The *Paradise-Apple* is a curious Fruit, produced by grafting a *Permain* on a Quince.

The *Pome-Roy*, is a Fruit of a high name, a good taste, a pulpy substance, and not yielding much Juice; yet that which is, is very good.

The *Pome-water* is an indifferent good lasting Fruit.

The *Golden Doucet*, or *Golden-ducket*, is much commended.

The *Westberry-Apple*, taking its name from *Westberry* in *Hampshire*, from whence they are much dispersed into the adjacent parts, is one of the most solid Apples that grows, of a tough rind, and obdurate Flesh, sharp and quick taste, long lasting, and yields a very excellent and plentiful Juice, making a *Cider* equal to the best of Fruits, and for the Kitchen few or none exceeding it.

The *Gilliflower-Apple* is of a pleasant Hautgust, and long lasting, of a thick Rind, and hard Core, well strip'd, and good for *Cider*, making an excellent mixture.

Of early Apples, the *Margaret-Apple* is the best and most early, usually Ripe about
St.

St. Margarets day in June. It is a fair and beautiful fruit, and of a pleasant taste and scent, not to be match'd at that season for the Table and Kitchin, and deserves a more general propagation.

The *Jeniting* is next to be esteemed, as well for its early ripening as its pleasant taste.

The *Devonshire Quarrington* is also a very fine early Apple.

The *Summer-Pippin* is a very pleasant Apple in colour and taste, and as necessary for all manner of uses, yielding a delicate Juice.

The *Codling*, so called from the use it is put unto, is a very necessary Apple in the Kitchin, and makes a good Summer-Cider.

The *Claret-wine-Apple* is fair, and yields plenty of a pleasant sharp Juice, from which it takes its name, and not from the Colour, it being a white Apple; but makes a rich Vinous Liquor, which well ordered excels most of other *Ciders*, especially with a mixture of sweet Apples.

The *White-Wining*, is a small white Apple; the Tree is a great bearer, and the fruit juicy and pleasant, but soon perishing, and the *Cider* made thereof small,

The

The *King-Apple*, though not common, yet is by some esteemed an excellent Apple, and prefer'd to the *Jemmiting*.

The *Famagusta* is also in the number of the best early Apples.

The *Giant-Apple* is a large Fruit and well tasted, and the best of any Summer-Apple for Culinary uses.

The *Bontraduc* or *Good Housewife*, is the largest of Apples, a great bearer, and good for the Kitchen, and makes good Summer-Cider.

The *Cats head*, by some called the *Gono-further*, is a very large Apple, and by its red sides promises well for Cider.

The *Spicing*, of all Apples that are marked so red, is the meanest: but whether this *English* Apple so called, be the same that bears the like name in *France*, whereof there are Plants brought thence, I cannot determine.

The *Gennet Moyle* is a pleasant and necessary Fruit in the Kitchen, and one of the best Cider-Apples. The Fruit is well marked, and the Trees great bearers.

The *White Must* is a very pleasant Apple, yielding great plenty of Vinous Liquor, bearing this name in *Herefordshire*, and is thought, by some, to be the same

Q

with

with the *Golden Runnet* in *Hampshire*.

The *Red Must* is also of the same nature.

The *Fox-whelp* is esteemed among the choice *Cider*-fruits.

The *Bromsbury Crab*, although little better than the common, yet kept on heaps till *Christmas*, yields a brisk and excellent *Cider*.

Eleots are Apples much in request in those *Cider*-Countries for their excellent Liquor, but not known by that name in several parts of *England*.

The *Stocken* or *Stoken-Apple* is likewise in esteem there, although not known by that name in many places.

The *Bitter-Scale* is an Apple much esteemed of in *Devonshire*, for the excellent *Cider* it yields without the mixture or assistance of any other.

The *Deans-Apple*, or the name at least, is there well esteemed of for the same reason.

As also is the *Pleasantine*, perhaps the same with our *Marigold*.

The *Pureling*, or its name, is not usual, but in the same parts.

The *Violet-Apple* is of a most delicate aromattick taste, which occasioned the name;

name; it is a Fruit not usually met withal; it's of a greenish colour, and not of a very firm body. Many give this name to other Fruits, which corruptly are called

Fillets, whereof also there are the Summer and the Winter, in very high esteem for their delicate Vinous Liquor they yield: The *Summer-fillet* for the present, and the *Winter-fillet* for lasting *Cider*.

The *Underleaf* is a *Herefordshire* Apple of a *Rhenish-wine* flavour, and may be accounted one of the best of *Cider-Apples*.

The *Arier-Apple*, *Richards*, or *Grange-Apples*, are also reckoned amongst the best *Cider-Apples*.

The *Coling* and the *Olive-Apples*, are in those parts much esteemed of for the same uses.

But above all *Cider-fruit*, the *Redstreak* hath obtain'd the preference, being but a kind of *Wilding*, and though kept long, yet is never pleasing to the Palate. There are several sorts of them, the *Summer* and the *Winter*, the *Yellow*, the *Red*, and the more *Green Redstreak*; some sorts of them have red veins running through the whole body of the Fruit, which of necessity must give the *Cider* made thereof the richest Tincture.

A Catalogue of Fruits.

If they are kept till they are mellow, the *Cider* at the first is very luscious, if ground early, then is the *Cider* more racy.

The *Quince-Apple*, so called from its colour, and is a very good Table-fruit, and then not bad for *Cider*.

The *Non-such* is a long-lasting Fruit, good at the Table, and well marked for *Cider*.

The *Angels Bit* is a delicate Apple for taste, and the Tree or its name proper to *Worcestershire* and those parts.

The *Peeling* is a very good lasting Apple, and makes very good *Cider*; it seems to be an antient *English* Fruit, being found in old Orchards, and agrees very well with this Air, and is a great bearer.

The *Oaken-pin*, so called from its hardness, is a long-lasting Fruit, and yields excellent Liquor, and is near of the nature of the *Westbury* Apple, though not in form.

The *Greening* is also another old *English* Fruit of a green colour, and keeps to a second year, and is a good Apple.

The *Lording* is a fair, green, and sharp Apple, a constant bearer, being a hardy Fruit, and for the Kitchen onely, to be preferred.

Sweet

Sweet Apples there are of several sorts, and their names change in every place; so that they are rather known by their colour and size, than their names. There is one sort called the *Honey-comb* in some places, which is a fair Apple, and by mixture with other Fruit, makes admirable *Cider*; so doth the *Small Russet-sweet Apple*, whose Tree is always cankerous.

There is a curious Apple newly propagated, called *Pome-appase*; the Fruit is small and pleasant, which the Madams of *France* carry in their Pockets, by reason they yield no unpleasant scent. The Tree is a very great bearer: I suppose this is that which is called the *Ladies Longing*.

The *Fig-Apple* is also lately propagated in this Country, the Tree yielding no Blossoms, as is usual with all other Apple-trees; nor hath the Fruit in it any Core, or Kernel: in these resembling a Fig, and differing from other Apples, yet is a very good Table-fruit, and lasting.

The *Creeper*, so called from the Tree that grows low, trailing its Branches near the ground; the Fruit is also a good Fruit.

The *Indian-Crab*, it's a Fruit I have not yet seen, but am informed there is such a

Tree in *Hampshire* that was brought from *America*, where it grew in the Woods as our *Crabs* do. The Fruit is reported to be a very pleasant Fruit.

The *Sodome-Apple*, or *Bloudy Pippin*, is a Fruit of more than ordinary dark colour, and is esteemed a good Apple.

The *Moscovy-Apple* is a good Winter Fruit, and a great curiosity, for that it is transparent.

The Summer *Belle & bon*, is a fair Apple, and the Tree a good bearer; but the Fruit is not long-lasting; for a short time it's a good Table-fruit, and makes indifferent good *Cider*.

The Winter *Belle & bon* is much to be preferred to the Summer in every respect.

The *Pear-Apple* is a curious pleasant Apple of a rough coat, but the Tree no great bearer.

There are also the Apples called *Esquire Vernons Apple*, the *Grutchling*, the *Pear-Russet*, the *Stoak-Apple*, the *Suffolk-Apple*, and the *Nonsuch-Apple*, which are highly commended for the Table and the Kitchen, and then cannot be bad for *Cider*.

The *Pellmell-Apple*, the *Thrift-Apple*, and the *Winter Glary*, are excellent good living Apples.

Crabs

Crabs, when kept till they are mellow, may be reckoned amongst the Apples, and ground with other mellow Fruit, do much enrich the *Cider*; and is the best Refiner of foul *Cider*.

The *Costard*, *Parsley-Apple*, the *William*, the *Cardinal*, the *Shortstart*, the *Winter-Reed*, the *Chestnut-Apple*, and the *Great Belly*, are in many places Apples of esteem: but being not acquainted with them, I can onely name them. Many more there are both *French* and *English*, which either are not made familiar to us, or else are peculiar onely to some places, or their names changed in every County, or else are of small account; which to enumerate would be tedious and useles.

SECT. II.

Of Pears.

The next in esteem are *Pears*, so called from their *Pyramidical* form; whereof there are so great variety, that the Kitchen and Table may be furnished throughout the year with different Species.

The *Early Susan* is the first ripe, being a small round Pear little bigger than a large *Cherry*. The Colour of this Pear is Green, and taste pleasant.

The *Margaret*, the *Maudlin*, the *Cluster-Pear*, the *Lentball Primett*, the *Sugar*, the *Madera*, the *Green Royal*, *July Pear*, *St. Laurence*, *Green Chesil*, and many other early Pears are in esteem for the Table in *July*. But after them you have

The *Windsor*, the *Greenfield*, the *Summer-Bergamot*, the *Orange*, the *Sovereign*, several sorts of *Katherines*, whereof the red *Katherine* is the best: The *Denny-pear*, *Prussia-pear*, *Summer-Poppering*, *Lording-pear*, *Summer Bon-Christien*, the *Orange-Bergamot*, *Hampdens Bergamot*, *Bezi de Hery*, the *Violet-pear*, the *Painted pear*, so called from its delicate strip'd colours; the
Rosewater-

Rosewater-pear, the *Shortneck*, so called from the shortness of its form and tail; the *Binfield* or *Dove-pear*, the great *Musk-pear*, the great *Russet of Remes*, *Amadotte*, the *Roussellet*, *Normich-pear*, the *Pomegranate-pear*, so called from its shape, and the *Edward-pear* very pleasant, the *Meola a la Busk*, *Crown-pear*, *St. Michaels-pear*, *Carlisle-pear*, *Roshea*, one of the best of Pears: *King Catherine*, *Orenge Bergamot*, *Hampdens Bergamot*, *Rousetlet-pelit*, *Rousetlet Hastife Musk Blanquet*, *Dove Musk Bergamot*, *Queen-pear*, *White Robert*, and the *Desireable pear*, are all very good Table-fruit for their season, before, or at *Michaelmas*.

The *Bævre du Roy* is esteemed, for the Table, the best of all Summer-pears; is a fair brown Pear, and excellent in its season, melting in the mouth, and thence called the *Butter-pear*, and bears well against a Wall. The *Green Bævre-pear* is more green and larger than the former.

The *Lewis-pear*, or by some the *Maiden-heart*, is the best of all Pears to dry, and is a good bearer.

The *Bloody-pear* is a good Pear, taking its name from the Red Juice it hath within its skin, and is a very great curiosity.

The

The *English-warden*, the *French-warden*, the *great Spanish-warden*, the *White-warden*, the *Stone-pear*, the *Arundel-pear*, the *Bishops-pear*, the *Caw-pear*, *Winter-musk*, *Cashurine*, the *Lady Hattons-pear*, the *Quince-pear*, the *Davis-pear*, *Mallborne-pear*, the *red Roman-warden*, the *Green-warden*, and *Winter-norwich*, are excellent baking Pears.

The *great black Pear of Worcester*, or *Parkinsons Warden*, is to be prefer'd to all other Pears to bake, it bears very well against a Wall; the Pears usually weighing twenty ounces, and sometimes more, each Pear; and being twice baked with Sugar, exceed most Fruits.

The *Diego-pear*, *Monsieur-John*, the *Gilly-flower-pear*, *Pear-Royal*, *Bowden-Musk*, *French Violet*, *Mogull-pear*, *Virgo*, *Lair*, *Sovereign-pear*, *Okenbury-pear*, the *White Worcester*, *Rouset-dorine*, *Montpelier*, *Imperial-pear*, *Pear de Lyons*, a rare Winter pear for the Table, *Bergamot Bougee*, *Rowling-pear*, *Balsam-pear*, *Bluster-pear*, *Emperours-pear*, the *Queen-Hedge-pear*, *Frith-pear*, *Brunswick-pear*, *Bings-pear*, *Winter-Poppering*, *Thorn-pear*, the *Portail*, the *Nonsuch*, *Dionier*, *Winter-Katherine*, *Clowe-pear*, *Lambart-pear*, *Russet-pear*, *Saffron-pear*, the *Petworth-pear*, or *Winter-Windsor*,

for, *Winter-Bergamot*, *Pound-pear*, and *Hundred pound-pear*, *Long-Bergamot*, *Burnt-cat*, *Lady-pear*, *Ice-pear*, *Dead mans pear*, *Bell-pear*, the *Squib-pear*, *Spindle-pear*, *Dogoniere*, *Virgin*, *Gascoign-bergamot*, *Scarlet-pear*, and *Stopples-pear*, are all very good *Winter-pears*, and keep throughout the old year.

Pears that usually keep until the succeeding Spring, are the *Winter-Bon-Christien*, the best of *Winter-pears*; the great *Surrein*, or *Serene*, *Little Dagobert*, the *Double-blossome-pear* the longest liver of all, and tastes very well in the Spring; the *Oak-pear* the great *Kairville*, the *Little black Pear of Worcester*.

Pears that are esteemed for their *Vinous Juice* in *Worcestershire* and those adjacent parts, are the *Red and Green Squash-pears*, the *John-pear*, the *Green Harparj*, the *Drake-pear*, the *Mary-pear*, the *Lullam-pear*: but above the rest are esteemed the *Bosbury* and the *Bareland-pears*, and the *White and Red Horse-pear*.

As for the *Turgovian-pear* that yields that most superlative *Perry* the world produces, mentioned in the *Pomona* of the most ingenious *Mr. Evelin*, I only wish it were more generally dispersed.

Mr.

Mr *Rickets* of *Hoxten*, or *Hosden*, hath a Pear he calls *Cashio Bury*, a very excellent, and to be admired Fruit for its Juice.

SECT. III.

Of Cherries.

In the next place the *Cherry*, so called from the French word *Cerises*, is admitted to be a Fruit of general use, especially for the Palate, off the Tree, and for the Conservatory. They are ripe on the Trees but three Summer Months, *May*, *June*, and *July*; afterwards to be had onely in the Conservatory.

In *May* are the Cherries usually called from the name of this month: The *Duke* and *Archduke* against a good Wall are most years ripe before the end of the month.

In *June* are ripe the *White*, *Red*, *Black*, and *Bleeding Hearts*, *Lukeward*, one of the best of *Cherries*; the early *Flanders*, the *Cluster-Cherry* bearing three, four, or five usually on a stalk; the *White-Spanish-cherry*, the *Amber-cherry*, the *Black-Orleans*,
the

the *White Orleans*, *Nonsuch*, the *Spanish-black*, and the *Naples*.

In July usually succeed the *Late Flanders*, common *English-cherry*, *Carnations* a delicate Fruit for the Table or Conservatory; *Morella*, or the great bearer, being a black Cherry fit for the Conservatory, before it be through ripe, but bitter eaten raw; onely it is to be esteemed, being the last Cherry that hangs on the Tree; the *Morocco-cherry*, *Great Amber*, the *Egriot*, *Bigarreaux*, the *Prince-Royal*, the *Portugal-cherry*, the *Kings Cherry*, the *Crown-cherry*, and the *Biquar*, both ill bearers: the great *Purple-cherry*, one of the best and latest Cherries, and a good bearer; the *Ounce-cherry*, so called from its fairness; the *Dwarf-cherry*, so called from the smalness of its Twigs and Fruit: there is also the common *Black Cherry*, much in esteem for its Physical properties.

SECT.

SECT. IV.

Of Plums.

There is great variety of *Plums*, and they also appropriated to several uses; they continue longer on the Trees than *Cherries*, and are a more pleasing, but not a more wholesome Fruit.

The first ripe are the *Red*, *Blue*, and *Amber*, *Primordian-plum*, the *Violet*, *Red*, *Blue*, and *Amber*, the *Matchless*, the *Black Damasin*, the *Morocco*, the *Barbery*, the *Myrobalan*, the *Apricot-plum* a delicate Plum that parts clean from the Stone; the *Cinnamon-plum*, the *Kings-plum*, the *Spanish*, the *Lady Elizabeth-plum*, the *Great Mogul*, and the *Tawny-plum*.

After them are the *White*, *Red*, and *Black Pear-plums*; the two former little worth, but the *Black* a pleasant Fruit; the *Green Osterly-plum*, the *Muscle-plum* one of the best of *Plums*, the *Catalonia-plum* much like the former; the *White Prunella*, the *Black Prunella*, the *Bonum Magnum* a fair yellowish green Plum, excellent for the Kitchen and Conservatory; the *Wheaten-plum*, the *Lawrence-plum* an ill tasted Fruit; the

the *Bole-plum*, the *Cheston-plum*, the *Queen-Mother-plum* one of the best sort, the *Dyaper'd-plum*, the *Marbled-plum*, and the blew *Marble*, the *Damasco-plum*, the *Foderingham-plum*, the *Blue and Green Pedrigo*, and the *White* not so good a Fruit, the *Verdoch* good only to preserve, the *Peach-plum*, the *Imperial-plum*, one of the largest of Plums, the *Gaunt-plum*, the *Denny-plum*, the *Turkey-plum*, the *Red*, *white*, and *Green Peascod-plums*, the *White*, *Yellow*, and *Red Date-plums*, the *Nutmeg-plum*, the *Great Anthony*, the *Jane-plum*, the *Prince-plum* the last ripe, and good for several uses. Many other sorts of Plums there are, whose names are uncertain, and are therefore here omitted.

There are several other sorts of Plums, as, the *Fryars-plum*, *Becket-plum*, *Chrystal-plum*, *White Muscle*, *White-prunella*, *French white Nutmeg*, *Catholick-plum*, *Turkey-plum*, *Amber-plum*; and the *Grass-plum*, all of them curious and well tasted Fruits.

There are two sorts of *Damsons*; the *Black*, which is the most necessary and best of all Plums; and the *White*, which is not so good as the *Red*: these are natural to our *English Soil*, as are the *Black and White Bullis*; whereof the *White* are pleasant

pleasant in *October* and *November*, and the Black necessary for the Kitchen in *December*, they usually hanging on the Trees till *Christmas*.

SECT. V.

Of Apricots, Peaches, Malacotunes, and Nectarins.

The *Apricot*, so called from *Apricus*, delighting in the Sun, is a kind of *Plum*, but far exceeding any of the former in every respect; whereof

The *Algier-apricot* is early ripe; it's a small round and yellow Fruit ripe in *June*.

The *Masculine-apricot* is a better and earlier Fruit than the former, but not so good a bearer.

The long, white, and *Orange-apricot* differ from the common *Apricot*, as their names tell you. There is also the *Turkey-apricot*.

The great *Roman-apricot* is the largest of all the kinds, and therefore best for the Kitching and Conservatory.

Peaches, from the French name *Pesche*, are

are of longer continuance than *Apricots*, and of a richer and more noble gust and flavour.

The most early are the *Nutmeg*, both *White* and *Red*; the *Troy-peach*, next the *Savoy-peach*, *Isabella*, *Persian*; the *White-Monsieur*, *Newington*, *Bellice-peach* to be prefer'd to the former; the *Queen-peach*, and the *Magdalen-peach*, and the *Double-blossome-peach*.

After them come the *Rambouillet*, the *Musk-peach*, and the *Violet-musk*, both usually esteem'd the best of *Peaches*; the *Crown-peach*, the *Roman-peach*, *Man-peach*, *Quince-peach*, *Grand Carnation*, *Portugal-peach*, *Bordeaux-peach*, late *Newington*, *Des-pot* being spotted, *Verona*, *Smyrna*, *Pavie peach*, and the *Colerane-peach*; one of the latest is the *Bloody Monsieur*, an excellent *Peach*, very red within and red without.

The *Modena*, *Orleans*, *Red Peach*, *Morrello-peach*, *Navar* and *Alberges*, are very good Fruit, and come clean from the Stone.

There are several other sorts of *Peaches*, as the *Arundel*, the *Admirable*, the *Syon-peach*, the *Uvedale-peach*, the *Superintendent*, the *Eaton-peach*, the *Laurence-peach*, the *Mountaban*, the *Perseck*, the *Minnion*,
 R the

the *Perpree*, the *Supreme-peach*, and the *Arabian-peach*, all of them very curious Fruit.

But the *Ricket-peach* hath lately gained the Reputation of being the best of Peaches in the Judgment of all Judicious Fruitists.

Of *Malacotonnes*, as much as to say, Apples with cotton on them, there are two or three sorts, but being late ripe and old Fruit, they are not much valued.

Nectarines, of the favour and taste of *Nectar*, are very pleasant Fruit, whereof the *Red Roman* is the fairest, and by most esteem'd the best and most delicate Fruit for its gust, that this Island yields: By some the *Muroy* is prefer'd, and by some the *Tawny*, neither of them so large as the *Red Roman*.

Then there is the *Red* or *Scarlet Nectarine*, an excellent Fruit, and by many much set by, because it leaves the Stone.

Besides all which, there are the *Great Green*, the *Little Green*, the *Cluster*, the *Yellow*, the *White*, the *Paper-white*, the *Painted*, the *Russet*, the *Genoa*, the *Argol*, the *Persian*, and the *Orbine Nectarines*, that are very good Fruit, but not to be compared to the former.

SECT. VI.

Of Grapes.

The *Grape* is the most universal, and yields the best Juice of any Fruit whatsoever; several sorts of them prosper very well with us.

Of which the *White Muscadine* is the best, bearing well, large Bunches and fair Fruit, ripens in most years against a *South-wall*, and fittest for *Espaliers* or a *Vineyard*.

The *Small black Grape*, by some called the *Cluster-Grape*, and by some the *Currant-Grape*, is the first ripe, bears well: the Bunches are small, but the Grapes so thick that you cannot put a Pin between them, and is a very pleasant sweet Grape, and is as fit for your propagation as any Fruit almost that grows.

There is another sort of them without Stones.

The *Canada* or *Parsley-Grape*, so called from the Countrey whence it came, and from the form of its Leaf, which is very much divided and jagged like a *Parsley-leaf*; it is ripe somewhat late, but a good Fruit.

The *Black Orleans* is a very good black Grape, and ripens very well with us.

The *Red muscadine* is a good Grape, and ripens well in very hot years, but is not so good as the *Black-Orleans*.

The *Raisin-Grape* is a large and long Grape, but ripens not well in this Climate.

The *White Frontiniac* is a Fruit of a very pleasant hautgust, like unto the *Rhenish-wine*, and will ripen with us, in case it be planted against a good Wall, and in a hot Summer.

There is also the *Red Frontiniac*, much of the same nature.

There are also the *Portugal*, the *White Orleans*, the *Darbois* and the *Allicant*, all very good Grapes.

And there are the small *Blue-grape*, and the great *Blue-Grape*, that are very good Fruit, and ripen well with us.

The *Bursarobe* it an excellent, large, sweet, white Grape, and in some years will ripen well; as also will the *Muscat*.

The *Burlet* is a very large Grape, but seldom ripening here.

There are also several old English-grapes, and some forreign, that are fit only to make Vinegar of.

SECT. VII.

Of Quinces.

There is not a more delicate Fruit in the Kitchen and Conservatory, than the *Quince*; whereof

The *Portugal Apple-quince* is esteemed the best; it is a large yellow Fruit, tender, pleasant, and soon boiled.

The *Portugal Pear-quince* is much like the former, except in its form.

The *Barbery-quince* is lesser than the other, as is the *English-quince*, which is a harsh Fruit, and covered with a Down or Cotton.

The *Lyons Quince* is a large yellow, and the *Brunswick-quince* a large white, both very good, but all inferiour to the two first sorts.

SECT. VIII.

Of Figs, Walnuts, Nuts, and Filberds.

Figs.

Figs are highly esteem'd by some, where-
of the *Great Blue Fig* is most accounted of; next unto it, the *Dwarf Blue Fig*, being much less in Tree and Fruit, but better tasted, and sooner ripe.

The *Walnuts*, (or rather *Gaul-nuts*, or *French-nuts*, coming originally out of *France*, and corruptly called *Welsh-nuts* in the *Western-parts* of *England*, the G being in time pronounced as a W, as *Guerre Warre*, *Guardian Warden*, &c. and so *Galnut Walnut*) are universally spread over this Country; of which there are several sorts.

The *Great Double Walnut* in some places ripens very well, is very sweet; but the Kernel answers not the bigness of the Shell.

There are other sorts that are lesser, with very hard Shells, and sweet Kernels, that ripen very well in any place.

But the best are those of a tender thin Shell, and a full Kernel, and of a middle size.

There is another sort that grows near

Salis-

Salisbury of a middle size, and a very good Fruit, called the *Bird-nut*, from the resemblance the Kernel hath to a Bird, with its Wings displayed at first view after the Nut is slit in the middle.

There is also the *Early Walnut* that ripens above a fortnight before any of the other, and is of as thin a Shell and pleasant a taste as any of the other. This Fruit I have not observed any where, but at *Petersfield* in *Hampshire*.

Also there is a very small sort of this Fruit round, and but little bigger than a *Filberd*, growing at the same place.

Besides the ordinary *Hasel-nuts* that Nuts. grow wild, there are Nuts that are of a thin Shell, large Kernel, and but little Husk, that are usually planted in Orchards.

There is a large kind of these long thin-shell'd Nuts with a very fair Kernel.

And another sort very large, that hath a thin Shell, which is the best of Nuts.

And also a great round Nut with a thick Shell and a large Kernel.

But the *Filberds* are to be esteemed above Filberds. them, whereof there is the *White Filberd*, which is commonly known.

And the *Red Filberd*, like unto the former, onely that the Kernel is covered with

a red skin, also the Shell and Leaf do incline more to redness than the other sorts.

The *Filberd* of *Constantinople* hath the Bark whiter, the Leaves bigger, and the Husks more jagged and rent than the former. The *Nuts* are like those of the white *Filberd*, but rounder and bigger, as Mr. *Ray* saith in his *Pomona*.

SECT. IX.

Of *Gooseberries*, *Currans*, *Barberries*, and *Rasberries*.

Gooseber-
ries.

Gooseberries, so called from the use that have a long time been made of them in the Kitchen when Green-Geese are in season.

The first ripe are the *Early Red*, which is a fine, sharp, pleasant Fruit: there are three sorts of them, differing onely in their sizes, the biggest being the sweetest.

There is also the *Blue Gooseberry*, differing little from the former, only in colour more blue, and later ripe.

The *Great White Dutch Gooseberry* is the fairest and best, and fittest for our Vineyard, and a very great bearer.

The

The *Great Yellow Dutch* differeth from the former onely in colour.

The *English Yellow Gooseberry* is known to every one, and is fittest for Culinary uses whilst green.

The *Hedgehog Gooseberry* is a large Fruit, well tasted, and very hairy.

The *Small rough Gooseberry* is hardly worth the mentioning.

The *Green Gooseberry*: of this there is the greater and the lesser, both very good, and late ripe.

Currans, or *Corinths*, from the *Corinths* Currans. of *Corinthia* first taking their name; whereof there are some that have been antiently planted in these parts: As

The *English Red Curran*, once in esteem, but now cast out of all good Gardens, as is the 'black, which was never worth any thing.

The *White Curran* was, not long since, in most esteem, until

The *Red Dutch Curran* became native in our Soil, which is also improved in some rich moist grounds, that it hath gained a higher name, of the *Greatest Red Dutch Curran*. These are the only Fruit that are fit to be planted and propagated for *Wine*, and for the *Conservatory*.

There

There is another sort of *Curran*, newly propagated from abroad, but not to be esteem'd for the Fruit, onely for Curiosity.

Barberries

Of *Barberries* there are but three sorts; the ordinary sort, and *Barberries* without stones, and the *Great Barberry*, which is a sort bearing bigger Fruit than either of the other.

Rasberries

Of *Rasberries* there are three sorts; the Common wild, the large Red *Garden-Rasberry*, which is one of the most pleasant of Fruits, and useful in the Conservatory, and for its delicate Juice; and the White, which is but little inferiour to the Red.

Also, I have seen formerly a *Rasberry* of a much darker colour than the Red, which was then termed the *Black Rasberry*, exceeding pleasant in taste.

There is a *Rasberry-tree* larger in Stalk and Leaves than any of the former, bearing a very large Blossome; but no Fruit comes to perfection of it in this Country.

SECT.

SECT. X.

Of Medlars, Services, Cornelians, Mulberries, and Strawberries.

Medlars are a pleasing Fruit, and in some cases Medicinal; whereof there are several kinds. *Medlars.*

The Common English, being but small, and the *Great Dutch-medlar*, which is much larger than the other, and is a good bearer.

Mr. *Ray* mentions a sort that are without stones, which a great curiosity.

And the *Neapolitan Medlar*, much like the former, without stones.

Services are a Fruit more common than desirable, therefore I shall only name them. *Services.*

The *Cornel-tree* beareth the Fruit commonly called the *Cornelian-cherry*, as well from the name of the Tree, as the *Cornelian-stone*, the colour whereof it somewhat represents. This Fruit is good in the Kitchen and Conservatory. *Cornelians.*

The *Mulberry-tree* deserves more room in our English Plantations, rather for the Leaf than the Fruit. Of *Mulberries* there are three sorts: *Mulberries.*

The

The *Black* or *Red Mulberry* is known to most; the *White Mulberry* is smaller in the Tree and Fruit; the *Virginian Mulberry* is quicker of growth than the former, and its Fruit larger, and as pleasant. These Fruits are not to be slighted in the Kitchen and Conservatory, nor for their Juice.

Strawberries. Although the *Strawberry* grows not on a Tree, and therefore cannot be esteemed an Orchard-fruit, yet they deserve a place under them; being humble, and content with the shades and droppings of your more lofty Trees, and furnish your Table with variety of early and delicate Fruit, in several kinds, *viz.*

The *Common English-strawberry*, well known to all, and much improved by transplanting them from the Woods to the Garden.

The *White-strawberry*, more delicate than the former.

The *Long Red-strawberry*, not altogether so good as the former.

The *Polonian* or *Great Strawberry* is the largest of all *Strawberries*, and very pleasant.

The *Raspberry*, or *Green-strawberry*, is the sweetest of all *Strawberries*, and latest ripe.

But the best of all *Strawberries*, is that kind lately brought out of *New-England*; where,

where, and throughout the *American* coast, they grow in great plenty, and are propagated here in *England*. They are the most early of all English-fruits, several years being ripe the first week in *May*, and continue bearing plentifully until Midsummer, unless drought prevent them. They are the fairest (except the *Polonian*) and of the best Scarlet dye of any Fruit that grows, and very pleasant and cool to the taste. The whole Nation is obliged to the Industry of the Ingenious Mr. *George Rickets*, Gardner at *Hoxten* or *Hogsdon* without *Bishopsgate*, near *London*, at the sign of the *Hand* there; Who can furnish any Planter with all or most of the Fruit-trees before mentioned, having been for many years a most Laborious and Industrious Collector of the best Species of all sorts of Fruits from Forreign parts. And hath also the Richest and most compleat Collection of all the great variety of Flower-bearing-Trees and Shrubs in this Kingdom. That there is not a day in the year, but the Trees, as well as the most humble Plants, do there yield Ornaments for *Flora*; with all sorts of Curious and Pleasant Winter-Greens, that seem to perpetuate the Spring and Summer, from the most hum-
ble

ble Myrtle to the very true Cedar of Libanus. Not without infinite Variety of Tulips, Auriculaes, Anemones, Gilly-flowers, and all other sorts of pleasant and delicate Flowers, that he may be truly said to be the *Master-Flowerist* of England; and is ready to furnish any Ingenious person with any of his choicest Plants.

Mr. *Richard Ball* of *Brainford*, hath also a very fair Nursery of all or most of the before mentioned Fruit-trees, and hath been a very great Collector of the best of Fruits, and hath great Variety of Trees for Ornament and Shade, especially the Famous *Platanus*; and many other Beautiful and useful Plants, Foreign and English.

Fruit-trees may be chosen by the eye, but for the Goodness or the right Species or nature of the Fruit, there is a necessity of trusting to the Nursery man, which is the reason that these are inserted, as persons of known fidelity, in vending Trees answerable to their names. As for Trees for beauty, and Flowers the most rich Ornaments of Nature, let Curious Eyes please themselves.



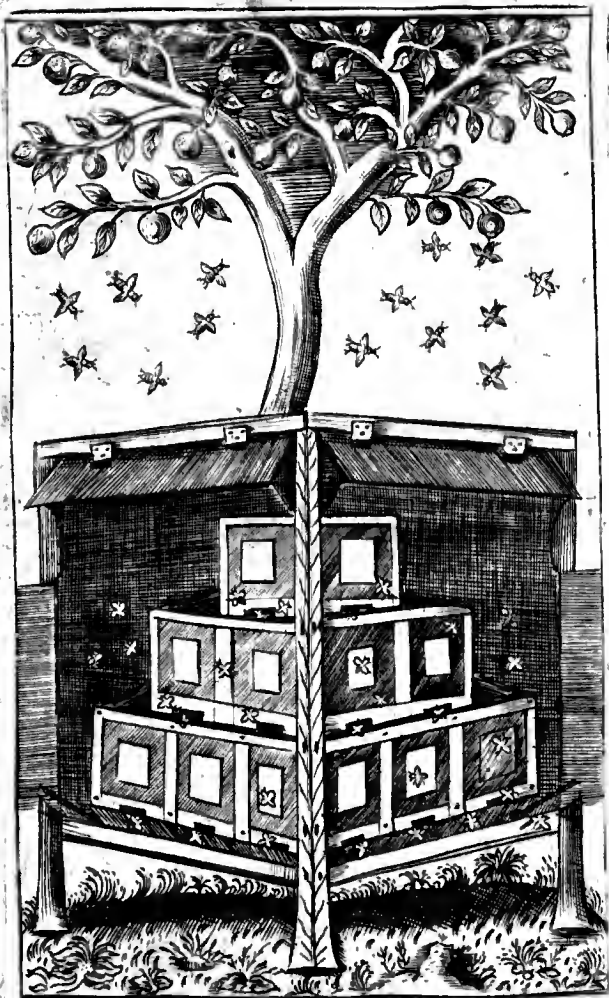
Advertisement.

Mr. *Henry Allen* before mentioned to be the Maker of the *Ingenio's* or *Mills* for grinding of Apples, maketh also *Skrew-presses* for the pressing of the *Cider*, Both *Skrew* and *Nut* being of cast Iron, soted-tempered, that they shall never fail. These *Skrew-presses* are cheaper, more durable, stand in less room, more portable, operate more effectually, and with much less labour than the *Great Wooden Skrew-presses*. The same person adapteth the *Rolls*, whereof the before mentioned *Ingenio's* are made, for several other Mechanick uses, to the great ease and advantage of the Operator, especially for the breaking or Heckling of *Hemp* or *Flax*, by means whereof a vast deal of Labour and expence may be saved, and will very much add to the more facile making of the Linnen Manufacture.

facture. This *Machine* being useful in the dressing and preparing of *Hemp* and *Flax*, from the *Stalk* to the *Loom*. The particular management whereof requires a few *Sheets* to demonstrate it, which in a little time may be made publick.

APIA





A P I A R I U M;
OR A
DISCOURSE
OF THE
Government and Ordering
OF
B E E S,

With their Nature and Properties,
Tending to the best Way of IMPROVING
them; and to the Discovery of the Falla-
cies that are imposed by some, for pri-
vate Lucre; on the Credulous Lovers
and Admirers of these Insects.

The Second Edition.

Written by *J. W. Gent.*

L O N D O N,

Printed for and Sold by *Thomas Dring* Bookseller,
at the Sign of the *Harrow* at *Chancery-lane-end*
in *Fleet-street.* MDCLXXVIII.





To the

R E A D E R.



After so many worthy Authors that have publickly imparted so much of Art and Ingenuity to the World, concerning the ordering and governing this small Animal the Bee; and especially Mr. Butler, whose Treatise of the Feminine Monarchy hath been judged by Persons of Learning to be the most complete that ever was written of any one Natural Subject, it will not be expected that any one should exceed him, as to the general Scope of his Treatise. But seeing that divers Persons have been for these many years, and yet are willing to endeavour an Improvement and Advancement of Bees, to make them more profitable, and bring

To the Reader.

them into greater esteem amongst us than formerly; and that by novel Ways and Methods of Ordering them, some Persons of very good Quality and Parts, have taken a great deal of pains and used much skill to observe the Nature and Properties of these Curious, Industrious and Profitable Insects, not thinking it an undervaluing to their Reputation, although

Slight is the Theme, yet not the Glory
slight, [*Virgil.*]

Others on the contrary, wanting that Reason and Experience they pretended to, have abused the World with their fictitious Notions concerning Bees, which have made a greater Humm than all the Bee-books that have been published before. That humming noise was the occasion of my reviewing those Observations I had formerly made concerning these small, profitable, laborious, loyal, nimble, cunning, industrious and resolute Animals; so resolved, that they cannot be compelled to digress from their own natural Inclinations, nor yet restrained from their prodigious Encrease, by which they preserve their Colonies, which otherwise would suddenly be extinguished: So profitable and laborious, that by the ordi-

To the Reader.

ordinary Methods of ordering them, they fully recompence all your Care and Cost you need to bestow on them with a sufficient overplus; and so nimble and cunning, that they are not to be plaid withal, nor governed by such that know not how to govern themselves nor their Pens: But of any Creatures whatsoever the most easily managed and improved, if you prosecute their own ways or intentions that Nature prompts them to, as many poor and ignorant Country Housewives can tell you; and the most learned and accomplished Poets and Philosophers have been forc'd to condescend unto: who after all their subtil disquisitions into the Natures and Properties of them, have ever concluded with admiration of their Virtues and their Knowledge, Order, Government, Art and Industry. Therefore if you design an improvement of them beyond the Ordinary Method, it is best first to understand their Natures, and wherein the common and ordinary Method of providing for them proves deficient, and then endeavour to supply all those defects and remove all obstructions that stand in their way, that you may rather ingratiate your self into their favour, by pleasing them in every thing, than in the least to thwart or cross them, for which Love of yours to them, they will

To the Reader.

recompence you manifold. For their delight is in warm and dry Habitations, not narrow and tall, troublesom to ascend, but broad and shallow. For it was not the Love the Bees bare to Ludovicus Vives that made them settle under the Leads over his Study in Oxford, and continue there above an hundred years, although their coming thither at that time might prove ominous to the future Eloquence of that person: nor could a narrow place have afforded so great a Mass of Honey as was taken thence upon renewing the Leads, Anno 1630. as Mr. Butler hath related: But it was the conveniency of the place being broad, warm and dry, that invited them to so long and continued a Succession: In other places of the same nature I have known the like, although not for so long a time. And as the Bees delight in a close and private Dwelling, so you must endeavour to preserve them by the smallness and closeness of the Doors to keep out their enemies, which are not a few, and save them much of their labour in a continual watch for a great part of the year, and secure them in their Sleep at other times from being destroyed or deprived of their Wealth; yet not to straiten them in their busie times of gathering. Many other things you may observe that

To the Reader.

that they naturally incline unto, wherein you may assist them. But be sure not to plant any thing near, nor do any act that may be offensive or Heterogeneous to their Natures, whatsoever any advise you to. Nor do you feed your selves with vain imaginations, that they will fix their Combs to Frames of your Fancy, nor work when and where you please; nor desert their Lechery, when you instruct them to the contrary, unless you have a more curious way of Castration than is yet discovered. Nor do you expect so vast a profit, as some have endeavoured to persuade you unto, only to invite you to be a Purchaser; lest you reckon your Chickens before they be hatched. To assist you in these Disquisitions, I have put you to this small charge: if it may be useful to you in prosecuting the Improvement of this little Animal, or in preventing your precipitating into Mistakes and Errors by any Ignis Fatuus, I have my Desire and Reward. But whether those other new pretended Methods of vast Advantage, that are so dear bought, or these ordinary and cheap Instructions will succeed most to your Content and Profit, time and Experience only can demonstrate; to which I must submit. This nevertheless I can assure

To the Reader.

sure you, that what I have in this small Tract positively affirmed, is either from Experience or good Authority; when peradventure what you pay dearer for, may be barely Suppositions; and yet at your own Cost to be Experimented.

CHAP.



C H A P. I.

*Of the Nature and Universality of
B E E S, and the Antiquity of their
Colonies.*

BEES and *Silkwormes* are the only Insects that are kept and nourished by Mankind, for their use and benefit. The *Silkwormes* for the fine spun Silk they yield, to adorn Princes and Grandees of the Earth withal; Nourished only in hot Climates, and fed by hand, by the Leaves but of one sort of Trees, and that also with continual attendance for their time of feeding: Their product at best but an Ornament. *Bees* of whom I shall now treat, are kept and maintained almost throughout the World, for the delicate Food, pleasant Drink, and wholesome Physick they yield; *Barbary* and other of those

those hot Countries abounding with them, so that *Wax*, the least part of the profit arising from them, is there a great Merchantable Comodity: *Russia* and *Tartary* make their principal Drinks out of the labours of these industrious Insects: All the Countries about the Mediterranean Sea, have ever been Stored with them, as most Histories of those parts testifie, in *America* especially, where our *English* Colonies are, *Bees* multiply even to admiration, so that we may esteem them the only Ubiquitaries of any Insect, hardy, enduring all Airs hot, cold, wet, or dry: The hottest Summers hurt them not, unless by melting their Honey; nor do the coldest Winters kill them, unless they be too nakedly and severely exposed. In moist Countries they thrive, and are most apt there to swarm, but their habitations ought to be kept dry, nothing more annoying them than wet within their Houses: In hot and dry places and Seasons they gather great store of Honey especially where the Sea or sweet Springs are near; So that we may well say with *Butler*,
*That there is no ground (of what nature so-
 ever it be, whether it be hot or cold, wet or
 dry, hill or dale, Woodland or Champian,
 meadow, pasture, or vrrable; in a word,
 whether*

whether it be battle or barren) which yieldeth not matter for the Bee to work upon. Then they are the most Industrious of any Animal whatsoever, never at rest, whilst either that they have matter to work upon abroad or room to work in at home; If they cannot find wherewith near home, on which to gather Honey or Wax, they fly far for it. For swiftness they exceed the Wind, notwithstanding which, many of them daily become a prey to the Swallow and other Birds. In their understanding also, they surpass all other Insects, that is, in their distinguishing of times and seasons wherein to labour, and send forth their Colonies, and how to bestow or expend their hoarded treasure. And when they have possessed themselves of a new Habitation, their curious Architecture is to be admired; But above all their Properties and Virtues, that of their *Prescience* is most observable, daily foreseeing what weather is likely to succeed, and ordering their affairs accordingly, and annually providing of Stores for the approaching Winter; Nature having instructed them to foreknow, that they shall stand in want of such provisions: They are not only Prognosticators for themselves, but portenders of good
or

evil, (or ominous) to Mankind, as hath been often observed from many accidents that have happened or succeeded after their unusual actions: which made the Poet; and questionless many others in that Age; take them to be divine, as well as the Muses Birds; Else would he not; after a repetition of several of their extraordinary Properties, have sang,

Georg. 4.

His quidam signis, &c.

From these Examples; some there are maintain; That Bees descend from a Celestial strain; and Heavenly Race;

After him *Pliny* esteem'd their manner; time, and place of settling, as *Augures* or *Presages*; for they sometimes settled amongst Houses, or on the Temples of their Gods, as you may read in his 11th Book of his Natural History; Cap. 17. But whether they portended good or evil, is not yet clear from Historical Observations; For the same *Pliny* relates that a swarm of *Bees* settled within the very Camp of General *Drusus*, the very same day, when he obtain'd that notable Victory at *Arbalo*. Yet may you read in *Lucius Florus* his Roman History, *Lib. 2. Cap. 6.*

That

That in the second *Carthaginian* War, when *Hannibal* fought against the *Romans* by *Transimenus* Lake, the Swarms of *Bees* that clustred upon the *Roman Ensigns*, proved unlucky signs of the great overthrow *Flaminius* the *Roman* General afterwards sustained. Afterwards the same Author tells you, *Lib. 4. Cap. 6.* That before the great battle, between *Cesar* and *Pompey*, when there were above 300000 men in the Field, in both Armies, besides the Aids of Kings, and Senators, Swarms of *Bees* (not usual amongst Armies) presaged that total ruine of *Pompey*, and victory to *Cesar*.

In the last cited Chapter of *Plinie's* Natural History, he tells you, that there was a Swarm of *Bees* rested upon the very lips and mouth of *Plato* whilst an infant, presaging his future Eloquence; The like happened to *Pindar*, *Lucan* and *St. Ambrose*, as is by Historians recorded: Of later years we have an account of the Swarm of *Bees*, that welcomed *Ludovicus Vives* to *C.C. Colledge* in *Oxford*, Anno 1520. signifying the incomparable sweetness of his Eloquence, whereof at large you may read in *Butler* his *Feminine Monarchy*, c. I. n. 59. But the uncertainty of their portents leaves

us in doubt what to conclude from such preternatural Accidents.

And as they are so universally dispersed, so are their mellifluous Colonies of very great Antiquity; *Sampson* feeding on the Honey made by a Swarm of Bees that hiv'd themselves in the Carcase of a *Lyon*, and *Jonathan* tasted of the Honey that dropped from a full *Comb* in a Wood. Profane Authors also have not passed these Insects over in silence, the most ancient Poets and Naturalists having written largely of them; as *Hesiod*, *Philistus*, *Menecrates* and many others. *Aristomachus* for fifty eight years did little else but keep *Bees*, and *Philistus* employ'd his whole Life-time about them, as *Pliny* relates, *lib. 11. cap. 9.* Honey being much more in esteem in those Ages than in these, *Sugar* having lately gained a Repute above it. For if you observe most of the ancient Instructions for Conserving, Preserving, or other Confectionating, *Honey* was then prescribed where *Sugar* is now: So that thence it may be presum'd that *Bees* were more nourish'd and cherish'd than in these later times. Such an opinion had the Ancients of Honey, that in case it were gathered by the *Bees* under a certain Constellation, that it would be so heavenly a sweet

sweet Liquor that no one thing in the World might be comparable to it (*Pliny lib. II. cap. 14.*) for the universal Cure of Diseases, and restoring from Death to Life, like unto that Celestial and divine *Nectar* which they supposed did immortalize the Gods above.

But how these numerous Insects first came to be reduc'd into Colonies is uncertain, unless *Aristeus* the Son of *Apollo* and King of *Arcadia* (as some report) was the first Discoverer of their Use and Order; a Work becoming so great a Person. But certain it is that they in ancient times had their residence in hollow Trees in ancient Woods, as that of *Jonathan's* finding Honey there, seems to assert: and in other Concavities.

Oft in deep Caves (if Fame a truth report)

Low underneath they vault their Waxen Court;

And oft discovered in a hollow Rock,

Or in the Belly of an aged Oak.

[*Translat. of Virgil.*]

And at this day in many places it is not unusual, to find Swarms in Trees and hollow places in Buildings, &c.

B

From

From whence their Swarms issuing out, it is probable that they were entic'd into Hives or other Receptacles prepared for them; which were first made of Rinds or Barks of Trees, in imitation, as may be supposed, of the hollow Trees they naturally placed themselves in. Afterwards by degrees they began to make them of other Materials: And some, before *Pliny's* time, had made such Hives, with that *fossile Glass* we call *Island-glass*; wherewith Ships are glaz'd; and some of clear *Horn*, placed in Frames to discover the Bees Work, although in vain. Then they betook themselves to the making of *Hives* of Osier-twigs, and such like, and dawb'd them; as yet in many places are used. From all which it may be concluded, That *Bees* preserved in *Colonies*, and their increase by Swarms, is of that Antiquity, that no History certainly mentions the first Invention of their management, unless you will credit that of *Aristeus*.

CHAP. II.

Of the Breeding of Bees.

That Bees are *Insects*, and that the most, if not all, of *Insects* are sometimes engendred by Putrefaction, is not by any denied; *Bees* many times being engendred in the corrupted Carcases of Beasts, according to the Poet;

*Quatuor eximios præstanti corpore Taurus,
ros, &c.*

*Four of his largest Bullocks forth he took,
As many comely Heyfers never brooke:
And when the ninth day bright Aurora
shew'd,
He worships Orpheus, and the wood re-
view'd:*

*A Wonder, not to be believ'd, he sees
From the dissolved Entrails, Swarms of
Bees.*

*Which from the broken ribs resounding fly,
And in a thick Cloud sally to the Sky.
On a talltop branch they Cluster now,
As Grapes hang dangling on the gentle
bough.*

[*Virg. Geor. 4.*]

Of Bees.

To which end also the same Poet directs the very Method of ordering a *Steer*, some a *Heyfer*, others an *Ox*, limiting it to that *Species*, others producing other Insects, that out of their Carcases multitudes of Bees may be engendred. And it is not improbable that the Carcases of these Beasts should produce *Bees*, when we every Summer perceive, that other Beasts that lie in the open Air do produce Insects of other *Species*. But this of Bees may not so well succeed in these Northern, as in the more Southern Parts of *Europe*, where our Poet lived.

It was the Opinion also of the same Poet and of other, that Bees gathered their Seed out of certain Leaves and Flowers, and carried them to their *Hives*, out of which their young were produc'd.

*'Tis strange that Bees such custom should
maintain,
Venus to scorn, in wanton lust disdain
To waste their strength; and without throws
they breed:
But cull from Leave: and various Flowers
their Seed.*

But

But this Opinion gains not much credit, nor is the other way practicable here. Therefore other ways for the Generation of these worthy Insects are to be discovered. *Aristotle* himself thought it a work of great difficulty to discover it: And *Butler* in his *Feminine Monarchy* hath taken great pains about the Generation of the *Queens, Princesses, Drones* and *Honey-Bees*; only from him I shall observe, that *Bees* begin to Breed about the middle of *February*, if they are well provided for, and the Spring be forward, else in *March*, by laying their *Eggs* or *Seed* at the bottoms of their void *Cells*; which by the warmth of the *Bees* sitting on them (the season of the year concurring) are converted into *Worms* or *Grubbs*, as most Insects are before they fly. Thus by the old *Bees* sitting on, warming, and feeding these *Grubbs*, in about three weeks time, are a whole Set of these Insects generated. And as the Spring comes on and Food increases, so do they increase their Breed, throughout the Months of *March, April, May, June* and *July*, continually feeding their young, either with their old stock of *Honey* in bad Weather, or with new Food and Water, which they continually gather and carry to their young if

the Weather permit them to fly abroad; or else in building Combs, as far as their room will suffer them and as it is for their own convenience. And thus do they build and breed until the end of *July*, and sometimes after. For when Bees have done Swarming, you may be confident they have done breeding, and not before.

It is most strange, yet true, that these Insects, as soon as they are Hived begin their work, and the very next morning will they build a Comb; As it appeared by a Swarm, that upon some dislike deserted their Hive the next day after their Swarming, and left a Comb of four or five inches in length, with many deep wrought Cells in it.

However from every Ingenious Bee-Master's Annual Experience, I may safely conclude, that Bees do not spend their time in these Spring and Summer-months (whilst they breed) in Luxury and Idleness, as by some is imagined; but to maintain and increase their Colonies, during that part of the year that yields them plenty of Matter out of the various Blossoms that are abroad, for the building of their Combs and feeding their young; until not only that Matter that is fit for those uses ceaseth, but until

til the Leaves of the Oak and other Honey-bearing Leaves and Plants yield plenty of that Nectar or Celestial Dew that they lay up in store for their Winter and Vernal Provision, and whereof their Masters many times deprive them.

In vain therefore can it be expected, that this noble (yet indocile) Insect, should be either perswaded to desist from breeding sooner than the season of the year enforceth them; or to gather Honey before it is to be had, as some would insinuate into us to believe.

It is not to be fear'd (in case it were in our power to prevent them) that Bees will ever overstock themselves; for were the Hive never so full of Bees, they would the sooner fill their Cells with Honey, and the better live over the Winter. And after they have kill'd their Drones, which they usually do before the gathering of their Honey, there is not an idle Bee nor a Beggar amongst them.

Besides, there is a necessity of their continual breeding all the Summer, by reason of their continual waste; For after the breeding time they every day waste their Number: that upon an easie computation, a thousand Bees scarce supply the losses

of a week in the hot gathering time, they being subject to so many casualties; For the Swallow and many other Birds dayly make a prey of many of them, besides what the extremity of the weather destroys, and infinite of other accidents befall these innocent creatures; That of a Swarm of thirty thousand Bees in *June*, you have scarcely left at *Michaelmas*, above ten thousand, over and above what are bred in that time, the rest having lost their lives in their adventures abroad. It is also easie to cast up, that there are about fifty thousand Cells in an ordinary Stall of *Bees*; and although the greater part of them have their Inhabitants in the Summer, yet but few of them in the Winter.

Many opinions there are amongst Bee-Masters, concerning Drone Bees, most making them to be a different Species of Bees, when upon a strict view and examination, they seem all to be but one sort. For you may observe that most Insects (especially such that may proceed from the putrification of some bodies, amongst which Bees may be reckoned) are of both kinds, Male and Female: and that in their declining age they engender and lay their seed or eggs, and then vary in shape and proportion

tion from what they were before in their prime; As may be observed in Ants, who are all young lusty and laborious in the Spring, in the middle of Summer lay their eggs, and soon after become aged, winged, and dull; and so at a little above a years end leave their Colonies to their vigorous Successors. The same may be observed in Silkworms hatched in *May*, flourishing and laborious in *June* and *July*, and in *August* engendring, growing old, winged and dying, in four Months beginning and ending their lives. And many other Insects after the same manner, begin their lives in one form or shape, and determine them in another; begin labourers, and end breeders. Therefore it is not difficult to convince any ingenious Scrutinist, that Bees in the Spring, before breeding time, are generally all of one Species, laborious and industrious. And that the seed left by the old decayed Bees of the precedent year, do by degrees hatch and become a new progeny in the Spring following: And that then the old superannuated Bees become layers of eggs, in order as they are in age, some being not so old nor decaying so soon as others, which eggs by the warmth of the season and plenty of nourishment, are successively

cessively hatched, and soon grow to be labourers; the aged Bees then become dull, heavy and idle, and so like the Inhabitants of *Socotora* near *Aethiopia*, when sick and aged, are quit of the pains and fears that attend longring diseases, by a sudden dispatch given them by their Indulgent Children, who hate Idleness even in their own Progenitors.

It will be very difficult to demonstrate, how or after what manner the Drones (in case they are only the Male Bees) should ingender or make pregnant the female Bees, in the Months of *June* or *July*, which are not to lay their eggs till the following Spring. But if you say they lay their eggs in the Summer, as the Silkworms do, for the subsequent Spring, then would they be visible; for the most curious eye cannot discern them amongst the Virgin Combs of the most prosperous Stalls; That they are carried in the bodies of these supposed female Bees, all the Winter is as improbable, such hot bodies being not so dull in procreation as Cows, Elephants, &c. Therefore I hope I may (with submission to the Judgment of the more learned and experienced) assert, that these as well as other Insects, reciprocally ingender the
one

one with the other, and that every of them being naturally fruitful, and of both sexes do lay their eggs in a few days after impregnation, from which a continued succession is raised during the warm breeding season.

But the greatest Objection I now meet withal, is, how the King, Queen, or Master-Bee, is raised, which for many Ages hath been treated of, and is yet universally affirmed to Govern the whole Colony? In answer to which, I only say, that there is no absolute necessity, that there should be a Government amongst irrational Creatures; especially amongst Ants, Bees, Wasps, &c.

Yet it is not to be denied, but that there is an Order amongst them. The like you will find in Birds, that unite in Flights; in several sorts of Beasts, that gather in Herds; and in Fish, that swim in Shoals, in far greater number than either beasts or Fowls. These also know their seasons move far, especially Birds, As the Swallow, Fieldfare, &c. and in great order, have their Leaders whom they follow. The same order doubtless is amongst Fish: As Herrings, Salmon, Mackarel, &c.

Yet could I never learn that there was a diffe-

rent Species amongst them that commanded the rest, as hath been long discoursed of to be amongst the Bees; For the most Curious Eye cannot discern those majestick Cells, nor those stately Bees in a Virgin-stock, taken in the first Winter after their Hiving; which if they had so great understanding and reason, as is required in so grand an Affair as Government, especially Monarchy, the best of all Governments, and proper only to the most excellent of all Living Creatures, Man; surely they would take care to erect a Court for such their Prince, for his preservation; whose care they depend on, to preserve them.

This concerning their Government, I only add to abate that opinion that is so rivetted in most Bee-Masters, that they do believe that a Swarm of Bees cannot prosper without a Leader; and that, The reason of their not Swarming, sometimes is because they want a King, Queen, or such like, to lead them forth. To the end that my design of multiplying Swarms and Colonies may be the better thought of, which otherwise must be blasted in the very bud, it being irrational to think or imagine to encrease them this new proposed way, in case the other received opinion be true.

C H A P. III.

Of Encreasing and Swarming of Bees.

MAny Attempts have been made by several Ingenious Persons, for the encrease of Bees without the troublesome and hazardous way of Swarming; by giving them liberty in the Spring and Summer to swell their vast numbers into several Artificial Hives, the one set under or by the other. But when they are dispersed into several Hives or Boxes, and near an equal proportion in each Box; yet when these Hives are separated with the Bees in them, that part separated from the old Stock will not thrive: A great Argument of their want of, and love unto their King or Queen, if they have any, which doubtless remains amongst his greatest Riches in the first Stock; from which if part of them voluntarily separate themselves, by Swarming with their Leader they soon betake themselves to their work.

So that I could never observe, from the Experience of any other, nor yet from my own, although often and seriously attempted,

ed, that the Stocks or Colonies of Bees could by other ways or means, than by their own voluntary Swarming, be ever multiplied or increased.

Therefore if you design many Stocks in your *Apiary*, or that you keep your ordinary stock only for increase wherewith to store your better Hives (hereafter discoursed of) which you keep for the sake of the Honey, be sure not to over-hive your Bees; for the less the Hive is, the oftner they Swarm. For Bees over-hived rarely increase, unless it be an early Swarm and in a good Summer. And in good Summers, an early Swarm not over-hived may cast a Swarm it self: A sufficient argument that they spend not their time in Luxury and Idleness; and that although they have room enough in their Hives to make their Combs and store themselves with Honey. yet do they breed during the breeding-time, else could they not send forth a new Colony so soon; and cannot employ themselves in gathering Honey before it falls.

The sending forth of Swarms or Colonies doth not at all hinder or confound the Bees, it being but the work of two or three days to prepare for a Swarm: unless the badness of the weather prevent, which may

as well prevent them of working as of swarming. And after they are Hived, they, the very next day, fall to making of Combs if the weather permit, and will in few days in fair weather have made large Combs and laid their Eggs or Seeds for another Breed. So that it cannot be reasonably imagined that Bees are in any confusion either before or after Swarming; or that they loose any time besides the day they swarm, as some have reported.

Bees usually swarm twice in a year, sometimes thrice, (and though but seldom) four times in an extraordinary good year; so that there is no danger of a decay of your Stock, unless through your own neglect, but a certain hope and confidence of taking a Swarm every year from each Hive to supply your new Hives, (we are hereafter to treat of) without any diminution to your breeding Stock; and as may also be presumed, a store left for a future encrease, and those that are superannuated left for you into the bargain, so that care be always taken not to over-hive them.

But that which would most conduce to your advantage would be to cause them by some means or other to Swarm, when they are in a Condition fitting for that purpose.

For

For every Bee-Master knows, that an early swarm coming out when the Earth is clothed with wax-yielding Flowers for the building their Combs, and that the Bees have the whole or at least the best part of the Honey-gathering season before them, is better than two or three after Swarmes and better than the Stall whence it comes.

Also it is observed, that many good Stalls and well filled with Bees, are long ere they swarm; and sometimes lie out under and by the doors of their Hives all the swarming season, there being no visible cause for such delay; which is a great impediment to that improvement that might otherwise be made of these Insects, and much troubleth and discourageth the Bee-Master. Every one knowing that the principal advantage that yet was ever made by keeping Bees, hath been in the multiplying them and their Colonies.

To obtain which, many attempts have been made to provoke them to rise in fair weather, when they have abundantly lain out and hang'd under and by the Hive in great Clusters, by brushing them down and often disturb their quiet, which hath sometimes although rarely succeeded; others have taken off the Hackle in the heat
of

of the day, and exposed them as much to the heat of the Sun as they could, which hath also sometimes proved effectual. When they hang in bunches under the door of the Hive, it is a good way to place a large Pewter Charger under them, so placing it with some props behind that it may incline to the Southwards, and by that means reflect the heat of the Sun on the Bees, which will make the place very warm; and if the charger be polite, it may make the place too hot for them: In a day or two, by this means, they may Swarm.

But these ways are all too slender and uncertain to produce the desired effect; Therefore some way may probably be discovered to provoke them to swarm at such a time as the Bee-Master shall positively determine; That he may be said to command a swarm, (The Store of Bees, and conveniency of the Season concurring.) Which must be done either by an invitation of them from their old home, as many other Creatures are usually allured, or drawn from one place to another by Stales, Baits, Calls, or such like like policies: As Ducks by Dequoys, several other Birds by Calls, some by Baits, and Fish by light,
 C &c.

&c. Or it must be by some facile enforcement from their Hives, by making their former place of abode uneasy to them. For Bees will depart from their Hives if they like them not, although Combs have been built in them: And I have known Bees swarm, when they have had much room in their Hives, and nothing openly appearing offensive to them. At *Michaelmas* I have had a small cast from a Hive, where there was no apparent cause for their departure. Therefore may we again repeat

Felix qui potuit rerum cognoscere causas.

I only hint these things, that such that (out of their great love to these admirable creatures) have been at so vast an expence and trouble in prosecuting that design of preventing the swarming of Bees and keeping them meerly for pleasure, without profit, as it (contrary to the promises of some) hath proved; (my self several years since having had a share in those disappointments,) may afford a little time to try some experiments to multiply Swarms (instead of hindering them) which may be done without any considerable expence, and little
more

more than observation: And without any charge of Bee-Houses or Licenses to use them, only Hives, Stools, and Hackles must be provided in case of Success. And I dare affirm, that whoever shall first oblige this Nation with a true and publick discovery of this Art, may be said to have done more to the advantage of Agriculture (if I may call this a branch of it,) than any thing that hath been done in it these many years. For in case the Bee-Master were but certain to have one Swarm out of each Hive in *May*, what a vast encrease would he have in a few years? Although he should permit each Swarm to stand but two Swarming seasons after he had hived them. And what a certainty would he be at in the prosperity of his Stock; it rarely happening, that an early Swarm ever suffers, unless through their own age, or the negligence of the Bee-Master.

CHAP. IV.

Of the Bee-Hives or Houses.

BEfore we did observe, that some of the ancient Bee-Masters had made Hives of transparent Matter, that they might the better discern the Work of the Bees; which it seems did not succeed according to expectation, else had they been more frequently used and approved of by the Reporters of them. *Butler* also condemns the use of them to that intent. And most true it is, that you cannot through the clearest Glass discern their working, nor yet their Combs, unless in *July* or *August* about Noon, when most of the Bees are abroad, and their Company begin to wax thin by their killing their Drones and death of their old Bees, which now through their constant and extraordinary labour have worn out their Wings, and fall far from home, uncapable of ever returning.

*For oft their Wings are torn on Rocks a-
broad,
Freely spending their Lives beneath their
Load:*

*In Flow'rs and making Honey such a pride
They have, by which their Lives away do
glide. [Virgil.]*

Then may you discern the ends of their Combs filled with transparent *Nectar*; but from that time they work not in making Combs nor yet in breeding.

Some have been of opinion, that by the light of these transparent Hives, these industrious Creatures do frame their work with more expedition and delight. To which I may answer, That in the darkest Cells or Caves they shape their Combs as curiously and artificially as in the most lightsome: And that in these that are transparent, the numerous labourers do so much obscure their work, that you would think the Light of small advantage to them. Therefore Glass for that purpose is of no great use.

It is likewise supposed that Bees take much pleasure in the Light of these Hives, and so are thereby the more prompted to Industry: Whether that be so or not is difficult to determine.

But it is probable that an Hive made with large Squares of fine French or Dutch Glass, which is more transparent than the
C 3 English,

English, may not incommode the Bees; especially if each Glass-window hath its Shutter over it, to close it from the cold as the weather requires it. This I am sure that it yields the Spectators much pleasure and delight to see these nimble Creatures always in Motion and full of business whilst the weather is hot, although not that expected and promised pleasure of the view of their *Architecture*.

Now if you design really to improve these Animals to their greatest height of advantage, you must observe their true inclinations, and follow them in that very Method that naturally they themselves tend unto. As

1. In what place soever they design to inhabit, they begin their work above and work downwards.

2. In a Narrow Hive or place where their Number is great, they are much impeded in their work; and in a broad Hive (so that their Number be proportionable) they begin many Combs according to their number, and do not so much hinder the one the other.

3. In a tall Hive or other Cavity, when their Combs are of any considerable length they become weary, because they continually

nually ascend and descend in the narrow passages between the Combs ; which is not only troublesome, but a great hindrance to those that are below. For I have always observed, that the uppermost part of the tallest Hives are never without Bees ; but at the coldest time of the day or night, then very full, and at the hottest times they are continually ascending and descending. To prove which I once cut off, with a sharp knife, the top of a straw Hive and some part of the Combs, thinking by that means that they would as well have passed out that way as at the bottom of the Hive ; over which I placed a Glass-hive made after Mr. *Hartlib's* way, published in his Commonwealth of Bees, that in case the Bees would have always ascended, they might have then built in the new Hive over them : but they would not forsake their Combs.

4. The Bees always fix their work to the top of the Hives, and not to the Sticks only that are placed in the Hive, as by some is erroneously affirmed ; those Sticks being placed in the Hives by some to strengthen them, that they should not sink with the weight of the Combs, by others to preserve the Combs from breaking, in case the Hives should be leaned side ways or removed.

C 4

5. They

5. They usually Swarm for want of Room.

6. A place cannot easily be overstock'd with Bees, so that they have liberty to fly without incommoding the one the other; but if the Country be barren or wanting of Meadow, Water and Oaks, it may be overstock'd.

Therefore make a Box or Hive of about eight Inches in height in the Inside, and about twelve Inches broad, four square, close at the top and open at the bottom, with a Square of French or Dutch Glass on each side of about four or five Inches broad and five Inches deep, so groved in that no Air may pass through the sides of it; which may be prevented by fixing it in with Paste or Cotton-wool. Let there be Shutters or Covers for each Square of Glass, to be added and taken off at pleasure, by means of small Buttons or Hasps; or you may make it without Glass if you please. Let there be two *Techoles* or *Doors*, the one in the middle of the one Square-side at the bottom, and the other in the middle of the other Square-side next adjoining; that when this Hive stands with the one Door towards the South-East, the other may be towards the South-West, each door being about

Of Bees.

about three Inches long and one third part of an Inch deep.

Then make another Box or Hive of the same depth, and about six or eight Inches broader, with two Squares of Glass on each side, two Doors on two of the sides, that they may tend towards the same coasts as the other: Let this Box be open at bottom also and close at the top, except an hole in the Middle of about three Inches Diameter or Square. You may also make a third Box of about two Foot over or more, but of the same depth as the former; always encreasing the Number of your Glass-squares, and Doors proportionable to the breadth of your sides.

The Tops of these Boxes must be made of well-season'd dry Wood, *Oak*, *Beech*, *Fir* or *Sugar-chest*, and made in Pannels joyned to prevent shrinking, swelling warping, splitting, &c. the sides with Studs and Pannels, as every Joyner can direct you. The top on the inside may be either of the Board as it is, which is best; or if you doubt that it will shrink you may line it with a thin Mat, as I have seen it, or Plaster it with fine Mortar made of Lime and Hair; always remembering to singe off the hair that may probably stick without the Mortar. You

Of Bees.

32
You may also make sticks to hang in several places of the Boxes, of about half an Inch square, fixed in the upper part of the Box and extending to the bottom or very near it, the better to preserve the Combs steady, and to help the Bees the easier to come to their Combs.

The first of these Boxes you may take a Swarm into it at Swarming time, and set it in its place where it is to stand, leaving both the Doors open to the coasts before mentioned; which if the Swarm be great will be quickly filled. When you perceive it near full add the second Box under it, placing the first on the middle of the undermost, leaving the hole in the middle open. This may be done in the cool of the evening or in the night. The next day will part of the Bees take to their new Box, but the greater number continue their former employment until they have quite filled the upper. Then will they fall to work in the lower, and it's probable may fill that also the same Summer. As you find occasion, you may add the third, and so a fourth or fifth, leaving the several Doors open in every Box whilst you find there is occasion; and as the weather grows colder and the Bees labour

labour less, so you may lessen their passages by small Wedges, made flat and fit for that purpose; so you may keep their Glasse shut as you think good. You may if you please let your uppermost be a small Straw-hive, which is as good, though not so comely or suitable, as that of Joyner's Work.

You may make a Frame of Wood on four Leggs, covered with Board or Lead, or what you please to place these Boxes in to preserve them from the Wet, much whereof they will not endure. Let the drip be carried off from the two foremost sides, least it drive too much on the Hives or Bees. This Case or Bee-house must stand *Arras*-wise with one Corner towards the South, that the Boxes also may the better stand that way. It must have doors on every side: the two back-doors may be whole, and made to open only when you have occasion to move, order or view your Bees. The two fore-doors may be made in several parts; the upper third part to open upwards, supported, dripping forwards, by slender Iron-hooks, that the wind stir them not; these serve to keep the Bees and Boxes from Rain and Sun, The Under-doors may be made in halves, the one to hang on the East and West-posts, and the other on

on the South-posts; those on the South-posts to be taken off the Hooks all the Summer, and in the Winter also, except when the Bees are to be totally confin'd. The Copper Cut in the Frontispiece hereof will shew you the form of the whole, as well Boxes as Bee-house.

From this Form or Model of keeping of Bees these Conveniencies and Advantages will certainly ensue.

1. The Bees have not far to ascend, their Habitation being but low.

2. They are not hindred for want of Room, nor for want of Entrance; their Doors are wide and on several sides of the Hives or Boxes, that they have great freedom of passage to and fro in the most busie time of their Gathering.

3. The Bees have the benefit of the Sun the whole day by this position of the Hive. In hot and dry weather the morning Sun is most necessary to invite them abroad before the Dews are off the Flowers and Trees; and the evening Sun is necessary in all weathers.

4. Their entrance or doors may easily be straitned as the season of the year requires.

5. The Boxes themselves may in the Winter

Winter be secured from cold Winds and Rains, and the warm Sun may be excluded in the Winter-months, which shining on the Hives, tempts the Bees to come abroad to their ruine, and usually wakens them out of their Winter-sleeps, provoking them to expend their Provision; which in the Spring-time, if the weather prove unseasonable, they may want.

6. You may make use of your Glass-Windows at any time to view the numerous Colonies of these most laborious Animals.

7. These broad and flat Boxes will harbour with advantage, as many Bees as possibly can cohabit together in any one Colony, with all imaginable conveniency. And as they increase in Number, so may you increase your Boxes, until you find them at a stay: And then it is best to take them by the usual way of Smothering by the fume of Brimstone, admitted by some hole left at the bottom of the Bee-house, and kept stopp'd until you have occasion to use it for this purpose, For let not any one imagine, that their Honey can be taken from them and the Bees preserved; unless by some sorts of driving mentioned by *Butler* in his *Feminine Monarchy*, which also are not commended.

The

The Bees will never forsake their Combs that are full of Honey, as I have several times experimented, as well by cutting off the top of the Hive and placing another over it, as by inverting a Hive with the bottom upwards and placing another over it; wherein the Bees built some Combs, yet by far the greater part of them kept to their former old Hive. Therefore all the boasts and affirmations of what hath been done to that purpose have been vain, unless such pretended Experimenters have met with a new Species of Bees.

CHAP.

CHAP. V.

Of the Gathering of Bees.

THese Animals spend their time, as long as the weather will permit and any thing will yield them matter to work upon, in gathering Honey either gross or pure, or Wax, as their occasions require and the season of the year will afford them, according to the Poet,

*Now when bright Sol makes Winters Cold
retreat,
Behind the Earth and opens Heav'n with
Heat,
Forthwith they rise, and thorough Groves
and Woods
Reap purple Flow'rs, and taste the Crystal
Floods :
By what instinct I know not ; then they fly
To their own Courts, and their dear Pro-
geny.
Next make their waxen Cells with greatest
Skill,
And those they with Celestial Nectar fill.*
[Translat. of Virg.]

In

In the first of the Spring in *February*, if the weather be fair, they will abroad; and in that Month and the next, as the Spring is earlier and later, they gather much on the *Hazel, Dandelyon, Dazie, Violet, Withy, Alder, Daffodil, &c.* But above any other Tree they most affect the *Phyllirea*; one sort of them beareth in those Months an abundance of greenish Blossoms which yield great plenty of a Gummy Rosinny Sweat, which the Bees daily transport to their Hives, and yet it as often as the day reneweth, Nothing can be more acceptable to your Bees than a Hedge of this Tree about your Apiary, it being a very close Fence green all the Winter, and yielding so great a quantity of acceptable Food in the usual time of their greatest Necessity.

Although these Trees are not now very common, yet are they easily propagated from Seeds, Layers or Slips. And I do assure you the effects of them to be as aforesaid, and do not advise it to your loss, as a certain Author did to place the *Elm* about your Apiary; a Tree that hath been always esteemed injurious to Bees, not only by ancient and experienced Bee-masters, but our modern *Botanicks*. Nor as hath been advised to plant the *Palm-tree*, which
neither

Of Bees.

neither Gold nor Silver can purchase
flourish in this Northern Clime.

The residue of the Spring do the Bees
plentifully gather on the Blossoms of the
Black-thorn, Bullace, Plum, Cherry, Pear,
Apple, Goosberry, Peach, and many other
Fruits and Flowers, of the Gardens as well
as of the Meadows.

*Them let sweet Gardens with fresh Flowers
Invite.* [Virgil.]

Thus from one Tree and Blossom to another do these industrious Insects gather their food, being more gross than the fine Honey they gather in the Summer for their Winter-store; this being but the *Ambrosia*, as *Butler* terms it, serving only for present maintenance for themselves and their Brood, for want of which (their old stock of fine Honey or *Nectar* being spent, and the weather bad that they cannot gather) they often die. Therefore those plants that afford them most of this early Food ought to be propagated about your *Apiary*.

When the Spring is a little past, and the Summer or *May-month* well entred, then the Bees prosecute their building, preparing Cells wherein to store up their Treasure

Of Bees.

or the succeeding Winter; not neglecting
their Breeding, when they continue until
Nature (their Mistress) prompteth them to
decline it, and follow their work of gather-
ing and storing up their *Nectar* whilst it is
to be had. Every Bee hath his several Of-
fice, some to gather, others to build &c. as
the Poet observed.

*For some provide, and by a Compact made,
Labour abroad; others at home are stay'd
To lay Narcissus Tears, and yielding Gum,
As the first Ground-work of the Honey-
Comb;*

*Which with stiff Wax they finish to their
praise.*

*Others, the Nations hope, young Colonies
raise.*

*Another part the purest Honey sive,
Until the liquid Nectar crack the Hives.*

*And some by Lot, attend the Gates & in-
form*

*Approaching Show'rs, and to foretell a
Storm;*

*To ease the laden, or imbattell'd drive,
The Drones, a slothful Cattel from the Hive.*

[Translat. of *Virg. Georg. 4.*]

After the Summer Solstice the pure *Nectar*

Ear rests on the Leaves of the Oak, and some other Trees, but most on the Oak; so long as these Dews fall, the Bees dayly lade themselves home with it; they not omitting their making of Combs, nor as yet their Breeding.

Besides from Trees, they gather much Honey from Thyme, chiefly to be nourished in and near your *Apiary*, as the Poet advised.

Set Thyme about their Hives, and Pines
remore
 From lofty Hills, for they such Plants do
 love. [Vng. Georg. 4.]

For Thyme yields much and very pure Honey. The Pines are only supposed to be for shelter, being ever green; in the room of which you may place *Phyllirea*, which is to be preferred, yielding both shelter and food.

After the Honey-dews are over, Bees gather but little; neither do they then build any more Cells, having no need of them, but at those times all their Cells to the very top, not only with Honey, but all the Intervals with their Bodies.

So that if you should separate or drive

Of Bees.

the Bees from their Combs before the fall of the Honey-dews, and take the upper part, you would have but little advantage, by reason of the young Grubs you would have mixt with your impure Honey. And if you should separate or drive them after, you would not leave wherewith to maintain them over the Winter; and your driving of them, being a lingering Death, would prove greater cruelty to these Animals than a sudden suffocation.

Not but that they in the Autumn continually employ themselves in gathering very pure Honey in small quantity, from the time of the Honey-dews, until the severity of the Winter prohibits their Flight; but not enough to renew their Store for the succeeding Winter.

All which considered, you will soon be of the Poet's Opinion,

Omnibus una quies operum, Labor omnibus unus;

All rest at once, at once they labour all.

[Virg.]

THE

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