

Sylva, or a discourse of forest-trees, and the propagation of timber in His Majesties dominions / By J. E[velyn] esq.; as it was deliver'd in the Royal Society the XVth of October, [1662], upon occasion of certain quæries propounded to that illustrious assembly, by the honorable the principal officers, and commissioners of the Navy. To which is annexed Pomona; or, an appendix concerning fruit-trees in relation to cider; the making and several ways of ordering it. Published by express order of the Royal Society. Also Kalendarium hortense; or, gard'ners almanac. Directing what he is to do monethly throughout the year.

Contributors

Evelyn, John, 1620-1706.
Nicholas, Edward, Sir, 1593-1669
Great Britain. Royal Navy.
Royal Society (Great Britain)

Publication/Creation

London : Printed by J. Martyn, and J. Allestry, printers to the Royal Society, 1664.

Persistent URL

<https://wellcomecollection.org/works/wmap64vt>

License and attribution

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

**wellcome
collection**

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>



EVELYN

SYLVA

1664







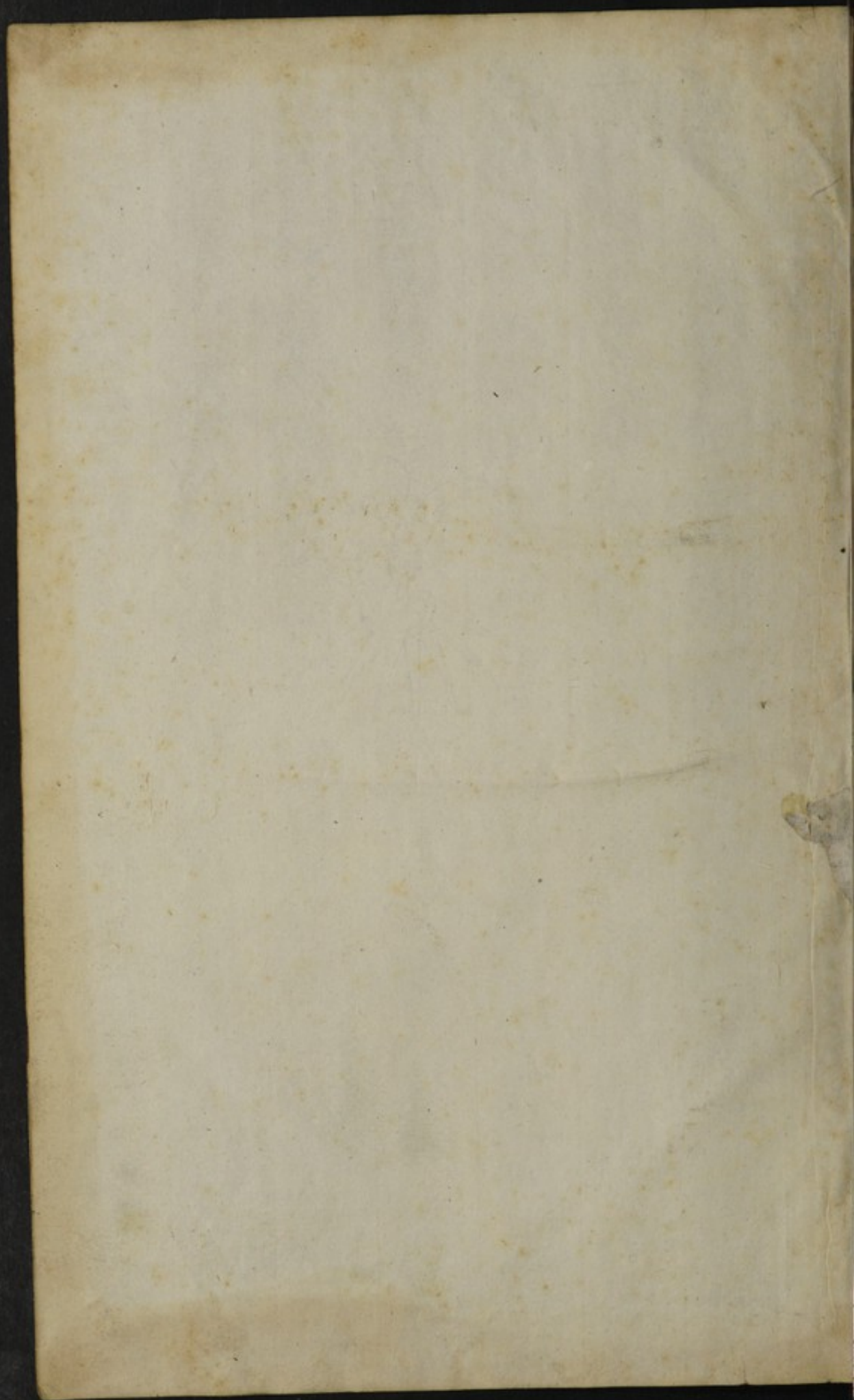
N. XV.

Duplicate from West. Hazleby Library

21956/C

118 - 90

by destroying of some side. pa. 60. ca



From the r^y: hall: S^r: Vol: Nicholas Gr:

By the Council of the ROYAL SOCIETY of London for Improving of Natural Knowledge.

Ordered, That the Book written by John Evelyn Esq; Fellow of this Society, Entituled SYLV A; Or a Discourse of Forest-Trees, and the Propagation of Timber in His Majesties Dominions: To which is annexed POMONA; Or an Appendix concerning Fruit-Trees in relation to Cider, the Making and several ways of Ordering it, be printed by John Martyn and James Allestry, Printers to the said Society.

Dat' die 3^o Mens.
Febr. Anno
1666 $\frac{1}{2}$.

BROUNCKER, P. R. S.

SYLVA,

39972

Or A DISCOURSE OF

FOREST-TREES,

AND THE

ES

Propagation of Timber

In His MAJESTIES Dominions.

By J. E. Esq;

As it was Deliver'd in the **ROYAL SOCIETY** the xvth of
October, **CICIDCLXII.** upon Occasion of certain *Queries*
Propounded to that *Illustrious Assembly*, by the *Honorable* the Principal
Officers, and *Commissioners* of the *Navy*.

To which is annexed

POMONA: Or, An *Appendix* concerning *Fruit-Trees* in relation to *CIDER*;
The *Making* and several ways of *Ordering* it.

Published by express Order of the **ROYAL SOCIETY.**

ALSO

KALENDARIVM HORTENSE; Or, *Gard'ners Almanac*;
Directing *what* he is to do *Monethly* throughout the *Year*.

Tibi res antiquæ laudis & artis
Ingredior, tantos ausus recludere fontes. Virg.



*Coats of the
Royal Society.*

LONDON, Printed by *Jo. Martyn*, and *Ja. Allestry*, Printers to the *Royal Society*, and are to be sold at their Shop at the Bell in *S. Paul's Church-yard*,
MDCLXIV.

SYLVIA
OF A DISCOURSE
FOREST-TREES,
AND THE
Propagation of Timber

By JOHN WALLIS, Esq.
of the Middle Temple, Barrister at Law.
As it was Deliver'd in the ROYAL SOCIETY the 17th of
October, 1680. upon Occasion of certain Questions
Propos'd in the Philosophical Transactions.
LONDON, Printed by J. Sturges, at the Sign of the
Anchor, in the Strand, 1681.



LONDON, Printed by J. Sturges, at the Sign of the Anchor, in the Strand, 1681.



TO THE
KINGS Most Sacred *MAJESTY*
Charles the Second.

FOR To whom, Sir, with^{ne} equal right ought I to Present this Publique Fruit of your ROYAL SOCIETY, then to its Royal FOUNDER? and this Discourse of Trees, then to your Sacred Majesty, tanquam NEMORUM VINDICI? *As of old they pay'd their Devotions HERCULI & SYLVANO; since You are our* Dei Vicarij Nemorensis Rex, as having once your Temple, and Court too under that Holy-Oak which you Consecrated with your Presence, and We celebrate with just Acknowledgment to God for your Preservation.

Cato de RR. cap. 73. Aurel. Vict. Gloss. Phil. apud Tranquill. And so Nemestinus Deus Nemorum, Arnob. lib. 4.

But your Majesty has yet another Title to this Work, and to all it pretends to; as having (like another Cyrus) by your own Royal Example, exceeded all your Predecessors in the Plantations which you have already made, and now design, beyond (I dare affirm it) all the Monarchs of this Nation since the Conquest of it. And indeed, what is there more August, more worthy of your Majesty, or more becoming our Imitation? then whilst you are thus solicitous for our Instruction, we pursue your Majesties great Example with that Veneration which is due to it? and by culti-

The Epistle Dedicatory.

*Argon, l. 1.
That famous
Ship built of
the Dodone-
an Oak.*

vating our decaying Woods, contribute to your Power, as to our greatest Wealth and Safety; since, whiles your Majesty is furnish'd to send forth those Argos, and Trojan Horses, about this your Island, we are to fear nothing from without it; and whilest We remain obedient to your Commands and great Example, nothing from within it: For, as no Jewel in your Majesties resplendent Crown can render you so much Lustre and Glory as your regards to Navigation; so, nor can any thing impeach your Navigation, and the Reputation of That, whiles you continue thus careful of your Woods and Forests. I shall add no more Sir to This, then to supplicate your Majesties gracious Acceptance of my Obedience to the Commands of your SOCIETY, who impos'd this Province on,


SIR,

Your Majesties ever Loyal,
most Obedient, and Faithful
Subject, and Servant

*Says-Court,
May 29.
1663.*

J. EVELYN.

TO THE
READER.

fter what the *Frontispece* and *Porch* of this *Wooden Edifice* presents you, I shall need no farther to repeat the *Occasion* of this following *Discourse*: I am only to acquaint you, That as it was deliver'd to the ROYAL SOCIETY by an unworthy *Member* thereof, in obedience to their *Commands*, by the same it is now publish'd without any further Prospect. And the *Reader* is to know, That if these dry *sticks* afford him any *Sap*, it is one of the *least* and *meanest* of those *Pieces* which are every day produc'd by that *Illustrious Assembly*, and which enrich their *Collections*, as so many *Monuments* of their accurate *Experiments*, and *Publique Endeavours*, in order to the production of *real* and useful *Theories*, the Propagation of *Natural Science*, and the honour of their *Institution*. If to this there be any thing subjoyn'd *here*, which may a while bespeak the patience of the *Reader*, it is only for the Encouragement of an *Industry*, and worthy *Labour*, too much in our days neglected, as haply esteem'd a consideration of too sordid and vulgar a nature for *Noble Persons* and *Gentlemen* to busie themselves withal, and who oftner find ways to *fell* down and destroy their *Trees* and *Plantations*, then either to *repair* or *improve* them.

But what shall I then say of our late prodigious *Spoilers*, whose furious devastation of so many goodly *Woods* and *Forests* have left an *Infamy* on their *Names* and *Memories* not quickly to be forgotten! I mean our unhappy *Usurpers*, and injurious *Sequestrators*; Not here to mention the deplorable necessities of a Gallant and Loyal *Gentry*, who for their *Compositions* were (many of them) compell'd to add yet to this *Waste*, by an inhumane and unparallel'd *Tyranny* over them, to preserve the poor remainder of their *Fortunes*, and to find them *Bread*.
Nor

To the Reader.

Nor was it here they desisted, when, after the fate of that beautiful Grove under Green-wich Castle, the Royal Walk of Elms in St James's Park,

Mr. Waller's
Poem of
St. James's
Park.

That living Gallery of aged Trees,

(as our excellent Poet calls it) was once proposing to the late Council of State to be cut down and sold, that with the rest of His Majesties Houses already demolish'd, and mark'd out for destruction, His Trees might likewise undergo the same destine, and no footsteps of Monarchy remain unviolated. This is a Truth; which coming by chance to hear of, I so conjur'd a powerful Member of it (and one who was to strike a principal stroke in this barbarous Execution) that if my Authority did not rescue those Trees from the Ax, sure I am, my Arguments did abate the Edge of it; nor do I ever pass under that Majestical shade but methinks I hear it salute me as once the Hamadryad did the good Rinaldo,

Tasso, Cant.
18.

Ben caro giungi in queste chiostre amene.

Questa selva, che dianzi era sì negra,

Vedi che tutto al tuo venir s' allegre,

E'n più leggiadre forme è revestita.

It is from hence you may calculate what were the Designs of those excellent Reformers, and the care these great States-men took for the preservation of their Countrey, when being Parties in the Booty themselves; they gave way to so dishonourable and impolitic a waste of that Material, which being left intire, or husbanded with discretion, had prov'd the best support and defence of it. But this (say they) was the effect of War, and in the heighth of our Contentions. No, it was a late and cold deliberation, and long after all had been subdu'd to them; nor could the most implacable of Enemies have express'd a more barbarous Resolution.

We read of the great Xerxes, that passing Conquerour through Achaia, he would not suffer his Army to violate so much as a Tree of his Adversaries; it being observ'd

by

To the Reader.

by the *Ancients*, that the *Gods* did never permit him to escape unpunish'd who was injurious to Groves, *tanquam sacros ex vetustate*: What became of *Agamemnon's* Host after his spoil of the *Woods* at *Aulis*? *Histories* tell us *Cleomenes* died mad; the *Tamassæan Genius* became proverbial; and the Mighty *Cæsar* himself carried ('tis thought) the malediction of the incensed *Gauls* to his *Funeral Pile*, for the havock he committed at *Massilia*, when he fell'd down those goodly *Oaks* before the face of the suppliant *Priests*, and the cursing *People*:

-----*Quis enim læsos impune putaret
Esse Deos?*

Lucan, lib. 3.

But lest this be charg'd with *Superstition*, because the *Instances* are *heathen*; It was a more noble and remarkable, as well as recent *Example*, when at the *Siege* of *Breda*, the late famous General *Spinola* commanded his *Army* not to violate a *Tree* of a *Wood* belonging to the *Prince* of *Orange* there, though a reputed *Traytor*, and in open defiance with his *Master*. To be short, we read, That when *Mithridates* but deliberated about the cutting down of some stately *Trees* which grew neer *Patara*, a *City* of *Lycia*, though necessitated to it for the building of *Warlike Engines* with them, being terrified in a *Vision*, he desisted from his purpose. It were to be wished *These*, or the like *Examples*, might have wrought some *Effects* upon the sacrilegious *Purchasers*, and disloyal *Invadere*, in this *Iron-age* amongst us, who have lately made so prodigious a *spoil* of those goodly *Forests, Woods, and Trees* (to satisfy an impious and unworthy *Avarice*) which being once the *Treasure* and *Ornament* of this *Nation*, were doubtless reserv'd by our more prudent *Ancestors* for the repairs of our floating *Castles*, the *safeguard* and boast of this renowned *Island*, when *Necessity*, or some imminent *Peril* should threaten it, or call for their *Assistance*; and not to be devour'd by these *Improvident Wretches*, who, to their eternal *Reproach*, did (with the *Royal Patrimony*) swallow likewise *Gods own Inheritance*; but whose *Sons* and *Nephews* we have liv'd to see as hastily disgorge

To the Reader.

Quæ tibi fa- them again; and with it all the rest of their *Purchases*,
corum Parnas which otherwise they might securely have enjoy'd: But
inflare tuo- this *in terrorem* only, and for caution to *Posterity*; whiles
rum I leave the *Guilty* to their proper *Scorpions*, and to their
Vaticinor: - *Erisichthonian* fate, or that of the inexorable *Paræbius*,
Vide Met. 1.8.
Apollon. 1.2.
Argonaut.

*Prosternit Quercum funestam quam sibi Nympha
Pignoribusque suis fecit-----*

the vengeance of the *Dryads*, and to their *Tutelar* better
Genius, if any yet remain, who love the solid Honour and
Ornament of their *Country*: For what could I say less,
* At Wot- * *Wood-born* as I am, in behalf of those *sacred*
ton in Sur- *Shades*, which both grace our *Dwellings*, and protect our
rey. *Nation*?

But to turn this just *Indignation* into *Prayers*, and address
my self to our better-natur'd *Country-men*: May such *Woods*
as do yet remain intire be carefully *Preserw'd*, and such as
are destroy'd, sedulously *Repair'd*. It is what every Person
who is *Owner* of *Land* may contribute to, and with infinite
delight, who are touch'd with that laudable *Ambition* of
imitating their most illustrious *Ancestors*, whose *Names* we
find mingl'd amongst *Kings* and *Philosophers*, *Patriots* and
good *Commonwealths-Men*: For such were of old *Solo-*
mon, *Cyrus*, and *Numa*; *Licinius* fir-named *Stolo*, *Cato*, and
Cincinnatus; the *Pisoës*, *Fabii*, *Cicero*, *Plinies*, and a thou-
sand more whom I could ennumerate, that disdain'd not
to exercise themselves in these *Rusticities*, as esteeming it
the greatest accession of *Honour* to dignifie their lasting
Names with such *Rural* marks as have consecrated their
Memories, and transmitted them to us through so many
Ages and *Vicissitudes* of the World.

Vi. Petrarch.
de Remed.
utriusque
fortune, li. 1.
dial. 57.

Let none therefore repute this *Industry* beneath him, or
as the least indignity to the rest of his *Qualities*, which so
great *Persons* have honour'd and cultivated with that af-
fection and ingenuity.

*Multa etiam
istarum Ar-
borum meâ
manu sunt
sate: Cyrus
ad Lyland.
Ciccr. ex Xe-
noph.*

The famous *Answer* which *Cyrus* gave to *Lyfander* will
sufficiently justify that which I have said, and what I far-
ther recommend to such *Gentlemen* as resolve to be *Plan-*
ters, *viz.* That they do not easily commit themselves to
the

To the Reader.

sole *Dictates* of their ignorant *Hinds* and *Servants*, who are (generally speaking) more fit to Learn than to Instruct. *Male agitur cum Domino quem Villicus docet*, was an Observation of old *Cato's*; and 'twas *Ischomachus* who told *Socrates* (discourfing one day upon a like fubject) *That it was far eafier to Make than to Find a good Husband-man*: I have often prov'd it fo in *Gard'ners*; and I believe it will hold in moft of our *Country Employments*: We are to exact *Labour*, not *Conduét* and *Reason*, from the greateft part of them; and the bufinefs of *Planting* is an *Art* or *Science* (for fo *Varro* has folemnly defin'd it) and That exceedingly wide of Truth, which (it feems) many in his time accounted of it; *facillimam efle, nec ullius acuminis Rusticationem*, an eafie and infipid Study. It was the fimple *Culture* only, with fo much difficulty retri'd from the late confufion of an intefine and bloody *War* like *Ours*, and now put in *Reputation* again, which made the noble *Poet* write

Vide & Curtium, l. 7. &c.

De R. R.

-----*Verbis ea vincere magnum
Quam fit, & anguftis hunc addere rebus honorem.*

Georg. 1.

Seeing, as the *Orator* does himfelf exprefs it, *Nihil eft homino liberè dignius*; There is nothing more becoming and worthy of a *Gentleman*.

In agris erant tunc Senatores. Cic. de Senect.

And thus you have in part what I had to produce in extenuation of this my *Adventure*, that *Animated* with a *Command*, and Affifted by divers *Worthy Perfons* (whose *Names* I am prone to *celebrate* with all juft *Refpects*) I have prefumed to caft in my *Symbol*; and which, with the reft that are to follow, may (I hope) be in fome degree ferviceable to *him* (who e're the happy *Perfon* be) which fhall oblige the *World* with that compleat *Systeme* of *Agriculture*, which as yet feems a *defiderate*, and wanting to its perfection. It is (I affure you) what is one of the *Principal Defigns* of the *ROYAL SOCIETY*, not in this *Particular* only, but through all the *Liberal* and more ufeful *Arts*; and for which (in the eftimation of all equal *Judges*) it will merit the greateft of *Encouragements*; that fo at laft what the Learned *Columella* has

To the Reader:

wittily reproach'd, and complain'd of, as a defect in that Age of his, concerning Agriculture in general, and is applicable here, may attain its desired Remedy and Consummation in This of Ours.

Præfat. ad P. Sylvium; which I earnestly recommend to the serious perusal of our Gentry. Et mihi ad sapientis vitam proximè videtur accedere. Cic. de Senectute.

Sola enim Res Rustica, quæ sine dubitatione proxima, & quasi consanguinea Sapientiæ est, tam discipulis egeat, quam magistris: Adhuc in Scholis Rhetorum, & Geometricorum, Musicorumque; Vel quod magis mirandum est, contemptissimorum vitiorum officinas, gulosius condiendi cibos, & luxuriosius ferula struendi, capitumque & capillorum concinnatores non solum esse audiui, sed & ipse vidi; Agricoltationis neque Doctores qui se profiterentur, nèque Discipulos cognovi. But this I leave for our Gallants to Interpret, and should now apply my self to the Directive Part, which I am all this while bespeaking, if after what I have said in the several Paragraphs of the ensuing Discourse upon the Argument of Wood, it might not seem superfluous to have premised any thing here for the Encouragement of so becoming an Industry: Let me be permitted to say, There is sufficient for Instruction, and more then is extant in any Collection whatsoever (*absit verbo invidia*) upon this subject; abstracting things Practicable, of solid use, and material, from the Ostentation and impertinences of Writers; who receiving all that came to hand on trust, to swell their monstrous Volumes, have hitherto impos'd upon the credulous World, without conscience or honesty. I will not exasperate the Adorers of our ancient and late Naturalists, by repeating of what our Verulam has justly pronounc'd concerning their Rhapsodies (because I likewise honor their painful Endeavours and am oblig'd to them for much of that I know) nor will I (wth some) reproach Pliny, Porta, Cardan, Mizaldus, Cursius, and many others of great Names (whose Writings I have diligently consulted) for the Knowledg they have imparted to me on this Occasion; but I must deplore the time which is (for the most part) so miserably lost in pursuit of their Speculations, where they treat upon this Argument: But the World is now advis'd, and (blessed be God) infinitely redeem'd from that base and servile submission of our noblest Faculties to their blind Traditions. This, you will

To the Reader.

will be apt to say, is a haughty *Period* ; but whiles I affirm it of the *Past*, it justifies and does honor to the *Present* Industry of our *Age*, and of which there cannot be a greater and more emulous *Instance*, then the *Passion* of His *Majesty* to encourage His *Subjects* in all that is laudable and truly emolumental of this nature.

It is not therefore that I here presume to instruct *Him* in the management of that great and august *Enterprise* of resolving to *Plant* and repair His ample *Forests*, and other *Magazines* of *Timber*, for the benefit of His *Royal Navy*, and the glory of His *Kingdoms* ; but to present to His *Sacred Person*, and to the *World*, what *Advises* I have received from others, observed my *self*, and most industriously *Collected* from a studious propensity to serve as one of the least *Intelligences* in the ampler *Orb* of our *Illustrious Society*, and in a *Work* so Important and Necessary.

J. E.

SYLVA:

will be not to let a single word, but white I af-
firm it of the fact, all subjects and books honor to the
two last of our, the one of which there cannot be
a review and more common interest, that the value of
the article to compare the subjects in all their
the and only experimental of the nature.
It is not however that I do pretend to judge the
in the management of the year and month I am
relating to you and report the ample I can
Mention of your for the benefit of the Royal Navy,
and the glory of the Admiralty; but to prefer to the
great value, and to the world, what I have
received from other, obtained my self, and most labor-
iously, collected from a number of persons to give an
one of the best I have seen in the number of our Na-
vies, and in a work so important and neces-

P. E.

317

Amico charissimo *Johanni Evelyno Armigero,*
è Societate Regali Londini. J. Beale, S. P. D.
In Sylvam.

Fare age quid causæ est quod tu Sylvestria pangis,
Inter Sylvanos, capripedésque Deos?
Inter Hamadryadas letus, Dryadásque pudicas,
Cum tua Cyrrhæis sit Chelys apta modis!
Scilicet hoc cecinit numerosus Horatius olim,
Scriptorum Sylvam quòd Chorus Omnis amat.
Est locus ille Sacer Musis, & Apolline dignus,
Prima dedit Summo Tempia Sacranda Jovi.
Hinc quoque nunc Pontem Pontus non respuit ingens,
Stringitur Oceanus, corripiturque Salus.
Hinc novus Hesperiiis emerfit mundus in oris,
Effuditque auri flumina larga probi.
Hinc exundavit distento Copia cornu,
Qualem & Amalthææ non habuere sinus.
Sylva tibi curæ est, grata & Pomona refundit
Auriferum, roseum, purpureúmque nemus.
Illa famémque sitimque abigens expirat odores,
Quales nec Medus, nec tibi mittit Arabs.
Ambrosiam præbent modò coëta Cydonia, Tantum
Comprime, Nectareo poma liquore fluunt.
Progredere, O Sæcli Cultor memorande futuri,
Felix Horticolam sic imitere Deum.

Gen. I. c. 2.

A TABLE Of the CHAPTERS.

S Y L V A.		CHAP.	Pag.
	Introduction.		1
1	Of the Seed.		4
2	Of the Seminary.		6
3	Of the Oak,		8
4	Of the Elm.		16
5	Of the Beech.		20
6	Of the Ash.		22
7	Of the Chest-nut.		24
8	Of the Wall-nut.		25
9	Of the Service.		28
10	Of the Maple.		28
11	Of the Sycamore.		29
12	Of the Horn-beam.		29
13	Of the Lime-tree.		30
14	Of the Quick-beam.		31
15	Of the Birch.		32
16	Of the Hasel.		34
17	Of the Poplar.		36
18	Of the Alder.		38
19	Of the Withy, Sallow, Ozier, and Willow.		39
20	Of Fences, Quick-sets, &c.		45
21	Of the Fir, Pine, Pinaster, Pitch-tree, &c.		51
22	Of the Larch, Platanus, Lo- tus, &c.		57
23	Of the Cypress-tree, and Ce- dar.		58
24	Of the Cork, Alaternus, Phil- lyrea, Granad, Myrtil, Jas- mine, &c.		62
25	Of the Acacia, Arbutus, Bays, Box, Eugh, Holly, Juniper, and Laurel-trees.		64
26	Of the Infirmities of Trees.		68
27	Of Coppes.		71
28	Of Pruning.		73
29	Of the Age, Stature, and Fel- ling of Trees.		78
30	Of Timber, the Seasoning and Uses; and of Fuel.		93
31	Aphorisms, or certain general Præcepts, of use to the forego- ing Chapters.		105
32	Of the Laws and Statutes for the Preservation and Im- provement of Woods, &c.		107
		<i>The Parænesis and Conclusion.</i>	112
P O M O N A.			
		<i>The Preface.</i>	1
1	Of the Seminary.		5
2	Of Stocks,		7
3	Of Grasses and Infections.		8
4	Of Variety and Improvements.		10
5	Of the Place and Order.		15
6	Of Transplanting and Distance.		17
7	Of Fencing.		18
8	Of Pruning, and the use of Fruit-Trees.		19
C I D E R.			
	Aphorisms concerning Cider by M. Beale.		21
	Sir Paul Niele's Discourse of Ci- der.		30
	Observations concerning the Ma- king and Preserving of Cider, by John Newburgh, Esq;		41
	Concerning Cider, by Dr Smith.		46
	Of Cider, by Capt. Taylor.		47
KALENDARIUM HORTENSE.			
	Introduction.		55
	January.		58, 59
	February.		60, 61
	March.		62, 63
	April.		64, 65
	May.		66, 67
	June.		68, 69
	July.		70, 71
	August.		72, 73
	September.		74, 75
	October.		76, 77
	November.		78, 79
	December.		80, 81
	The Catalogue of Plants, &c. to be set into the Conserve, or otherwise defended in Winter.		82

1

SYLVA:

OR, A

DISCOURSE

OF


Forest-Trees,

AND

The Propagation of *Timber* in His *MAJESTIES*
Dominions, &c.

*Tuque ades, inceptumque una decurre laborem,
O decus, o fame meritò pars maxima nostræ
CAROLIDE, pelagòq; volans da vela petenti :
Da facilem cursum, atque audacibus annue cœptis :
Ignavòsque vie mecum miseratus agrestes
Ingredere, & votis jam nunc assuesce vocari.*

The Introduction.

I.  Since there is nothing which seems more fatally *Introduction.*
to threaten a Weakening, if not a Dissolution
of the strength of this famous and flourishing
Nation, then the sensible and notorious de-
cay of her *Wooden-walls*, when either through
time, *negligence*, or other *accident*, the present
Navy shall be worn out and impair'd; it has
been a very worthy and seasonable Advertisement in the Honour-
able the principal *Officers* and *Commissioners*, what they have late-
ly suggested to this *Illustrious Society*, for the timely prevention
and redress of this intollerable defect. For it has not been the late
increase of *Shipping* alone, the multiplication of *Glass-works*, *Iron-*
Furnaces, and the like, from whence this im-politick diminution
of our *Timber* has proceeded; but from the disproportionate
B spreading

A Discourse of Forest-Trees.

spreading of *Tillage*, caused through that prodigious havock made by such as lately professing themselves against *Root* and *Branch* (either to be re-imbours'd of their *holy* purchases, or for some other sordid respect) were tempted, not only to fell and cut down, but utterly to grub up, demolish, and raze, as it were, all those many goodly *Woods*, and *Forests*, which our more prudent *Ancestors* left standing, for the Ornament, and service of their *Country*. And this devastation is now become so *Epidemical*, that unless some favourable *expedient* offer it self, and a way be seriously, and speedily resolv'd upon, for the future repair of this important *desert*, one of the most glorious, and considerable *Bulwarks* of this *Nation*, will, within a short time be totally wanting to it.

2. To attend now a spontaneous supply of these decay'd *Materials* (which is the vulgar, and natural way) would cost (besides the *Inclosure*) some entire *Ages* repose of the *Plow*: Therefore, the most expeditious, and obvious *Method*, would (doubtless) be by one of these two ways, *Sowing*, or *Planting*. But, first, it will be requisite to agree upon the *Species*; as what *Trees* are likely to be of greatest *Use*, and the fittest to be cultivated; and then, to consider of the *Manner* how it may best be effected. Truly, the *waste*, and *destruction* of our *Woods*, has been so universal, that I conceive nothing less than an universal *Plantation* of all the sorts of *Trees* will supply, and well encounter the defect; and therefore, I shall here adventure to speak something in general of them all; though I chiefly insist upon the propagation of such only as seem to be the most wanting, and serviceable.

3. I distribute them, therefore, into these two *Classes*, the *Dry*, and the *Aquatic*; both of them applicable to the same civil uses of *Building*, *Utensils*, *Ornament* and *Fuel*; for to dip into their *Medicinal* virtues is none of my *Province*.

Among the *dry*, I esteem the more principal, and solid, to be the *Oak*, *Elme*, *Beech*, *Ash*, *Chest-nut*, *Wall-nut*, &c. The less principal, the *Service*, *Maple*, *Lime-tree*, *Horn-beam*, *Quick-beam*, *Birch*, *Hassel*, &c. together with all their *sub-alternate*, and several kinds.

*Sed neque quàm multæ species, nec nomina quæ sint
Est numerus, Geor.*

Of the *Aquatical*, I reckon the *Poplars*, *Ash*, *Alder*, *Willow*, *Sallow*, *Osier*, &c. Then I shall add a word or two, for the encouragement of the planting of *Fruit-trees*, together with some less *vulgar*, but no less *useful* *Trees*, which, as yet are not *endenizon'd* amongst us, or (at least) not much taken notice of: And in pursuance hereof, I shall observe this order: First, to shew how they are to be *Raised*, and then to be *Cultivated*: By *Raising*, I understand the *Seed* and the *Soil*; by *Culture* the *Planting*, *Fencing*, *Watering*, *Dressing*, *Pruning* and *Cutting*; of all which briefly.

And

A Discourse of Forest-Trees.

3

And first for their *Raising*, some there are
——— *nullis hominum cogentibus, ipsæ*
sponte sua veniunt——— Specifying according to the various
disposition of the *Air*, and *Soil*.

Pars autem posito surgunt de semine. As the *Oak*, *Chest-nut*,
Asb, &c.

Pullulat ab radice aliis densissima Sylva. As the *Elme*, *Al-*
der, &c. and there are others

Nil radicis egent——— Growing without any such *Roots*;
as *Willows*, and all the *Vimineous* kinds, which are raised of
Sets only.

Hos natura modos primum dedit——— For thus we see there are
more ways to the *Wood* than one; and *Nature* has furnish'd us with
variety of expedients.

4. But it has been stily controverted by some, whether were
better to raise *Trees* for *Timber*, and the like uses, from their
Seeds and first *Rudiments*; or to *Transplant* such as we find have
either rais'd themselves from their *Seeds*; or spring from the *Mo-*
ther-roots. Now, that to produce them immediately of the *Seed*
is the better way, these *Reasons* may seem to evince.

First, because they take soonest. *Secondly*, because they make
the straightest, and most uniform shoot. *Thirdly*, because they
will neither require *staking*, nor *watering* (which are two very
considerable *Articles*) and *lastly*, for that all *transplanting* (though
it much improve *Fruit-trees*) unless they are taken up the first
Year, or two, is a considerable impediment to the growth of *For-*
est-trees. And, though it be true that divers of those which are
found in *Woods*, especially *Oaklings*, young *Beeches*, *Asb*, and some
others, spring from the self-sown *mast* and *keys*; yet, being for
the most part dropp'd, and disseminated amongst the half-rotten
sticks, musty leaves, and perplexities of the *mother-roots*, they
grow scraggy; and being over-dripp'd become squalid and mos-
sie, which checks their growth, and causes them to dwindle

Crescentique adimunt fetus, uruntque ferentem.

Nor can their roots expand, and spread themselves as they would,
do if they were sown, or had been planted in a more open, free,
and ingenuous *Soil*. And that this is so, I do affirm upon *Expe-*
rience, that an *Acorn* sown by hand in a *Nursery*, or ground where
it may be free from these encumbrances, shall in two or three
Years out-strip a *Plant* of twice that age, which has either been
self-sown in the *Woods*, or removed; unless it fortune, by some
favourable accident, to have been scatter'd into a more natural,
penetrable, and better qualified place: But this disproportion is
yet infinitely more remarkable in the *Pine*, and the *Wall-nut-tree*,
where the *Nut* set into the ground shall certainly overtake a *Tree*
of ten years growth which was planted at the same instant; and
this is a *Secret* so generally mis-represented by most of those who
have treated of these sort of *Trees*, that I could not suffer it to

pass over without a particular *remark*; so as the noble *Poet* (with pardon for receding from so venerable *Authority*) was certainly mistaken, when he delivers this observation as *universal*, to the prejudice of *Sowing*, and raising *Woods* from their Rudiments :

*Nam quæ seminibus jactis se sustulit arbor
Tarda venit; seris factura nepotibus umbram.*

Geor. l. 2.

CHAP. I.

Of the Seed.

Seed.

1. **B**UT to commence with the *Method* propos'd : Chuse your *Seed* of that which is perfectly *mature*, *ponderous* and *sound*; commonly that which is easily shaken from the boughs, or gathered about *November*, immediately upon its spontaneous fall, is best, and does (for the most part) direct to the proper season of *interring*, &c. according to the *Institution* of *Nature* her self :

*Nam specimen sationis, & insitionis origo
Ipsa fuit rerum primum natura creatrix :
Arboribus quoniam bacca, glandesque caduce
Tempestiva dabant pullorum examina subter, &c.*

Lucret. l. 5.

Yet this is to be consider'd, that if the *place* you sow in be too cold for an *Autumnal* semination, your *Acorns*, *Mast*, and other *Seeds* may be prepared for the *Vernal* by being barrell'd, or potted up in moist *Sand* or *Earth stratum* S. S. during the *Winter*; at the expiration whereof you will find them *sprouted*; and being committed to the *Earth*, as apt to *take* as if they had been sown with the most early : by this means, too, they have escaped the *Vermine* (which are prodigious devourers of *Winter* sowing) and will not be much concern'd with the increasing heat of the *Season*, as such as being crude, and *unfermented* are newly sown in the beginning of the *Spring*; especially in hot and loose *Grounds*; being already in so fair a progress by this artificial preparation; and which (if the provision to be made be very great) may be thus manag'd. Chuse a fit piece of *Ground*, and with boards (if it have not that *position* of it self) design it three foot high; lay the first foot in fine *Earth*, another of *Seeds*, *Acorns*, *Mast*, *Keys*, *Nuts*, *Haws*, *Holly-berries*, &c. promiscuously, or separate, with (now, and then) a little *Mould* sprinkled amongst them : The third foot wholly *Earth* : Of these preparatory *Magazines* make as many, and as much larger-ones as will serve your turn, continuing it from time to time as your *store* is brought in. The same may you also do by burying your *Seeds* in *Sand*, Barrelling

ling them (as I said) in *Tubs*, or laid in heaps in some deep *Cellar* where the rigour of the *Winter* may least prejudice them; and I have fill'd old *Hampers*, *Bee-hives*, and *Boxes* with them, and found the like advantage, which is to have them ready for your *Seminary*, as before hath been shew'd, and exceedingly prevent the season.

2. But to pursue this to some farther Advantage; as to what concerns the election of your *Seed*, It is to be consider'd, that there is vast difference in *Trees* even of the same *growth* and *bed*, which I judge to proceed from the variety and quality of the *Seed*: This, for instance, is evidently seen in the heart, *procerity* and stature of *Timber*; and therefore chuse not your *Seeds* always from the most *Fruitful-trees*, which are commonly the most *Aged*, and decayed; but from such as are found most *solid* and *fair*: Nor, for this reason, covet the largest *Acorns*, &c. (but as *Husband-men* do their *Wheat*) the most *weighty*, *clean* and *bright*: This Observation we deduce from *Fruit-trees*, which we seldom find to bear so kindly, and plentifully, from a *sound* stock, *smooth* Rind, and *firm* Wood, as from a *rough*, *lax*, and *untoward* Tree, which is rather prone to spend it self in *Fruit*, the ultimate effort, and final endeavour of its most delicate *Sap*, then in *solid* and *close substance* to encrease the *Timber*. And this shall suffice, though some haply might here recommend to us a more accurate *Microscopical* examen, to interpret their most secret *Schematisms*, which were an over *nicity* for these great *Plantations*.

3. As concerning the *medicating*, and *insuccation* of *Seeds*, or enforcing the Earth by rich and generous *Composts*, &c. for *Trees* of these kinds, I am no great favourer of it; not only, because the *charge* would much discourage the *Work*; but for that we find it unnecessary, and for most of our *Forest-trees*, noxious; since even where the Ground is too fertile, they thrive not so well; and if a *Mould* be not proper for *one* sort it may be fit for *another*: Yet I would not (by this) hinder any from the trial, what advance such *Experiments* will produce: In the mean time, for the simple *Imbibition* of some *Seeds* and *Kernels*, when they prove extraordinary dry, and as the Season may fall out, it might not be amiss to *macerate* them in *Milk*, or *Water* only, a little *impregnated* with *Cow-dung*, &c. during the space of twenty four hours, to give them a *spirit* to sprout, and *chet* the sooner; especially, if you have been retarded in your *sowing* without our former preparation.

4. Being thus provided with *Seeds* of all kinds, I would advise to raise *Woods* by sowing them *apart*, in several places destin'd for their growth, where the *Mould* being prepar'd (as I shall shew hereafter) and so qualified (if election may be made) as best to suit with the nature of the *Species*, they may be sown *promiscuously*, which is the most natural and *Rural*; or in straight and even lines, for *Hedge-rows*, *Avenues*, and *Walks*, which is the more *Ornamental*: But because some may chuse rather to draw them out of *Nurseries*; that the *Culture* is not much different, nor the hinderance considerable (provided they be early, and carefully *Removed*)

moved) I will finish what I have to say concerning these *Trees* in the *Seminary*, and shew how they are *there* to be *Raised*, *Transplanted*, and *Govern'd* till they can shift for themselves.

CHAP. II.

Of the *Seminary*.

Seminary.

I. **Q**ui *Vineam, vel Arbustum constituere volet, Seminaria prius facere debet*, was the precept of *Columella*, l. 3. c. 5. speaking of *Vineyards* and *Fruit-trees*: and, doubtless, we cannot pursue a better Course for the propagation of *Timber-trees*: For though it seem but a trivial design that one should make a *Nursery* of *Foresters*; yet is it not to be imagin'd, without the experience of it, what prodigious *Numbers* a very small spot of Ground well Cultivated, and destin'd for this purpose would be able to furnish towards the sending forth of yearly *Colonies* into all the naked quarters of a *Lordship*, or *Demeasnes*; being with a pleasant *Industry* liberally distributed amongst the *Tenants*, and dispos'd of about the *Hedge-rows*, and other *Waste*, and uncultivated places, for *Timber*, *Shelter*, *Fuel*, and *Ornament*, to an incredible Advantage. This being a cheap, and laudable Work, of so much pleasure in the execution, and so certain profit in the event; to be but once well done (for, as I affirm'd, a very small *Nursery* will in a few Years people a vast extent of Ground) hath made me sometimes in admiration at the universal negligence.

2. Having therefore made choice of some fit place of *Ground*, well *Fenced*, respecting the *South-east*, rather than the full *South*, and well protected from the *North* and *West*; let it be *Broken up* the *Winter* before you sow, to mellow it, especially if it be a *Clay*, and then the *furrow* would be made deeper; or so, at least, as you would prepare it for *Wheat*: Or you may *Trench* it with the *Spade*, by which means it will the easier be cleansed of whatsoever may obstruct the putting forth, and insinuating of the tender *Roots*: Then having given it a second *stirring*, immediately before you sow, cast, and dispose it into *Rills*, or small narrow *Trenches* of four, or five inches deep, and in even lines, at two foot interval, for the more commodious *Runcation*, *Hawing*, and dressing the *Trees*: Into these *Furrows* (for a *Conseminea Sylva*) throw your *Oak*, *Beech*, *Ash*, *Nuts*, all the *Glandiferous* Seeds, *Mast*, and *Key-bearing* kinds, so as they lye not too thick, and then cover them very well with a *Rake*, or fine-tooth'd *Harrow*, as they do for *Pease*: Or, to be more accurate, you may set them as they do *Beans* (especially, the *Nuts* and *Acorns*) and that every *Species* by themselves, which is the better way: This is to be done at the latter end of *October*, for the *Autumnal* sowing; and in the lighter ground, about *February* for the *Vernal*.

3. Your *Plants* beginning now to peep should be earthed up, and

and comforted a little; especially, after breaking of the greater *Frosts*, and when the swelling mould is apt to spue them forth; but when they are about an *inch* above ground you may, in a *moist* season, draw them up where they are too *thick*, and set them immediately in other lines, or *Beds* prepared for them; or you may plant them in double *fosses*, where they may abide for good and all, and to remain till they are of a competent stature to be *Transplanted*; where they should be set at such *distances* as their several *kinds* require; but if you draw them only for the thinning of your *Seminary*, prick them into some empty *Beds* at one foot *interval*, leaving the rest at two or three.

4. When your *Seedlings* have stood thus till *June*, bestow a half digging upon them, and scatter a little *mungy*, half-rotten *Litter*, *Fearn*, *Bean-hame*, or old *Leaves* among them, to preserve the *Roots* from scorching, and to entertain the moisture; and then in *March* following (by which time it will be quite consum'd and very mellow) you shall *chop* it all into the *earth*, and mingle it together: Continue this *process* for two or three years successively, and then (or before, if the stature of your young *Impes* invite) you may plant them forth, carefully taking up their *Roots*, and cutting the *Stem* within an *inch* of the ground (if the *kind*, of which hereafter, suffer the *knife*) set them where they are to continue: Some repeat this the second *Year*, and after *March* (the *Moon* decreasing) re-cut them at half a foot from the *surface*; and then meddle with them no more: but this (if the *process* be not more severe then needs) must be done with a very sharp *Instrument*, and with care, lest you violate, and unsettle the *Root*; which is likewise to be practis'd upon all those which you did not *Transplant*, unless you find them very thriving *Trees*; and then it shall suffice to *prune* off the *Branches*, and spare the *Tops*; for this does not only greatly establish your *Plants*, by diverting the *Sap* to the *Roots*; but likewise frees them from the injury and concussion of the *Winds*, and makes them to produce handsome, straight *shoots*, infinitely preferable to such as are abandon'd to *Nature*, and *Accident*, without this discipline: By this means the *Oak* will become excellent *Timber*, shooting into straight and single *stems*: The *Chest-nut*, *Ash*, &c. multiply into *Poles*, which you may reduce to *standards* at pleasure.

5. The Author of the Natural History, *Pliny*, tells us it was a vulgar *Tradition*, in his time, that no *Tree* should be Removed under two years old, or above three: *Cato* would have none *Transplanted* less then five fingers in *diametre*; but I have shew'd why we are not to attend so long, for such as we raise of *Seedlings*: In the interim, if these directions appear too busie, or *operose*, or that the *Plantation* you intend be very ample, a more compendious *Method* will be the confused sowing of *Acorns*, &c. in *Furrows*, two foot asunder, covered at three fingers depth, and so for three years cleansed, and the first *Winter* cover'd with *fearn*, without any farther culture, unless you *Transplant* them; but, as I shewed before, in *Nurseries* they would be cut an *inch* from the *Ground*,
and

and then let stand till *March* the second year, when it shall be sufficient to *disbranch* them to *one* only shoot; whether you suffer them to *stand*, or remove them elsewhere. But to make an *Essay* what Seed is most agreeable to the *Soil*, you may by the *thriving* of a promiscuous *Semination* make a judgement of it, Transplanting those which you find least agreeing with the *place*; or else, by *Copsing* the *starvlingin* the places where they are new sown, cause them sometimes to overtake even their untouch'd *contemporaries*. But I now proceed to particulars.

 CHAP. III.

Of the Oak.

Oak.

1. I Have sometimes consider'd it very seriously, what should move *Pliny* to make a whole *Chapter* of *one* only *Line*, which is less than the *Argument* of most of the rest in his huge *Volumn*: but the weightiness of the *Matter* does worthily excuse him, who is not wont to spare his *Words*, or his *Reader*. *Glandiferi maximè generis omnes, quibus honos apud Romanos perpetuus.* "Mast-bearing-trees were they principally which the Romans held in chiefest reputation, li. 6. cap. 3. And in the following where he treats of *Chaplets*, and the dignity of the *Civic Coronet*, it might be compos'd of the *Leaves* or *Branches* of any *Oak*, provided it were a *bearing Tree*, and had *Acorns* upon it. It is for the esteem which these *wise*, and glorious *people* had of this *Tree* above all others, that I will first begin with the *Oak*.

2. The *Oak* is of *four* kinds; two of which are most common with us; the *Quercus urbana*, which grows more up-right, and being clean, and lighter is fittest for *Timber*: And the *Robur* or *Quercus Sylvestris*, which is of an hard, black grain, bearing a smaller *Acorn*, and affecting to spread in *branches*, and to put forth his *Roots* more above ground; and therefore in the planting, to be allow'd a greater distance; *viz.* from *twenty five*, to *forty foot*; whereas the other shooting up more erect will be contented with *fifteen*: This *kind* is farther to be distinguish'd by his fullness of *leaves*, which *tarnish*, and becoming yellow at the *fall*, do commonly clothe it all the *Winter*, the *Roots* growing very deep and stragling. The Author of *Britannia Baconica* speaks of an *Oak*, in *Lanhadron Park* in *Cornwall*, which bears constantly leaves speckl'd with *White*; and of another call'd the *Painted-oak*, which I only mention here, that the variety may be compar'd by some ingenious person thereabouts, as well as the truth of the fatal *pre-admonition* of *Oaks* bearing strange leaves. It is in the mean time the propagation of this large spreading.

3. *Oak* which is especially recommended for the excellency of the *Timber*, and that his *Majesties* Forests were well and plentifully

fully stor'd with them; because they require room, and space to amplify and expand themselves, and would therefore be planted at more remote distances, and free from all encumbrances: And this upon consideration how *slowly* a full-grown *Oak* mounts upwards, and how *speedily* they spread, and dilate themselves to all *quarters*, by dressing and due culture; so as above *forty years* advance is to be gain'd by this only Industry: And, if thus his *Majesties* Forests, and *Chases*, were stor'd; *viz.* with this *spreading Tree* at handsome *Intervals*, by which *Grazing* might be improv'd for the feeding of *Deer* and *Cattel* under them, benignly visited with the *gleams* of the *Sun*, and adorn'd with the distant *Landships* appearing through the glades, and frequent *Vallies*

*Cærulea distinguens inter plaga currere possit
Per tumulos, & convalles, camposque profusa:
Ut nunc esse vides vario distincta lepore
Omnia, quæ pomis interstita dulcibus ornant
Arbustisque tenent felicibus obsita circum.*

As the *Poet* incomparably describes his *Olive-groves*,

————— betwixt

Whose rows the azure *skie* is seen immix'd,
With *Hillocks*, *Vales*, and *Fields*, as now you see
Distinguish'd with a sweet variety;
Such places which wild *Apple-trees* throughout
Adorn, and happy *shrubs* grow all about.

Lucret. lib. 5.

(For so we might also sprinkle *Fruit-trees* amongst them (of which hereafter) for *Cider* and many singular uses) we should find such goodly *Plantations* the boast of our *Rangers*, and *Forests* infinitely preferable to any thing we have yet beheld, *rude*, and *neglected* as they are: I say, when his *Majesty* shall proceed (as he hath *design'd*) to animate this laudable pride into fashion, *Forests* and *Woods* (as well as *Fields* and *Inclosures*) will present us with another face than now they do. And here I cannot but applaud the worthy Industry of old *Sir Harbottle Grimstone*, who (I am told) from a very small *Nursery* of *Acorns* which he sow'd in the neglected corners of his ground, did draw forth such numbers of *Oaks* of competent growth; as being planted about his *Fields* in even, and uniform rows, about one hundred foot from the *Hedges*; bush'd, and well water'd till they had sufficiently fix'd themselves, did wonderfully improve both the beauty, and the value of his *Demefnes*. But I proceed.

4. Both these *kinds* would be taken up very young, and *Transplanted* about *October*; and though they will grow tolerably in moist grounds; yet do they generally affect the *sound*, *black*, *deep* and *fast* mould, rather warm than over wet and cold, and a little *rising*; for this produces the firmest *Timber*; and so our former Naturalist

— in montem succedere sylvas
Cogebant.

Lucret.

though my L. Bacon prefer that which grows in the *moister* grounds for *Ship-timber*, as the most *tough*, and less subject to *rift*: but let us hear *Pliny*. This is a general Rule, *saieth he*; “What Trees soever they be which grow tolerably either on “*Hills*, or *Vallies*, arise to greater stature, and spread more amply “in the *lower ground*: But the *Timber* is far better, and of a finer “*grain*, which grows upon the *Mountains*; excepting only *Apple*, “and *Pear-trees*. And in the 39. cap. lib. 16. The *Timber* of those “Trees which grow in *moist* and *shady* places is not so good as “that which comes from a more expos’d situation, nor is it so close, “substantial and durable; upon which he much prefers the *Tim-* “*ber* growing in *Tuscany*, before that towards the *Venetian* side, “and upper part of the *Gulph*: And that *Timber* so growing was in greatest esteem long before *Pliny*, we have the *spear* of *Agamemnon*

— — — — — ἔχει ἀνιμωτεροῦς ἔσχε. ΙΑ λ. from a Tree so expos’d; and *Dydimus* gives the reason. Τὰ γὰρ ἐν δένδρῳ (says he) πλείον γυμναζομένη δένδρα, σερτά, &c. For that being continually *weather-beaten* they become harder and tougher.

5. But to discourage none, *Oaks* prosper exceedingly even in gravel, and moist *Clays*, which most other Trees abhor; yea, even the coldest *clay* grounds that will hardly graze: I have read, that there grow *Oaks* (some of which have contain’d ten loads apiece) out of the very Walls of *Silcester* in *Hants*, which seem to strike root in the very *Stones*. It is indeed observ’d, that *Oaks* which grow in rough, *stony* grounds, and obstinat *clays*, are long before they come to any considerable stature; for such places, and all sort of *Clay*, is held but a *step-mother* to *Trees*; but in time they afford the most excellent *Timber*, having stood long, and got good *rooting*: The same may we affirm of the lightest *sands*, which produces a smoother-grain’d *Timber*, of all other the most useful for the *Joyner*. What improvement the *stirring* of the ground about the roots of *Oaks* is to the *Trees* I have already hinted; and yet in *Copses* where they stand *warm*, and so thicken’d with the *under-wood*, as this culture cannot be practis’d, they prove in time to be goodly *Trees*.

6. That the Transplanting of young *Oaks* gains them *ten years Advance* some happy persons have affirmed: from this belief, I have desir’d to be excus’d, and produc’d my Reasons for it: Nor less are they *mistaken*, who advise us to plant *Oaks* of a great *bigness*, which hardly make any considerable *progress* in an *Age*: Yet if any be desirous to make *trial* of it, let their *Stems* be of the smoothest, and tenderest *Bark*; for that is ever an indication of *youth*, as well as the paucity of their *Circles*, which in disbranching, and cutting the head off, at *five* or *six* foot height (a thing, by the way, which the *French* usually spare when they *Transplant* this *Tree*) may

may (before you stir their *Roots*) serve for the more certain *Guide*; and then plant them immediately, with as much Earth as will adhere to them, in the place destin'd for their *station*; abating only the *tap-roots*, which is that down-right, and stubby part of the *Roots* (which all *Trees* rais'd of *Seeds* do universally produce) and quickning some of the rest with a sharp *knife* (but sparing the *Fibrous*, which are the main *Suckers* and *Mouths* of all *Trees*) spread them in the *fosse*, or *pit* which hath been prepar'd to receive them. I say in the *fosse*, unless you will rather *trench* the whole *Field*, which is incomparably the best; and infinitely to be prefer'd before narrow *pits* and *holes* (as the manner is) in case you plant any number considerable, the Earth being hereby made *loose*, *easier* and *penetrable* for the *Roots*; about which you are to cast that *Mould* which (in opening of the *Trench*) you took from the *Surface*, and purposely laid apart; because it is sweet, mellow, and better *impregnated*: But in this *Work*, be circumspect never to *inter* your *Stem* deeper then you found it standing; for profound *buryings* very frequently destroys a *Tree*; though an *Error* seldom observed: If therefore the *Roots* be sufficiently cover'd to keep the *Body* steady and erect, it is enough; and the not minding of this trifling *Circumstance* does very much deceive our ordinary *Wood-men*: For most *Roots* covet the *Air* (though that of the *Quercus urbana* least of any:

— quòd quantum vertice ad auras
Æthereas, tantum radice ad tartara tendit)

And the perfection of *that* does almost as much concern the prosperity of a *Tree*, as of *Man* himself; since *Homo* is but *Arbor inversa*; which prompts me to this *curious*, but important *Advertisement*; That the *Position* be likewise sedulously observed.

7. For, the *Southern* parts being more *dilated*, and the *pores* expos'd (as evidently appears in their *Horizontal Sections*) by the constant *Excentricity* of their *Hyperbolical Circles*; being now on the *sudden*, and at such a season converted to the *North*, does *sterve*, and destroy more *Trees* (how careful soever men have been in ordering the *Roots*, and preparing the *Ground*) then any other *Accident* whatsoever (neglect of *staking*, and *defending* from *Cattle* excepted) the importance whereof caused the best of *Poets*, and most experienc'd in this *Argument*, giving advice concerning this *Article*, to add

Quinetiam Cœli regionem in cortice signant,
Ut quo quæque modo steterit, quâ parte calores
Austrinos tulerit, quæ terga obverterit axi
Restituant: Adeo in teneris consuescere multum est.

Geor. li. 1.

Which *Monition*, though *Pliny*, and some *others* think good to neglect, or esteem *Indifferent*; I can confirm from frequent losses of my own, and by particular *trials*; having sometimes *Trans-*

planted great trees at *Mid-summer* with success (the *Earth* adhering to the *Roots*) and miscarried in others where this *Circumstance* only was omitted.

To observe therefore the *Coast*, and side of the stock (especially of *Fruit-trees*) is not such a trifle as by some pretended: For if the *Air* be as much the *Mother* or *Nurse*, as *Water* and *Earth*, (as more then probable it is) such blossoming Plants as court the motion of the *Meridian Sun*, do as 'twere evidently point out the advantage they receive by their *position*: And the frequent *mossiness* of most *Trees* on the opposite side does sufficiently note the unkindness of that *Aspect*; and which is most evident in the *bark* of *Oaks* white and smooth; The *Trees* growing more kindly on the *South* side of an *Hill*, then those which are expos'd to the *North*, with an hard, dark, rougher, and more mossie *Integument*. I have seen (writes a worthy *Friend* to me on this occasion) whole *Hedge-rows* of *Apples* and *Pears* that quite perish'd after that shelter was remov'd: The good *Husbands* expected the contrary, and that the *Fruit* should improve, as freed from the predations of the *Hedge*; but use and custom made that shelter necessary; and therefore (saith he) a *stock* for a time is the weaker, taken out of a *Thicket*, if it be not well protected from all sudden and fierce invasions either of crude *Air* or *Winds*: Nor let any be deterr'd, if being to remove many *Trees*, he shall esteem it too consumptive of time; for with a *Brush* dipped in any *white* colour, or *Oaker*, a thousand may be marked as they stand, in a moment; and that once done, the difficulty is over. I have been the larger upon these two *Remarks*, because I find them so *material*, and yet so much neglected.

8. There are other *Rules* concerning the *situation* of *Trees*; the former *Author* commending the *North-east-wind* both for the flourishing of the *Tree*, and advantage of the *Timber*; but to my observation, in our *Climates*, where those sharp *winds* do rather *flanker* then blow fully opposite upon our *Plantations*, they thrive best; and there are as well other *Circumstances* to be considered, as they respect *Rivers* and *Marshes* obnoxious to unwholsom and poisonous *Fogs*; *Hills*, and *Seas*, which expose them to the weather; and those *syloisfragi venti*, our cruel, and tedious *Western winds*; all which I leave to observation; because these *accidents* do so universally govern, that it is not easie to determine farther then that the *Timber* is commonly better qualified which hath endur'd the *colder Aspects* without these prejudices: And hence it is, that *Seneca* observes *Woods* most expos'd to the *Winds* to be the most *strong* and *solid*, and that therefore *Chiron* made *Achilles's* *Spear* of a *Mountain-tree*; and of those the *best* which grow thin, not much shelter'd from the *North*. Again, *Theophrastus* seems to have special regard to *places*; exemplifying in many of *Greece*, which exceeded others for good *Timber*, as doubtless do our *Oaks* in the *Forest* of *Dean* all others of *England*: and much certainly there may reasonably be attributed to these advantages for the growth of *Timber*, and of almost all other *Trees*, as we daily see by their
general

general improsperity where the ground is a *hot gravel*, and a *loose earth*: An *Oak* or *Elme* in such a place shall not in an *hundred years* overtake one of *fifty* planted in its *proper soil*; though next to this, and (haply) before it, I prefer the good *Air*: But thus have they such vast *Junipers* in *Spain*; and the *Asbes* in some parts of the *Levant* (as of old neer *Troy*) so excellent, as it was after mistaken for *Cedar*, so great was the difference; as now the *Cantabrian* or *Spanish* exceeds any we have else in all *Europe*.

9. But before we take leave of this *Paragraph*, concerning the *Transplanting* of great *Trees*, and to shew what is possible to be effected in this kind, with cost, and industry; *Count Maurice* (the late *Governour* of *Brasil* for the *Hollanders*) planted a *Grove* neer his delicious *Paradise* of *Friburge*, containing six hundred *Cocotrees* of *eighty* years growth, and *fifty* foot high to the neereft bough: these he wafted upon *Floats*, and *Engines*, four long miles, and planted them so luckily, that they bare abundantly the very first year; as *Gaspar Barleus* hath related in his elegant *Description* of that *Princes* expedition: Nor hath this only succeeded in the *Indies* alone; *Monsieur de Fiat* (one of the *Marshals* of *France*) hath with huge *Oaks* done the like at *de Fiat*: shall I yet bring you neerer home? My Lord *Hopton* planted *Oaks* as big as twelve *Oxen* could draw, to supply some defect in an *Avenue* to one of his houses in *Devonshire*; as the Right Honourable *Sir Charles Barclay*, *Treasurer* of His *Majesties Household*, assur'd me; who had himself likewise practis'd the *Removing* of great *Oaks* by a particular address extremely ingenious, and worthy the communication.

10. Chuse a *Tree* as big as your *thigh*, remove the earth from about him; cut through all the *collateral Roots*, till with a competent strength you can enforce him down upon one side, so as to come with your *Axe* at the *Tap-root*; cut that off, redress your *Tree*, and so let it stand cover'd about with the *mould* you loosen'd from it, till the next year, or longer if you think good; then take it up at a fit season; it will likely have drawn new tender *Roots* apt to take, and sufficient for the *Tree*, wheresoever you shall transplant him: *Pliny* notes it as a common thing, to re-establish huge *Trees* which have been blown down, part of their *Roots* torn up, and the body prostrate; and, in particular, of a *Fir*, that when it was to be *transplanted* had a *tap-root* which went no less then *eight* cubits *perpendicular*; and to these I could superadd, but I proceed. To facilitate the *Removal* of such monstrous *Trees*, for the *Adornment* of some particular *place*, or the rarity of the *Plant*, there is this *expedient*. A little before the hardest *Frosts* surprize you, make a square *Trench* about your *Tree*, at such distance from the *Stem* as you judge sufficient for the *Root*; dig this of competent depth, so as almost quite to undermine it; by placing *blocks*, and *quarters* of wood, to sustain the *Earth*; this done, cast in as much *Water* as may fill the *Trench*, or at least sufficiently wet it, unless the ground were very moist before. Thus let it stand, till some very hard *Frost* do bind it firmly to the
Roots,

Roots, and then convey it to the *pit* prepar'd for its new station; but in case the mould about it be so *ponderous* as not to be remov'd by an ordinary force; you may then raise it with a *Crane* or *Pully* hanging between a *Triangle*, which is made of three strong and tall *Limbs* united at the top, where a *Pully* is fastned, as the *Cables* are to be under the quarters which bear the earth about the *Roots*: For by this means you may weigh up, and place the whole weighty *Clod* upon a *Trundle* to be convey'd, and *Replanted* where you please, being let down perpendicularly into the place by the help of the foresaid *Engine*. And by this *address* you may *Transplant* Trees of a wonderful *stature*, without the least disorder; and many times without *topping*, or diminution of the *head*, which is of great importance where this is practis'd to supply a *Defect*, or remove a *Curiosity*.

11. Some advise, that in planting of *Oaks*, &c. *four*, or *five* be suffer'd to stand very neer to one another, and then to leave the most *prosperous*, when they find the rest to disturb his growth; but I conceive it were better to plant them at such *distances*, as they may least incommode one another: For *Timber-trees*, I would have none neerer then *forty* foot where they stand *closest*; especially of the spreading kind.

12. Lastly, Trees of ordinary stature *Transplanted* (being first well *water'd*) must be sufficiently *staked*, and *Bush'd* about with *thorns*, or with some thing better, to protect them from the concussions of the *Winds*, and from the casual *rubbing*, and poysonous brutting of *Cattle* and *Sheep*, the *oyliness* of whose *Wooll* is also very noxious to them; till being well *grown*, and *fixed* (which by *seven* years will be to some competent degree) they shall be able to withstand all accidental *invasions*, but the *Axe*; for I am now come to their *Pruning* and *Cutting*, in which work the *Seasons* are of main importance.

13. Therefore, if you would propagate *Trees* for *Timber*, cut not off their *heads* at all, nor be too busie with lopping: but if you desire *Shade*, and *Fuel*, or bearing of *Mast* alone, lop off their *Tops*, *sear*, and unthriving *Branche*s only; If you intend an out-right *felling*, expect till *November*; for this *prematu*re cutting down of *Trees* before the *Sap* is perfectly at *rest* will be to your exceeding prejudice, by reason of the *Worm*, which will certainly breed in the *Timber* which is felled before that period: But in case you cut only for the *Chimney*, you need not be so punctual as to the time; yet for the benefit of what you let *stand* observe the *Moons* increase. The *Reason* of these *differences* is; because *this* is the best season for the *growth* of the *Tree* which you do *not* fell, the other for the *durableness* of the *Timber* which you *do*: Now that which is to be *burnt* is not so material for *lasting*, as the *growth* of the *Tree* is considerable for the *Timber*.

14. The very *stumps* of *Oak*, especially that part which is dry, and above ground being well *grubb'd*, is many times worth the pains and charge, for sundry rare, and *hard* works; and where *Timber* is dear: but this is to be practis'd only where you
design

design a final *extirpation*; for some have drawn *suckers* even from an old *stub-root*; but they certainly perish by the *Moss* which invades them, and are very subject to grow rotten. *Pliny* speaks of one *Root* which took up an entire *Acre* of Ground; if so, his *Argument* may hold good for their growth after the *Tree* is come to its period.

15. There is not in *nature* a thing more obnoxious to *deceit*, than the buying of *Trees standing*, upon the reputation of their *Appearance* to the *eye*, unless the *Chapman* be extraordinarily judicious; so various are their *hidden*, and conceal'd *Infirmities*, till they be *fell'd*, and *sawn out*: so as if to any thing *applicable*, certainly there is nothing which does more perfectly confirm it than the most flourishing *out-side* of *Trees*, *Fronti nulla fides*. A *Timber-tree* is a *Merchant Adventurer*, you shall never know what he is *worth*, till he be *dead*.

16. *Oaks* are in some places (where the soil is *specially* qualified) ready to be cut for *Cops* in *fourteen* years and sooner; I compute from the first *semination*; though it be told as an instance of high encouragement (and as indeed it merits) that a *Lady* in *Northamptonshire* sowed *Acorns*, and liv'd to cut the *Trees* produc'd from them, *twice* in *two* and *twenty* years; and *both* as well grown as most are in *sixteen* or *eighteen*. This yet is certain, that *Acorns* set in *Hedge-rows* have in *thirty* years born a *stem* of a foot *diameter*. Generally, *Copp-wood* should be cut *close*, and at such *Intervals* as the growth requires; which being seldom constant, depends much on the *places*, and the *kinds*, the *mould* and the *air*, and for which there are extant particular *Statutes* to direct us, of all which more at large hereafter. Oak for *Tan-bark* may be *fell'd* from *April* to the last of *June*, by a *Statute* in the 1 *Jacobi*.

17. To enumerate now the incomparable *Uses* of this *Wood*, were needless: But so precious was the esteem of it, that of *old* there was an express *Law* amongst the *Twelve Tables* concerning the very gathering of the *Acorns* though they should be found fallen into another mans *Ground*: The *Land* and the *Sea* do sufficiently speak for the improvement of this excellent material; *Houses*, and *Ships*, *Cities* and *Navies* are built with it; and there is a *kind* of it so *tough*, and extremely compact, that our sharpest *Tools* will hardly enter it, as scarcely the very *Fire* it self, in which it consumes but slowly, as seeming to partake of a *ferruginous*, and *metallin* shining nature proper for sundry robust *Uses*. That which is *twin'd*, and a little *wreath'd* (easily to be discern'd by the *texture* of the *Bark*) is best to support *Burthens*, for *Posts*, *Columns*, *Summers*, &c. for all which our *English Oak* is infinitely preferable to the *French*, which is nothing so *useful*, nor comparably so *strong*; insomuch as I have frequently admir'd at the sudden falling of most goodly *Timber* to the *Eye*, which being employ'd to these *Uses* does many times most dangerously flie in *sunder*, as wanting that native *spring*, and *toughness*, which our *English Oak* is indu'd withall. For *Shingles*, *Pales*, *Lathes*, *Coopers ware*, *Clap-board*, &c. the *finallest* and *straightest* is best; discover'd
like-

likewise by the upright *tenor* of the *Bark*, as being the most proper for *cleaving*: The *knottiest* for *Water-works*, *Piles* and the like; because 'twill drive best, and last longest. Were planting of these *Woods* more in use, we should banish our *hoops* of *Hasel*, &c. for those of good *Oak*, which being made of the younger *shoots*, are exceeding tough and strong: One of them being of *Ground-Oak* will out-last six of the best *Asb*. The smaller trunchions, and *spray*, make *Billet*, *Bavine* and *Coals*; and the very *Bark* is of price with the *Tanner* and *Dier*, to whom the very *Saw-dust* is of use, as are the *Asbes* and *Lee* to cure the *roapishness* of *Wine*. The *Ground-Oak* while young is us'd for *Poles*, *Cudgels* and *Walking-staffs*, not to forget the *Galls*, *Mistletoe*, and many other useful *Excrecencies*: *Pliny* affirms that the *Galls* do break out altogether in one *night* about the beginning of *June*, and arrive to their full growth in one *day*; this I recommend to the experience of some extraordinary vigilant *Wood-man*. What benefit the *Mast* does universally yield for the fattening of *Hogs* and *Deer* I shall shew upon another occasion, before the conclusion of this Discourse; in the mean time, the very *Acorns* themselves were heretofore the *Food* of *Men* (as well as other *Productions* of the earth) till their luxurious *Palats* were *debauched*; and even in the *Romans* time, the custom was in *Spain* to make a *second service* of *Acorns* and *Mast*, (as the *French* now do of *Marrons*, and *Chest-nuts*) which they likewise used to roast under the *embers*. *Oaks* bear also a *knur*, full of a *Cottony* matter, of which they Antiently made *Wick* for their *Lamps* and *Candles*; and among the *Selectiora Remedia* of *Jo. Prævotius* there is mention of an *Oyl* à *querna glande* Chymically extracted, which he affirms to be of the longest continuance, and least consumptive of any other whatsoever: for such lights, *ita ut uncia singulis mensibus vix absumaturo continuo igne*. To conclude, *M. Blith* makes *Spars* and small building *Timber* of *Oakes* of *eleven* years growth; this is indeed a prodigious Advance, but I suspect the figure.

CHAP. IV.

Of the Elm.

Elm.

1. **O**F the *Elm* there are *four*, or *five* sorts, and from the difference of the *Soil* and *Air* divers *spurious*: Two of these kinds are most worthy our culture, *viz.* the *Mountain Elm*, which is taken to be the *Oriptelea* of *Theophrastus*; being of a less, jagged and smaller leaf; and the *Vernacula* or *French Elm*, whose leaves are thicker, and more florid, delighting in the lower, and moister grounds, where they will sometimes rise to above an hundred foot in height, and a prodigious growth, in less than an *Age*; my self having seen *one* planted by the hand of a
Countess

Countess yet living, which is neer *twelve* foot in *compass*, and of an *height* proportionable; notwithstanding the numerous *progeny* which grows under the shade of it, some whereof are at least a foot in *Diameter*, that for want of being seasonably *transplanted* must needs have hindered the procerity of their ample and indulgent *Mother*.

2. Both these *sorts* are rais'd of *Appendices* or *Suckers* (as anon we shall describe) but this *latter* comes well from the *Samera* or *Seeds*, which being *ripe* about the beginning of *March* will produce them; as we see abundantly in the *Gardens* of the *Thuylleries*, and that of *Luxembourg*, at *Paris*, where they usually sow themselves, and come up very thick; and so do they in many places of our *Country*, though so seldom taken notice of, as that it is esteem'd a *Fable* by the less observant and ignorant *Vulgar*. To raise them therefore of their *Seeds* (being well dry'd a day or two before) sprinkle it in *Beds* prepar'd of good earth; sieving some of the finest *mould* thinly over them, and watering them when need requires. Being risen an *inch* above ground (refresh'd, and preserv'd from the scraping of *Birds* and *Poultry*) comfort the tender *seedlings* by a second sieving of more fine earth, to establish them; thus keep them clean *weeded* for the first *two years*; or till being of fitting stature to *Remove*, you may *thin*, and *Transplant* them in the same manner as you were directed for young *Oaks*; only they shall not need above one *cutting* where they grow less regular and hopeful. But because this is an *Experiment* of some *curiosity*, obnoxious to many casualties, and that the producing them from the *Mother-roots* of greater *Trees* is very facile and expeditious (besides the numbers which are to be found in the *Hedge-rows*, and *Woods*, of all plantable sizes) I rather advise our *Forester* to furnish himself from those places.

3. The *Suckers* which I speak of are produc'd in abundance from the *Roots*, whence being dextrously *separated*, after the Earth has been well loosen'd, and planted about the end of *October*, they will grow very well: Nay, the *stubs* only, which are left in the ground after a *Felling* (being fenced *in* as far as the *Roots* extend) will furnish you with plenty, which may be *Transplanted* from the *first* year or *two* successively, by slipping them from the *Roots*, which will continually supply you for many years after that the body of the *Mother Tree* has been cut down: And from hence probably is sprung that (I fear) mistake of *Salmasius* and others, where they write of the growing of their *Chips* (I suppose, having some of the bark on) scatter'd in hewing of their *Timber*; the *Error* proceeding from this, that after an *Elm-tree* has been *Fell'd*, the numerous *Suckers* which shoot from the remainders of the *latent* *Roots* seem to be produced from this dispersion of the *Chips*: Let this yet be more accurately examin'd; for I pronounce nothing *Magisterially*.

4. But there is also another *Artifice* to produce them sooner, which is this; *Bare* some of the *Master-roots* of a vigorous *Tree*, within a *foot* of the *Trunk*, or thereabouts, and with your *Axe*

make severall *Chops*, putting a small *stone* into every *cleft*, to hinder their closure, and give access to the *wet*; then cover them with three or four *inch* thick of *Earth*: and thus they will send forth *Suckers* in abundance, which after two, or three *Years*, you may separate, and plant in the *Ulmarium*, or place design'd for them; and which if it be in *plumps* (as they call them) within ten or twelve *foot* of each other, or in *Hedge-rows*, it will be the better: For the *Elm* is a Tree of *Consort*, *Sociable*, and so affecting to grow in *Company*, that the very best which I have ever seen do almost *touch* one another: This also protects them from the *Winds*, and causes them to shoot of an extraordinary *height*; so as in little more than *forty* years they even arrive to a load of *Timber*; provided they be sedulously and carefully cultivated, and the soil propitious. For an *Elm* does not thrive so well in the *Forest*, as where it may enjoy scope for the *Roots* to dilate and spread in the sides, as in *Hedge-rows* and *Avenues*, where they have the *Air* likewise free.

5. Of all the Trees which grow in our *Woods*, there is none which does better suffer the *Transplantation* than the *Elm*; for you may remove a Tree of *twenty years* growth with undoubted success: It is an *Experiment* I have made in a Tree almost as big more as my waste; but then you must totally *disbranch* him, leaving only the *Summit* intire; and being careful to take him up with as much *Earth* as you can, refresh him with abundance of *water*. This is an excellent and expeditious way for great *Persons* to plant the *Accesses* of their *Houses* with; for being dispos'd at *sixteen*, or *eighteen* foot *Interval*, they will in a few years bear goodly *heads*, and thrive to admiration. Some that are very cautious *emplaster* the wounded head of such over-grown *Elms* with a mixture of *clay*, and *horse-dung*, bound about them with a *wisp* of *Hay* or fine *Moss*, and I do not reprove it. But for more ordinary plantations, younger Trees, which have their *bark* smooth and tender, about the scantling of your *leg*, and their *heads* trimm'd at *five* or *six* foot *height*, are to be preferr'd before all other. *Cato* would have none of these sorts of *Trees* to be removed till they are *five* or *six* fingers in *diameter*; others think they cannot take them too *young*; but experience (the best *Mistress*) tells us, that you can hardly plant an *Elm* too *big*. There are who pare away the *Root* within two fingers of the *stem*, and quite cut off the *Head*; but I cannot commend this extream severity, no more then I do the strewing of *Oats* in the pit; which *fermenting* with the moisture, and frequent *waterings*, is believed much to *accelerate* the putting forth of the *Roots*; not considering, that for want of *air* they corrupt, and grow *musty*, which more frequently suffocates the *Roots*, and endangers the whole *Tree*.

6. The *Elm* delights in a *sound*, *sweet* and *fertile* Land, something more inclin'd to moisture, and where good *Pasture* is produced; though it will also prosper in the gravelly, provided there be a competent depth of *mould*, and be refresh'd with springs: in defect of which, being planted on the very surface of the ground (the
swarth

swarth par'd first away, and the earth stirred a foot deep or more) they will undoubtedly succeed; but in this *Trial*, let the *Roots* be handsomly spread, and covered a *foot*, or more in height, and above all, firmly *staked*. This is practicable also for other *Trees*, where the *Soil* is over moist, or unkind: For as the *Elm* does not thrive in too *dry*, *sandy* or *hot* grounds, no more will it abide the *cold* and *spongy*; but in places that are competently fertile, or a little elevated from these annoyances; as we see in the *Mounds*, and castings up of ditches, upon whose banks the *Femal* sort does more naturally delight.

7. The *Elm* is by reason of its aspiring, and *tapering* growth (unless it be *topp'd* to enlarge the *branches*, and make them spread low) the least offensive to *Corn*, and *Pasture-grounds*, to both which, and the *Cattel*, they afford a benign *shade*, *defence*, and agreeable *Ornament*.

8. It would be planted as *shallow* as might be; for, as we noted, deep *interring* of *Roots* is amongst the *Catholick* Mistakes; and of *this*, the *greatest* to which *Trees* are obnoxious. Let new planted *Elms* be kept *moist* by frequent refreshings upon some half-rotten *Fern*, or *Litter* laid about the foot of the *stem*; the earth a little stirred and depressed for the better reception, and retention of the *water*.

9. Lastly, your Plantation must above all things be carefully preserv'd from *Cattel*, and the concussions of impetuous *Winds*, till they are out of reach of the *one*, and sturdy enough to encounter the *other*.

10. When you lop the *Elm* (which may be about *January* for the fire, and more frequently, if you desire to have them *tall*; or that you would form them into *Hedges* (for so they may be kept *plashed*, and thickned to the highest twig; affording both a magnificent, and august *Defence* against the *Winds* and *Sun*) I say, when you thus *trim* them, be careful to indulge the *Tops*; for they protect the body of your *Trees* from the *wet*, which always invades those parts first, and will in time *perish* them to the very heart; so as *Elms* beginning thus to decay, are not long prosperous. Sir *Hugh Plat* relates (as from an expert *Carpenter*) that the boughs and branches of an *Elm* should be left a *foot* long next the *trunk* when they are *lop'd*; but this is to my certain observation a very great *mistake* either in the *Relator*, or *Author*: for I have noted many *Elms* so disbranch'd, that the remaining *stubs* grew immediately *hollow*, and were as so many *Conduits*, or *Pipes*, to hold, and convey the *Rain* to the very body, and *heart* of the *Tree*.

11. There is a *Cloyster* of the right *French Elm* in the little *Garden* neer to her *Majesties* the *Q. Mothers* Chappel at *Somerset-house*, which were (I suppose) planted *there* by the industry of the *FF. Capuchines*, that will perfectly direct you to the incomparable use of this noble *Tree* for *shade* and *delight*, into whatever *Figure* you will accustom them. I have also heard of grafting *Elms* to a great improvement of their heads, and it would be try'd.

12. When you would *Fell* let the *Sap* be perfectly in repose; as 'tis commonly about *November* or *December*, after the *frost* hath well nipp'd them: I have already alludg'd my reason for it; and I am told, That both *Oak* and *Elm* so cut, the very *Saplings* (whereof *Rafters*, *Spars*, &c. are made) will continue as long as the very *heart* of the *Tree* without decay. In this *work* cut your *kerfs* near to the ground; but have a care that it suffer not in the *fall*, and be ruined with its own weight: This depends upon your *Wood-man's* judgment in *disbranching*, and is a necessary caution to the *Felling* of all other *Timber-Trees*. If any begin to *doat*, pick out such for the *Ax*, and rather trust to its *Successor*.

13. *Elm* is a *Timber* of most singular *Use*; especially where it may lie continually *dry*, or *wet* in extreames; therefore proper for *Water-works*, *Mills*, *Pipes*, *Pumps*, *Ship-planks* beneath the *Water-line*; and some that has been found buried in *Boggs*, has turn'd like the most polish'd, and hardest *Ebony*, only discern'd by the *grain*: Also for *Wheel-wrights*, *Kerbs* of *Coppers*, *Featheridg* and *Weather-boards*, *Dressers* and sundry other employments. It makes also the second sort of *Charcoal*; and finally (which I must not omit) the use of the very *leaves* of this *Tree*, especially of the *female*, is not to be despis'd; for being suffered to dry in the *Sun* upon the *Branches*, and the *spray* shrip'd off about the *decrease* in *August* (as also where the *suckers* and *stolones* are super-numerary, and hinder the thriving of their *Nurses*) they will prove a great relief to *Cattel* in *Winter*, when *hay* and *fodder* is dear; they will eat them even before *Oates*, and thrive exceedingly well with them; remember only to lay your *Boughs* up in some dry, and sweet corner of your *Barn*: It was for this the *Poet* prais'd them, and the *Epithete* was advis'd,

— — *fecunda frondibus Ulmi.* Georg. 2.

In some parts of *Hereford-shire* they gather them in *Sacks* for their *Swine*, and other *Cattel* according to this husbandry.

CHAP. V.

Of the Beech.

Beech.

I. **T**HE *Beech*, [*Fagus*] numbred amongst the *glandiferous* *Trees*, I rank here before the martial *Ash*, because it commonly grows to a greater stature. There are of these *Fagi* two, or three *kinds* with us; the *Mountain*, which is the whitest, and most sought after by the *Turner*; and the *Campestral* or wild, which is of a blacker colour, and more durable. They are both to be rais'd from the *Mast*, and govern'd like the *Oak*, of which amply; and that is absolutely the best way of furnishing a *Wood*: But they are likewise

likewise to be planted of young *seedlings* to be drawn out of the places where the fruitful *Trees* abound. In *Transplanting* them cut off only the boughs and bruised parts, two *Inches* from the *stem*, to within a *yard* of the *top*; but be very sparing of the *Root*: *This* for such as are of pretty *stature*. They make spreading *Trees*, and noble *Shades* with their well furnish'd and glistering *leaves*, being set at forty foot distance; but they grow taller and more upright in the *Forests*, where I have beheld them at *eight* and *ten* foot, shoot into very long *poles*; but neither so apt for *Timber*, nor *Fuel*: In the *Vallies* (where they stand warm, and in *consort*) they will grow to a stupendious *procerity*, though the soil be stony and very barren: Also upon the *declivities*, sides and tops of high *Hills*, and *chalkie Mountains* especially; for they will strangely insinuate their *Roots* into the bowels of those seemingly impenetrable places, not much unlike the *Fir* it self, which, with *this* so common *Tree*, the great *Cesar* denies to be found in *Britanny*, *Materia cujusque generis, ut in Gallia, præter Fagum & abietem*: but certainly from a grand mistake.

2. The *Beech* serves for various *Uses* of the *House-wife*; with it the *Turner* makes *Dishes*, *Trays*, *Bowls*, *Rimbs* for *Buckets*, and other *Utensils*, *Trenchers*, *Dresser-boards*, &c. likewise for the *Wheeler*, *Joyner*, and *Upholster* for *Sellyes*, *Chairs*, *Stools*, *Bed-steeds*, &c. for the *Bellows-maker*, and *Husbandman* his *Shovel* and *Spade-graffs*; for *Fuel*, *Billet*, *Bavin* and *Coal* though one of the least lasting: Not to omit even the very *Shavings* for the *fining* of *Wines*. Of old they made their *Vasa Vindimiatória* and *Corbes Messoriæ* (as we our pots for *Straw-berries*) with the *Rind* of this *Beech*; and that curiously wrought *Cup* which the *Shepherd* in the *Bucolicks* wagers with all, was engraven by *Alcimedon* upon the *Bark* of this *Tree*: You would not wonder to hear me deplore the so frequent use of this *Wood*, if you did consider that the industry of *France* furnishes that *Country* for all domestic *Utensils* with excellent *Walnut*; a material infinitely preferrable to the best *Beech*; which is indeed good only for *shade* and for *Fire*; as being brittle, and exceedingly obnoxious to the *Worm*: But whilst we thus condemn the *Timber*, we must not omit to praise the *Mast*, which fats our *Swine* and *Deer*, and hath in some *Families* even supported men with bread: *Chios* indur'd a memorable *Siege* by the benefit of this *Mast*: and in some parts of *France* they now grind the *Buck* in *Mills*; it affords a sweet *Oyl* which the poor people eat most willingly: But there is yet another benefit which this *Tree* presents us; that its very *leaves* which make a natural, and most agreeable *Canopy* all the *Summer*; being gather'd about the fall, and somewhat before they are much *frost-bitten*, afford the best and easiest *Mattresses* in the world to lay under our *quilts* instead of *straw*; because, besides their tenderness and loose lying together, they continue sweet for seven or eight years long; before which time *straw* becomes *musty*, and hard; They are thus used by divers *persons* of *Quality* in *Dauphine*, and in *Switzerland* I have some-

sometimes lain on them to my great refreshment : so as of this Tree it may properly be said,

—*Sylva domus, cubilia frondes.* Juvenal.

Swine may be driven to *Maſt* about the end of August.

CHAP. VI.

Of the *Aſb*.

Aſb.

THUS the *Aſb* is with us *Male* and *Female*, the one affecting the higher grounds :

—*Steriles saxosis montibus orni.* Geor. 2.

The other the plains, of a whiter wood, and rising many times to a prodigious stature ; so as in forty years from the *Key*, an *Aſb* hath been sold for thirty pounds *Sterling* : and I have been credibly inform'd, that one person hath planted so much of this one sort of *Timber* in his life time as hath been valu'd worth fifty thousand pounds to be bought. These are pretty encouragements, for a small, and pleasant industry.

2. The *Keys* being gather'd when they begin to fall (which is about the end of *October*, and the ensuing Moneth) are to be sow'd ; but not altogether so deep as your former *Maſts* : Thus they do in *Spain* : A very narrow *Seminary* will be sufficient to store an whole *Country* : They will lye a full year in the ground before they appear ; therefore you must carefully *Fence* them all that time and have patience : But if you would make a considerable *Wood* of them at once, *Dig* or *Plow* a parcel of ground, as you would prepare it for *Corn*, and with the *Corn* (or what other *Grain* you think fittest) sow also good store of *Keys*, some *Crab-kernels*, &c. amongst them : Take off your crop of *Corn*, or *Seed* in its *Season*, and the next year following it will be cover'd with young *Aſbes*, which will be fit either to stand, or be *Transplanted* for divers years after ; and these you will find to be far better then any you can gather out of the *Woods* (especially *Suckers* which are worth nothing) being removed at one foot stature (the sooner the better) provided you defend them well from *Cattel* : The reason of this hasty transplanting, is to prevent their obstinate, and deep rooting ; *tantus amor terre* — which makes them hard to be taken up when they grow older, and that being remov'd, they take no great hold till the second year, after which they come away amain : Yet I have planted them of five and six inches *diametre*, which have thriven as well as the smaller wands.

Cut

Cut not his *Head* at all, nor (by any means) the fibrous part of the *Roots*, only, that down-right, or *Tap-root* (which gives our *Husbandmen* so much trouble in drawing) is to be totally abated: But this work ought to be in the increase of *October*, or *November*, and not in the *Spring*. We are (as I told you) willing to spare his *head*; because, being yet young, it is but of a *spongy* substance; but being once well fixed, you may cut him as close to the earth as you please; it will cause him to shoot prodigiously; so as in a few years to be fit for *Pike-staves*. In *South Spain* (where are the best) after the first dressing, they let them grow till they are so big, as being cleft into four parts, each part is sufficient to make a *Pike-staff*: I am told there is a *Flemish Ash* planted by the *Dutchmen* in *Lincolnshire*, which in six years grows to be worth *twenty shillings* the Tree; but I am not assur'd, whether it be the *Ash*, or *Abeele*; either of them were, upon this account, a worthy encouragement. From these low Cuttings come our *Ground-ashes*, so much sought after for *Arbours*, *Espaliers*, and other *Pole-Works*: They will spring in abundance, and may be reduced to *one* for a *Standard-tree*, or for *Timber*, if you design it; for thus, *Hydra* like, a *Ground-cut-ash*

Per damna, per cedes, ab ipso
Ducit opes animimumq; ferro. Hor.

3. It is by no means convenient to plant *Ash* in *Plow-lands*; for the *Roots* will be obnoxious to the *Coulter*; and the *shade* of the Tree is malignant to *Corn* when the head and banches over-drip it; but in *Hedge-rows*, and *Plumps*, they will thrive exceedingly, where they may be dispos'd at nine or ten foot distance, and sometimes neerer: But in planting of a whole *Wood* of several kinds of *Trees* for *Timber*, every third *set* at least would be an *Ash*. The best *Ash* delights in the best Land (which it will soon impoverish) yet grows in any; so it be not over-wet, and approaching to the *Marshy*, unless it be first well drain'd: By the banks of sweet and crystal *Rivers* and *Streams* I have observ'd them to thrive infinitely.

4. The use of *Ash* is (next to that of the *Oak* it self) one of the most universal: It serves the *Souldier* — *Fraxinus utilis hastis*. Ovid. The *Carpenter*, *Wheel-wright*, *Cart-wright*, *Cooper*, *Turner* and *Thatcher*: Nothing like it for our *Garden Palisad-bedges*, *Hop-yards*, *Poles* and *Spars*, *Handles*, *Stocks* for *Tools*, *Spade-trees*, &c. In sum, the *Husband-man* cannot be without the *Ash* for his *Carts*, *Ladders*, and other tackling: From the *Pike*, *Spear* and *Bow* (for of *Ash* were they formerly made) to the *Plow*; in *Peace* and *War* it is a wood in highest request: Lastly, the *white* and rotten dottard part composes a *ground* for our *Gallants Sweet-powder*, and the *Truncheons* make the third sort of the most durable *Coal*, and is (of all other) the sweetest of our *Forest-fueling*, and the fittest for *Ladies Chambers*: To conclude, the very *dead-leaves* afford (like those of the *Elm*) relief to our *Cattel* in
Winter;

Winter; but the shade of them is not to be endur'd, because it produces a noxious *Insect*; and for displaying themselves so very late, and falling very early, not to be planted for *Umbrage*, or *Ornament*; especially neer the *Garden*; since (besides their predatitious *Roots*) the deciduous *leaves* descending with so long a *Stalk*, are drawn by clusters into the *Worm-holes*, which foul the *Allies* with their falling *Keys*, and suddenly infect the ground.

CHAP. VII.

Of the Chest-nut.

Chest-nut.

1. **T**He next is the *Chest-nut*, [*Castanea*] of which *Pliny* reckons many kinds, especially that about *Tarentum* and *Naples*; but we commend those of *Portugal*. They are rais'd best by *sowing*; previous to which, let the *Nuts* be first spread to *sweat*, then cover them in *sand*; a *Month* being past, plunge them in *Water*, reject the *Swimmers*; being dry'd for thirty days more, *sand* them again, and then to the *water-ordeal* as before. Being thus treated till the beginning of *Spring*, set them as you would do *Beans*: *Pliny* will tell you they come not up, unless four or five be pil'd together in a hole; but that is false, if they be good, as you may presume all those to be which pass this *examination*; nor will any of them fail: But being come up they thrive best *unremov'd*, making a great *stand* for at least two years upon every *Transplanting*; yet if needs you must alter their *Station*, let it be done about *November*, and that into a light friable ground, or moist *Gravel*; however, they will grow even in *Clay*, *Sand*, and all *mixed* soils, upon expos'd and bleak places, as more patient of *cold* than heat.

2. If you desire to set them in *Winter*, or *Autumn*, I counsel you to inter them within their *bushes*, which being every way arm'd are a good protection against the *Mouſe*, and a providential integument: Some sow them confusedly in the *Furrow* like the *Acorn*, and govern them as the *Oak*; but then would the ground be broken up 'twixt *November* and *February*; and when they spring be cleans'd at two foot asunder, after two years growth: Likewise may *Copses* of *Chest-nuts* be wonderfully increased and thickn'd by *laying* the tender and young branches; but such as spring from the *Nuts* and *Marrons* are best of all, and will thrive exceedingly, if being let stand without removing, the ground be stirr'd and loosen'd about their *Roots* for two or three of the first years, and the superfluous wood pruned away: Thus will you have a *Copse* ready for a *felling* within eight years, which (besides many other uses) will yield you incomparable *poles* for any work of the *Garden*, *Vineyard*, or *Hop-yard*, till the next *cutting*: And if the Tree like the ground, will in ten or twelve years

years grow to a kind of *Timber*, and bear plentiful fruit.

3. I have seen many *Chest-nut-trees* transplanted as big as my arm, their *heads* cut off at five and six foot height; but they came on at leisure: In such *Plantations*, and all others for *Avenues*, you may set them from thirty to ten foot distance, though they will grow much neerer, and shoot into poles, if (being tender) you cultivate them like the *Ash*.

4. The *Chest-nut* being grafted in the *Wall-nut*, *Oak* or *Beech*, (I have been told) will come exceeding fair, and produce incomparable Fruit; for the *Wall-nut* it is probable; but I have not as yet made a full attempt: In the mean time, I wish we did more univervally propagate the *Horse-chest-nut*, which being easily increas'd from layers grows into a goodly *Standard*, and bears a most glorious flower, even in our cold Country: This Tree is now all the *mode* for the *Avenues* to their Countrey palaces in *France*, as appears by the late *Superintendents* Plantation at *Vaux*.

5. The use of the *Chest-nut* is (next the *Oak*) one of the most sought after by the *Carpenter* and *Joyner*: It hath formerly built a good part of our ancient houses in the *City of London*, as does yet appear. I had once a very large *Barn* near the *City* fram'd intirely of this *Timber*: And certainly they grew not far off; probably in some *Woods* near the *Town*: For in that description of *London* written by *Fitz-Stephens*, in the Reign of *Hen. 2.* he speaks of a very noble and large *Forest* which grew on the *Boreal* part of it: *Proxime* (says he) *patet foresta ingens, saltus nemorosi ferarum, latebræ cervorum, damarum, aprorum, & taurorum Sylvestrium, &c.* a very goodly thing it seems, and as well stor'd with all sorts of good *Timber*, as with *Venison* and all kind of *Chase*. The *Chest-nut* affords the best *Stakes* and *Poles* for *Palisades* and *Hops*, as I said before; and being planted in *Hedge-rows* & *circa agrorum itinera*, or for *Avenues* to our *Country-houses*, they are a magnificent and royal Ornament: But we give that fruit to our *Swine* in *England*, which is amongst the delicacies of *Princes* in other Countries; and being of the larger *Nut*, is a lusty, and masculine food for *Rustics* at all times. The best *Tables* in *France* and *Italy* make them a *service*, eating them with *Salt*, in *Wine*, being first roasted on the *Chapplet*; and doubtless we might propagate their use, amongst our *common people*, at least (as of old the *Βαλανοειδής*) being a *Food* so cheap, and so lasting. Finally,

CHAP. VIII.

Of the *Wall-nut*.

1. **T**he *Wall-nut* is to be elevated like the *Chest-nut*, being *Wall-nut*,
planted of the *Nut*, or set at the distance you would
F have

have him stand; for which they may be prepared by bedding them (being dry) in *sand*, or good earth, till *March*, from the time they fell, or were beaten off the Tree: Or if *before* they be set with *husk* and all upon them; for the extream bitterness thereof is most exitial and deadly to *worms*: Some supple them a little in warm *Cows-milk*; but being treated as before, you will find them already *sprouted*, and have need only to be planted where they are to abide; because (as we said long since) they are most impatient of *transplanting*: But if there be an absolute necessity of removing, let your *Tree* be about four years old, and then by no means touch the *head* with your *knife*, nor cut away so much as the very *Tap-root*; since being of a pithy and hollow substance, the least diminution, or bruise, will greatly endanger the killing.

2. The *Wall-nut* delights in a dry, sound and rich land; especially, if it incline to a feeding *Chalk*, or *Marle*; and where it may be protected from the cold; as in great Pits, Vallies, and Highway sides; also in Stony-grounds, and on *Hills* especially *Chalkie*: likewise in *Corn-fields*: Thus *Burgundy* abounds with them, where they stand in the midst of goodly *Wheat-lands* at sixty and an hundred foot distance; and it is so far from hurting the *crop*, that they look on them as a great preserver, by keeping the grounds warm; nor do the roots hinder the Plow. When ever they fell a *Tree* (which is only the old, and decay'd) they always plant a young one neer him; and in several places 'twixt *Hanaw* and *Francfort* in *Germany*, no young *Farmer* whatsoever is permitted to *Marry a Wife*, till he bring proof that he hath planted, and is a *Father* of such a stated number of *Wall-nut-trees*, as the *Law* is inviolably observed to this day for the extraordinary benefit which this *Tree* affords the *Inhabitants*: And in truth, were this *Timber* in greater plenty amongst us, we should have far better *Uensiles* of all sorts for our houses, as *Chairs*, *Stools*, *Bed-Steeds*, *Tables*, *Wainscot*, *Cabinets*, &c. in stead of the more vulgar *Beech*, subject to the *worm*, weak and unsightly.

3. They render most graceful *Avenues* to our Country dwellings, and do excellently in *bedge-rows*; but had need be planted at forty, or fifty foot interval; for they affect to spread both their roots and branches. The *Bergstras* (which extends from *Heidelberg* to *Darmstadt*) is all planted with *Wall-nuts*; for so by another ancient *Law* the *Bordurers* were oblig'd to nurse up, and take care of them; and that chiefly for their ornament and shade; so as a man may ride for many miles about that Country, under a continu'd *Arbour*, or *Close-walk*; The *Traveller* both refresh'd with the *Fruit*, and the *Shade*: How would such publick *Plantations* improve the glory and wealth of a *Nation*! but where shall we find the *spirits* amongst our Country-men? Yes, I will adventure to instance in those *Plantations* of Sir *Richard Stidolph*, upon the *Downs* neer *Lether-head* in *Surrey*; and so about *Cassaulton*, where many *thousands* of these *Trees* do celebrate the *industry* of the *Owners*; and will certainly reward it with infinite *improvement*, as I am assur'd they do in part already, and that very considerably;
besides

besides the *Ornament* which they afford to those pleasant *Tracts*, for some *miles* in circumference. I remember *Monsieur Sorbier*, in a *Sceptical* discourse to *Monsieur de Martel*, speaking of the readines of the People in *Holland* to furnish, and maintain whatsoever may conduce to the *publick Ornament*, as well as *Convenience*; tells us, that their *Plantations* of these, and the like *Trees* even in their very *Roads* and common *High-ways* are better preserv'd, and entertain'd (as I my self have likewise been often an eye witness) than those about the *Houses* and *Gardens of pleasure* belonging to the *Nobles* and *Gentry* of most other *Countries*: And in effect it is a most ravishing object to behold their amenities in this particular: With us says he (speaking of *France*) they make a jest at such political *Ordinances*, by ruining these publick and useful *Ornaments*, if haply some more prudent *Magistrate* do at any time introduce them. Thus in the Reign of *Henry the fourth*, during the *Superintendency* of *Monsieur de Sulli*, there was a resolution of adorning all the *High-ways* of *France* with *Elms*, &c. but the rude and mischievous *Paysans* did so hack, steal, and destroy what they had begun, that they were forc'd to desist from the through prosecution of the design; so as there is nothing more expos'd, wild, and less pleasant than the common *Roads* of *France* for want of *shade*, and the decent *limits* which these sweet, and divertissant *Plantations* would have afforded; not to omit that *Political* use (as my *Lord Bacon* hints it where he speaks of the *Statues*, and *Monuments* of brave men, and such as had well deserv'd of the *Publick*, erected by the *Romans* even in their *High-ways*;) since doubtless, such noble and agreeable objects would exceedingly divert, entertain and take off the *Minds* and *Discourses* of *Melancholy* people, and pensive *Travellers*, who having nothing but the dull and enclos'd ways to cast their eyes on, are but ill *Conversation* to themselves, and others.

4. What universal use the *French* make of the *Timber* of this sole *Tree* for domestic affairs may be seen in every room both of poor and rich: It is of singular account with the *Joyner*, for the best grain'd and colour'd *Wain-scot*; with the *Gun-smith* for *Stocks*; the *Drum-maker* for rims: the *Cabinet-maker* for *Inlayings*, especially the firm and close *Timber* about the *Roots*, which is admirable for *fleck'd* and *chambletted* works, and the older it is, the more estimable; but then it should not be put in *work* till thoroughly *season'd*; because it will shrink beyond expectation: Besides these uses of the *Wood*, the *Fruit* is for *preserves*, for *Oyl* and *Food*; and the very husks and leaves being macerated in warm water, and that liquor poured on the *Carpet* of *Walks* and *Bowling-greens*, does infallibly kill the *Worms* without endangering the grass; not to mention the *Dye* which is made of this *Lixive* to colour *Wooll*, *Woods*, and *Hair*, as of old they us'd it. That which is produc'd of the *thick shell* becomes best *Timber*; that of the *thinner*, better *Fruit*. *Columnella* has sundry excellent rules how to ascertain, and accelerate the *growth* of this *Tree*, and to improve its *qualities*, which I recommend to the farther *Industrious*, and pass now to the *less principal*.

CHAP. IX.

Of the Service.

Service.

1. **T**He *Service-tree* is rais'd of the *Sorbs*, or *Berries*, which being ripe (that is) rotten about *September*, may be sown like *Beech-mast*: It is reported that the *Sower* never sees the fruit of his labour; either for that it bears only being very old; or that Men are commonly so before they think of planting *Trees*: But this is an egregious mistake; for these come very soon to be *Trees*, and being planted young thrive exceedingly; I have likewise planted them as big as my arm successfully: The best way is therefore to propagate them of *Suckers* or *Sets*; they delight in reasonable good ground, rather inclining to cold than over hot; for in places which are too dry they never bear kindly.

2. The *Timber* is useful for the *Joyner*, and being of a very delicate *Grain*, for divers *curiosities*: Also it is taken to build with, yielding *Beams* of considerable substance: The shade is beautiful for *Walks*, and the *Fruit* not unpleasant, and in some cases *Medicinal*.

CHAP. X.

Of the Maple.

Maple.

1. **T**He *Maple* [*Acer*] (of which *Authors* reckon very many kinds) was of old held in equal estimation almost with the *Citron*; especially the *Bruscum*, the *French-Maple*, and the *Peacocks-tail-Maple*, which is that sort so elegantly undulated, and crisped into variety of *curls*: They are all produced of the *Keys*, like the *Asb*; and like to it, affect a sound and a dry mould; growing both in *Woods* and *Hedge-rows*, especially in the latter; which if rather hilly than low affords the fairest *Timber*. By shreading up the boughs to a head I have caus'd it to shoot to a wonderful height in a little time; but if you would lop it for the *Fire*, let it be done in *January*. The *Timber* is far superiour to *Beech* for all uses of the *Turner*, who seeks it for *Dishes*, *Trays*, *Trenchers*, &c. as the *Joyner* for *Tables*, *Inlayings*, and for the delicateness of the grain when the *knurs* and *nodosities* are rarely *diapred*, which does much advance its price: Also for the lightness (under the name *Ayer*) imploy'd often by those who make *Musical-instruments*. But there is a larger sort, which we call the *Sycamor*.

2.

CHAP.

CHAP. XI.

Of the Sycamor.

1. **T**He Sycamor is much more in reputation for its shade than it deserves; for the Leaves which fall early (like those of the *Ash*) turn to a *Mucilage*, and putrifie with the first moisture of the season; so as they contaminate and mar our Walks, and are therefore (by my consent) to be banish'd from all curious Gardens and Avenues: There is in *Germany* a better sort of Sycamor than ours, wherewith they make *Saddle-trees*, and divers other things of use; our own is excellent for *Cart* and *Plow-timber*, being light, tough, and not much inferiour to *Ash* it self.

CHAP. XII.

Of the Horn-Beam.

1. **T**He Horn-beam, in *Latine* the *Carpinus*, is planted of Sets; though it may likewise be raised from the Seeds, which being mature in *August* should be sown in *October*; but the more expeditious way, is, by Sets of about an inch *diametre*, and cut within half a foot of the Earth: Thus it will advance to a considerable Tree. The places it chiefly desires to grow in are in cold hills, and in the barren and most expos'd parts of Woods.

2. Amongst other uses which it serves for, as *Mills* (for which it excels either *Yew* or *Crab*) *Toak-timber* (whence of old 'twas call'd *ζυγία*) *heads* of *Beetles*, *Stocks*, and handles of *Tools* (for all which purposes its extream toughness commends it to the *Husbandman*) being planted in small *Fosses*, or *Trenches*, at half a foot *interval*, and in the single row it makes the noblest and the stateliest *Hedges* for long Walks in *Gardens*, or *Parks*, of any Tree whatsoever whose leaves are *deciduous*, and forsake their branches in *Winter*; because it grows tall, and so sturdy as not to be wronged by the *Winds*: Besides, it will furnish to the very foot of the *stem*, and flourishes with a glossie and polish'd *verdure* which is exceeding delightful, of long continuance, and of all other the harder Woods the speediest Grower; maintaining a slender, upright *stem*, which does not come to be bare, and sticky in many years. That admirable *Espalier-hedge* in the long middle walk of *Luxembourg* Garden at *Paris* (then which there is nothing more graceful) is planted of this Tree; and so is that *Cradle* or *Close-walk*, with that perplex *Canopie*, which covers the seat in his *Majesties* Garden at *Hampton-Court*. These *Hedges* are *tonse*; but where they are maintain'd to fifteen or twenty foot height (which is very

very frequent in the *places* before mention'd) they are to be cut, and kept in order with a *Sythe* of four foot long, and very little *falcated*; this is fix'd on a long *sweed* or streight handle, and does wonderfully expedite the trimming of *these* and the like Hedges.

 CHAP. XIII.

Of the Lime-Tree.

Lime-tree.

1. **T**He *Lime-Tree*, [*Tilia*] is of two kinds; the *Male*, which is harder, fuller of knots, and of a redder colour; but producing neither *Flower*, nor *Seed*, as does the *Female*, whose *Blossome* is very odoriferous perfuming the *Air*: The *Wood* is likewise thicker, of small pith, and not obnoxious to the *Worm*. We send commonly for this *Tree* into *Flanders* and *Holland*, to our excessive cost, while our own *Woods* do in some places spontaneously produce them, from whence I have received many of their *Berries*; so as it is a shameful negligence, that we are no better provided of *Nurseries* of a *Tree* so choice and universally acceptable. For so they may be rais'd either of the *Seeds* in *October*; or (with better success) by the *Suckers*, and *Plants*, after the same *Method*, and in as great abundance as the *Elme*, like to which it should be cultivated.

3.

2. The *Lime-tree* affects a rich feeding Soil; In such Ground their growth will be almost incredible for speed and spreading. They may be planted as big as ones Leg; their *Heads* topp'd at about six foot *bole*; thus it will become (of all other) the most proper and beautiful for *Walks*, as producing an upright *Body*, smooth and even *Bark*, ample *Leaf*, sweet *Blossom*, and a goodly *shade* at distance of eighteen or twenty foot. The *Prince Elector* did lately remove very great *Lime-Trees* out of one of his *Forests*, to a steep hill exceedingly expos'd to the heat of the *Sun* at *Hidelbourg*; and that in the midst of *Summer*: They grow behind that strong *Tower* on the *South-west*, and most torrid part of the eminence; being of a dry reddish barren earth; yet do they prosper rarely well: But the heads were cut off, and the *pits* into which they were transplanted were (by the industry and direction of one *Monsieur de Son*, a *Frenchman*) fill'd with a composition of *Earth* and *Cow-dung* which was exceedingly beaten, and so diluted with water as it became almost a liquid *pap*: It was in this that he plunged the *Roots*, covering the surface with the turf: A singular example of removing so great *Trees* at such a *season*, and therefore by me taken notice of here expressly.

4. The *Timber* of a well grown *Lime* is convenient for any use that the *Willow* is; but much to be preferr'd, as being both stronger, and yet lighter; whence *Virgil* calls them *tilias leves*; and therefore

fore turn'd into Boxes for the Apothecaries; and *Columella* commends *Arculus tiliaceas*: with the Twigs they made Baskets, and Cradles; and of the smoother side of the bark Tablets for Writing; for the antient *Philyra* is but our *Tilia*. The Gravers in wood do sometimes make use of this fine Material; and even of the coursest membrane, or slivers of the Tree growing 'twixt the bark and the main body, they now twist into Bass-ropes; Besides the Truncheons make a far better Coal for Gun-powder than that of Alder it self: and the extraordinary candor and lightness has dignifi'd it above all the Woods of our Forest in the hands of the Right Honourable the White-stave Officers of his Majesties Imperial Court. Those royal Plantations of these Trees in the Parks of Hampton-Court, and St. James's will sufficiently instruct any man how these (and indeed all other Trees which stand single) are to be govern'd, and defended from the injuries of Beasts, and sometimes more unreasonable Creatures, till they are able to protect themselves. In Holland (where the very high-ways are adorn'd with them) they frequently clap three or four Deal-boards (in manner of a close trunk) about them; but it is not so well; because it keeps out the air which should have free access, and intercourse to the bole, and by no means be excluded from flowing freely about them, or indeed any other Trees; provided they are secur'd from the violence of impetuous winds, &c. as his Majesties are without those close Coffins, in which the Dutch-men seem rather to bury them alive: In the mean time, is there a more ravishing, or delightful object then to behold some intire streets, and whole Towns planted with these Trees, in even lines before their doors, so as they seem like Cities in a wood? this is extreamly fresh, and skreens the houses both from Winds, Sun and Dust; then which there can be nothing more desirable where streets are much frequented.

 CHAP. XIV.

Of the Quick-Beam.

1. THE Quick-beam, [*Ornus*] or (as others term it) the *Whitchen*, Quick-beam. is a species of *Wild-Ash*. The Berries which it produces in *October* may then be sown; or rather the Sets planted: It rises to a reasonable stature, shoots upright, and slender; and consists of a fine smooth bark. It delights to be both in Mountains and Woods, and to fix it self in good light ground. Besides the use of it for the Husbandmans Tools (as once by a Statute of *Hen. 8.* for Bows) and for Fuel, I have not yet observed any other; save that the Blossoms are of an agreeable scent.

2.

CHAP.

CHAP. XV.

Of the Birch.

Birch.

1. **T**He Birch [*Betula*] is altogether produc'd of *suckers* (though it sheds a kind of *Samara* about the *Spring*) which being planted at four or five foot interval, in small twigs, will suddenly rise to Trees; provided they affect the ground, which cannot well be too barren; for it will thrive both in the dry, and the wet, Sand and Stony, *Marshes* and *Bogs*; the *water-galls*, and *uliginous* parts of *Forests* that hardly bear any grass, do many times spontaneously produce it in abundance whether the place be high, or low, and nothing comes amiss to it.

Plant the small *twigs*, or *suckers* having *roots*, and after the first year cut them within an *inch* of the surface; this will cause them to sprout in strong, and lusty *tusets*, fit for *Copse*, and *Spring-woods*; or, by reducing them to one *stem*, render them in a very few years fit for the *Turner*. For though *Birch* be of all other the worst of *Timber*; yet has it its various uses, as for the *Husbandmans Ox-yoaks*; also for *Hoops*, *Paniers*, *Brooms*, *Wands*, *Bavin* and *Fuel*; great and *small-coal*, which last is made by *charking* the slenderest *brush*, and *summities* of the twigs; as of the tops and loppings M. *Howards* new *Tanne*: Lastly, of the *whitest* part of the *old wood*, found commonly in doating *Birches*, is made the grounds of our *Gallants Sweet-powder*; to say nothing here of the *Magisterial Fasces*, for which antiently the *Cudgels* were us'd by the *Lit̄or*; as now the gentler *Rods* by our tyrannical *Pedagogues*.

2. 3. I should here add the uses of the *water* too, had I not already protested against tampering with the *Medicinal* virtues of *Trees*, in the entrance of this *Treatise*: But if the sovereign effects of the *juice* of this despicable *Tree* supply its other defects (which makes some judge it unworthy to be brought into the *Catalogue* of *Woods* to be propagated) I may for *once* be permitted to play the *Empiric*, and to gratifie our laborious *Wood-man* with a draught of his own *Liquor*: And the rather, because these kind of *Secrets* are not yet sufficiently cultivated; and ingenious *Planters* would by all means be encourag'd to make more *trials* of this nature, as the *Indians*, and other *Nations* have done on their *Palmes*, and *Trees* of several kinds, to their great emolument. The *Mystery* is no more then this: About the beginning of *March* (when the *buds* begin to be proud and turgid) with a *Chizel* and a *Mallet* cut a slit almost as deep as the very *pith*, under some *bough*, or branch of a well spreading *Birch*; cut it *oblique* and not *long-ways* (as a good *Chirurgion* would make his *orifice* in a *Vein*) inserting a small *stone* or *chip*, to keep the lips of the wound a little open: Sir *Hugh Plat*, giving a general rule for the gathering of *sap*, and *tapping* of *Trees*, would have it done within one foot of the ground, the first
rind

rind taken off, and then the white bark slit over-twhart, no farther then to the body of the Tree: Moreover, that this *wound* be made only in that part of the *bark* which respects the *South-west*, or between those quarters; because (says he) little, or no *sap* riseth from the *Northern*.

In this *slit*, by the help of your *knife* to open it, he directs that a *leaf* of the *tree* be inserted, first fitted to the dimensions of the *slit*, from which the *sap* will distill in manner of *filtration*: take away the *leaf*, and the *bark* will close again, a little earth being clapped to the *slit*: Thus the *Knicht* for any *Tree*: But we have already shew'd how the *Birch* is to be treated: Fasten therefore a *Bottle*, or some such convenient *Vessel* appendant: this does the effect better then *perforation* or *tapping*: Out of this aperture will extil a *limpid* and clear *water*, retaining an obscure smack both of the *taste* and *odor* of the *Tree*; and which (as I am credibly inform'd) will in the space of *twelve* or *fourteen* days preponderate, and outweigh the whole *Tree* it self, *body* and *roots*; which if it be constant, and so happen likewise in other *Trees*, is not only stupendous, but an *experiment* worthy the consideration of our profoundest *Philosophers*: *an ex sola aqua fiunt Arbores?* whether *water* only be the *principle* of *Vegetables*, and consequently of *Trees*: For evident it is, that we know of no *Tree* which does more copiously attract, be it that so much celebrated *spirit* of the *World* (as they call it) inform of *water* (as some) or a certain *specificque liquor* richly impregnated with this *Balsamical* property: That there is such a *Magnes* in this simple *Tree* as does manifestly draw to it self some *occult*, and wonderful *virtue*, is notorious; nor is conceivable, indeed, the difference between the efficacy of that *liquor* which distills from the *bole* or parts of the *Tree* neerer to the *Root*, (where Sir *Hugh* would celebrate the *Incision*) and that which weeps out from the more sublime *Branches*: But I refer these disquisitions to the learned; especially, as mention'd by that incomparable *Philosopher*, and my most noble Friend, the honourable *Mr. Boyle*, in his *second part* of the usefulness of *Natural Philosophy*: *sect. 1. Essay 3^d*. where he speaks of the *Manna del Corpo*, or *Trunk-manna*, as well as of that *Liquor* from the *bough*: so of the *Sura* which the *Coco-trees* afford; and that *Polonian* secret of the *Liquor* of the *Wall-nut-tree* root; with an encouragement of more frequent *Experiments* to educe *Saccharine* substances upon these occasions: But the *Book* being publish'd so long since this *Discourse* was ready, I have only here the liberty to refer the *Reader* to one of the best *Entertainments* in the world.

4. In the mean time, the *liquor* of this *Tree* is esteem'd most powerful for the dissolving of the *Stone* in the bladder: *Helmont* shews how to make a *Beer* of the water; but the *Wine* is a most rich *Cordial*, curing (as I am told) *Consumptions*, and such interior diseases as accompany the *Stone* in the *Bladder* or *Reins*: This *Wine*, exquisitely made, is so strong, that the common sort of *stone-bottles* cannot preserve the *spirits*, so subtile they are and *volatile*; and yet it is gentle, and very harmless in operation within the

Body, and exceedingly sharpens the *Appetite*, being drank *ante pastum*: I will present you a *Receipt*, as it was sent me by a fair *Lady*.

To every gallon of *Birch-water* put a quart of *Hony* well stirr'd together; then boil it almost an hour with a few *Cloves*, and a little *Limon-peel*, keeping it well scumm'd: When it is sufficiently boil'd, and become cold, add to it three or four spoonfuls of good *Ale* to make it work (which it will do like new *Ale*) and when the *Yeast* begins to settle, bottle it up as you do other *winy liquors*. It will in a competent time become a most brisk and spiritous *Drink*, which (besides the former virtues) is a very powerful *opener*, and doing wonders for cure of the *Pthifick*: This *Wine* may (if you please) be made as successfully with *Sugar* in stead of *Hony*, lbj. to each *Gallon* of *Water*; or you may dulcifie it with *Raisins*, and compose a *Raisin-wine* of it. I know not whether the quantity of the sweet *Ingredients* might not be somewhat reduc'd, and the operation improv'd: But I give it as receiv'd.

But besides these, *Beech*, *Alder*, *Asb*, *Elder*, &c. would be attempted for *Liquors*: Thus *Crabs*, and even our very *Brambles* may possibly yield us *medical* and useful *Wines*. The *Poplar* was heretofore esteem'd more *physical* than the *Betula*. The sap of the *Oak*, juice, or decoction of the inner bark cures the *Fashions*, or *Farcy*, a virulent and dangerous infirmity in *Horses*, and which (like *Cancers*) were reputed incurable by any other *Topic*, then some actual, or potential *cautery*: But, what is more noble; a dear friend of mine assur'd me, that a *Country Neighbour* of his (at least *four-score* years of age) who had lain sick of a bloody *Strangury* (which by cruel torments reduc'd him to the very *article* of death) was, under *God*, recover'd to perfect, and almost *miraculous* health, and strength (so as to be able to fall stoutly to his labour) by one sole draught of *Beer*, wherein was the *decoction* of the internal bark of the *Oak-tree*; And I have seen a composition of an admirable *sudorific*, and *diuretic* for all affections of the *Liver* out of the like of the *Elm*, which might yet be drank daily as our *Cophee* is, and with no less delight; but *Quacking* is not my *trade*: I speak only here as a plain *Husband-man*, and a simple *Forester*, out of the limits whereof I hope I have not unpardonably transgress'd. *Pan* was a *Physician*, and *he* (you know) was *President* of the *Woods*. But I proceed.

CHAP. XVI.

Of the Hasell.

Hasel.

I. **T**He *Hasell* is best rais'd from the *Nuts*, which you shall sow like *Mast* in a pretty deep *furrow* toward the end of *February*: Light ground may immediately be sown and *harrow'd* in very accurately; but in case the mould be *clay*, plow it earlier, and

and let it be sufficiently mellow'd with the *frosts*; and then the *third* year cut your *Trees* near to the ground with a sharp *Bill*, the *Moon* decreasing.

2. But if you would make a *Grove* for pleasure, plant them in *Fosses* at a *yard* distance, and cut them within half a foot of the earth, dressing them for three or four *Springs*, and *Autumns*, by only loosning the *Mould* a little about their roots. Others there are who set the *Nuts* by hand at one foot distance, to be *transplant-ed* the third year at a yard asunder: But this work is not to be taken in hand so soon as the *Nuts* fall, till *Winter* be well advanc'd; because they are exceedingly obnoxious to the *frosts*; nor will they sprout till the *Spring*: Besides, *Vermine* are great devourers of them: Preserve them therefore *moist*, not *mouldy*, by laying them in their own *dry* leaves, or in *Sand*, till *January*.

Plantis & duræ Coryli nascuntur-----

3. *Hasels* are likewise propagated of *Sets*, and *Suckers*; from whence they thrive very well, the *shoots* being of the scantlings of small *wands*, and *switches*, or somewhat bigger, and such as have drawn divers *hairy* twigs, which are by no means to be *disbranch'd*, no more then their *Roots*, unless by a very sparing and discreet hand. Thus your *Coryletum* or *Copse* of *Hasels* being planted about *Autumn*, may (as some practise it) be cut within three or four inches of the ground the *Spring* following, which the new *Cion* will suddenly repair in clusters and tufts of fair *poles* of twenty, and sometimes thirty foot long: But, I rather should spare them till two, or three years after, when they shall have taken strong hold, and may be cut close to the very earth; the *impro- perous*, and feeble ones especially. Thus are likewise *Filberts* to be treated, both of them improv'd much by *trans- planting*.

4. For the *place*, they above all affect *cold*, *barren*, *dry* and *sandy* grounds; also *Mountains*, and even *rockie* soils produce them; but more plentifully if somewhat moist, dankish, and mossie, as in the fresher *Bottoms*, and sides of *Hills*, and in *Hedge-rows*. Such as are maintain'd for *Copses*, may after twelve years be *fell'd* the first time; the next at seven or eight, &c. for by this period their *Roots* will be compleatly vigorous. You may *plant* them from *October* to *January*, provided you keep them carefully *weeded* till they have taken fast hold.

5. The use of the *Hasel* is for *Poles*, *Spars*, *Hoops*, *Hurdles*, *Forks*, *Angling-rods*, *Faggots*, *Coals*; also for *With's* and bands, upon which I remember *Pliny* thinks it a pretty *Speculation*, that a wood should be stronger to bind withall being *bruin'd* and *divi- ded*, then when *whole* and *entire*; lastly, for riding *Switches* and *Divinatory Rods* for the detecting and finding out of *Minerals*; at least, if that *tradition* be no imposture.

There is a compendious expedient for the thickning of *Copses* which are too *transparent*, by laying of a *Sampler*, or *pole* of an

Hazel, Ash, Poplar, &c. of twenty, or thirty foot in length (the head a little lopp'd) into the ground, giving it a *chop* near the foot, to make it succumb; *this* fastned to the earth with a *hook* or two, and cover'd with some fresh *mould* at a competent depth (as *Gardners* lay their *Carnations*) will produce a world of *suckers*, thicken and furnish a *Copse* speedily. But I am now come to the *Water-side*; let us next consider *the Aquatic*.

CHAP. XVII.

Of the Poplar.

Poplar.

1. **I** Begin this second *Class* (according to our former *Distribution*) with the *Poplar*, of which there are several kinds; *White, Black, &c.* besides the *Aspen*: The *white* is the most ordinary with us, to be rais'd in abundance by every *set* or *slip*: Fence the ground as far as any old *Poplar* roots extend, they will furnish you with *suckers* innumerable, to be slip'd from their *mothers*, and *transplanted* the very first year. You shall need no other *Nursery*. When they are young their *leaves* are somewhat broader, and rounder then when they grow aged. In moist, and *boggy* places they will flourish wonderfully, so the ground be not *spewing*; but especially near the *Margins* and banks of *Rivers*,

Populus in fluviis ——— Virg.

2. *Aspen.*

Also *trunchions* of seven, or eight foot long, thrust two foot into the *earth*, when once *rooted*, may be cut at six inches above ground; and thus placed at a yard distant they will immediately furnish a kind of *Copse*. But in case you plant them of *rooted-trees*, or smaller *sets*, fix them not so *deep*; for though we bury the *Trunchions* thus profound; yet is the *root* which they strike commonly but shallow. The *Aspen* only (which is that kind of *white Poplar* bearing a smaller, and more tremulous leaf) thrusts down a more searching foot, and in this likewise differs, that he takes it *ill* to have his *head* cut off: *Pliny* would have short *trunchions* couched two foot in the ground (but first two days dry'd) at one foot and half distance, and then moulded over.

3. *Abele.*

3. There is something a finer sort of *White Poplar* which the *Dutch* call *Abele*, and we have much transported out of *Holland*: These are also best propagated of *slips* from the *Roots*, the least of which will *take*, and may in *March*, at three, or four years growth be *transplanted*.

4. In *Flanders* (not in *France*, as a late Author *pretends*) they have large *Nurseries* of them, which first they plant at one foot distance, the mould light, and moist; but, as I said, they must be *interr'd* pretty deep, and kept clean by *pruning* them to the middle

dle *shoot* for the first two years, and so till the third or fourth: When you *Transplant*, place them at eight, ten or twelve foot Interval: They will likewise grow of *Layers*, and even of *cuttings*: In *three years* they will come to an incredible altitude; in *twelve*, be as big as your middle; and in *eighteen*, or *twenty*, arrive to full perfection: A *specimen* of this advance we have had of an *Abele Tree* at *Sion*, which being lopp'd in *Febr. 1651*. did by the end of *October 52*. produce branches as big as a mans *wrist*, and *seventeen* foot in length: As they thus increase in *bulk*, their *value* and price advance likewise; so as the *Dutch* look upon a *Plantation* of these *Trees* as an ample portion for a *Daughter*, and none of the least effects of their good *Husbandry*; which truly may very well be allow'd, if that *calculation* hold, which the *Knight* has asserted, who began his *Plantation* not long since about *Richmond*; that *30 li.* being laid out in these *Plants*, would render at the least *ten thousand pounds* in *eighteen* years: Every *Tree* affording thirty *Plants*, and every of them thirty more, after each seven years improving *twelve pence* in growth, till they arriv'd to their *acme*.

5. The *Black Poplar* grows rarely with us; it is a stronger, and taller *Tree* than the *White*, the *leaves* more dark, and not so ample. Divers stately ones of these I remember about the banks of *Po* in *Italy*, which *River* being the old *Eridanus* so celebrated by the *Poets* in which the temerarious *Phaëton* is said to have been precipitated, doubtless gave argument to that *fiction* of his sad *Sisters Metamorphosis* into these *Trees*; but for the *Amber* of their precious *tears* I could hear of no such matter, while passing down that *River* towards *Ferrara* I diverted my self with this story of the ingenious *Poet*.

6. The best use of the *Poplar*, and *Abele* (which are all of them hospitable *Trees*, for any thing thrives under their *shades*) is for *Walks*, and *Avenues* about *Grounds* which are situated low, and neer the water, till coming to be very old they are apt to grow *knurry*, and out of proportion: The *Timber* is incomparable for all sorts of white *Woodden Vessels*, as *Trays*, *Bowls* and other *Turners* ware; likewise to make *Carts*, because it is exceeding light; for *Vine*, and *Hop-props*, and divers *viminious* works. The loppings in *January* are for the *Fire*; and of the *twigs* (with the leaves on) are made *Brooms*. The *Brya* or *Catkins* attract the *Bees*, as do also the *leaves* more tenacious of the *Mel-dews* than most other *Forest-trees*, the *Oak* excepted.

Of the *Aspen* our *Woodmen* make *Hoops*, *Fire-wood* and *Coals*, &c.

CHAP. XVIII.

Of the Alder.

Alder.

1. **T**He Alder is of all other the most faithful lover of *watery* and *boggy* places, and those most despis'd weeping parts, or *water-galls* of *Forests*, — *crassiq; paludibus Alni*. They are propagated of *Trunchions*, and will come of *Seeds* (for so they raise them in *Flanders*, and make wonderful profit of the *Plantations*) like the *Poplar*; or of *Roots*, which I prefer, being set as big as the small of one's *leg*, and in length about two foot; whereof one would be plunged in the *mud*. This profound fixing of *Aquatic-trees* being to preserve them *steedy*, and from the concussions of the *winds*, and violence of *waters*, in their *liquid* and slippery foundations. They may be placed at four, or five foot distance; and when they have struck *root*, you may *cut* them, which will cause them to spring in *clumps*, and to shoot out into many useful *poles*. But if you plant smaller *sets*, cut them not till they are arriv'd to some competent bigness; and that in a proper *season*; which is, for all the *Aquatics*, not till *Winter* be well advanc'd, in regard of their *pithy* substance. Therefore such as you shall have occasion to make use of before that period ought to be well grown, and *fell'd* with the *earliest*, and in the first *quarter* of the increasing *Moon*; that so the successive *shoot* receive no prejudice.

2. There are a sort of *Husbands* who take excessive pains in *stubbing* up their *Alders* where-ever they meet them in the *boggy* places of their grounds, with the same indignation as one would extirpate the most pernicious of *Weeds*; and when they have finish'd, know not how to convert their best *Lands* to more profit than this (seeming despicable) *plant* might lead them to, were it rightly understood: besides, the *shadow* of this *Tree* does feed and nourish the very *grass* which grows under it.

3. You may cut *Aquatic-trees* every third, or fourth year, and some more frequently, as I shall shew you hereafter. They should also be abated within half a foot of the principal *head*, to prevent the perishing of the main *stock*; and besides, to *accelerate* their sprouting. In setting the *Trunchions* it were not amiss to prepare them a little after they are fitted to the size, by laying them a while in *water*; this is also practicable in *Willows*, &c.

4. Of old they made *Boats* of the greater parts of this *Tree*

Tunc alnos primum fluvii sensere cavatas.

Georg. 1.

Nec non & torrentem undam levis innatat alnus

Missa Pado — 2.

And as *then*, so *now*, are over-grown *Alders* frequently sought after, for

for such *Buildings* as lye continually under water, where it will harden like a very *stone*; whereas being kept in any unconstant temper it *rots* immediately: *Vitruvius* tells us, that the *Adorasses* about *Ravenna* in *Italy* were pil'd with this *Timber*, to superstruct upon, and highly commends it.

5. The Poles of *Alder* are as useful as those of *Willows*; but the *coals* far exceed them; especially for *Gun-powder*: The *Wood* is likewise useful for *Piles*, *Pumps*, *Water-pipes*, *Troughs*, *Sluces*, *Wooden-beels*, and the swelling *bunches* which are now and then found in the old *Trees*, afford the *Inlayer* pieces curiously *chamletted* and very hard, &c. but the *Fagots* better for the *fire* than for the *draining* of *Grounds*, by placing them (as the *guise* is) in the *Trenches*; which old rubbish of *Flints*, *Stones*, and the like gross materials, does infinitely exceed, because it is for ever, preserves the *Draines* hollow, and being a little moulded over will produce good *grass*, without any detriment to the ground; but this is a *secret*, not yet well understood, and would merit an express *Paragraph*, were it here seasonable,

— & jam nos inter opacas
Musa vocat Salices —

CHAP. XIX.

Of the Withy, Sally, Ozier, and Willow.

1. Since *Cato* has attributed the *third place* to the *Salicium*, pre-^{Withy.} ferring it even next to the very *Ortyard*; and (what one would wonder at) before even the *Olive*, *Meadow*, or *Corn-field* it self (for *Salicium tertio loco, nempe post vineam, &c.*) and that we find it so easily rais'd, of so great and universal *Use*, I have thought good to be the more particular in my *Discourse* upon them; especially, since so much of that which I shall publish concerning them, is deriv'd from the long *experience* of a most learned and ingenious *person*, from whom I acknowledge to have receiv'd many of these hints.

Not to perplex the *Reader* with the various names, *Greek*, *Gallic*, *Sabinic*, *Amerine*, *Vitex*, &c. better distinguish'd by their *growth*, and *barke*; and by *Latine Authors* all comprehended under that of *Salices*, I begin with the *Withy*. The *Withy* is a reasonable large *Tree*, and fit to be planted on high banks; because they extend their roots deeper than either *Sallyes* or *Willows*. For this reason you shall plant them at ten or twenty foot distance; and though they grow the slowest of all the *twiggy Trees*; yet do they recompence it with the larger *crop*; the *wood* being tough, and the *twigs* fit to bind strongly; the very *peelings* of the branches being useful to bind *Arbour-poling*, and in *Topiary works*, *Vineyards*, *Espalier-fruit*, and the like.

2. There

2. There are two principal sorts of these *Withies*, the *hoary*, and the *red Withy* which is the *Greek*; toughest, and fittest to *bind* whiles the twigs are flexible and tender.

Sallyes.

1. *Sallyes* grow much faster, if they are planted within reach of *water*, or in a very *moorish* ground, or flat plain; and where the soil is, by reason of extraordinary moisture, unfit for *Arable*, or *Meadow*; for in these cases it is an extraordinary *improvement*: In a word, where *Birch*, and *Alder* will thrive.

2. Before you *plant* them, it is found best to turn the ground with a *Spade*; especially, if you design them for a flat.

3. We have three sorts of *Sallys* amongst us: The *vulgar*, which proves best in dryer banks, and the *hopping Sallys* which require a moister soil, growing with incredible celerity: And a *third* kind, of a different *colour* from the other *two*, having the twigs *reddish*, the leaf not so long, and of a more dusky *green*; more brittle whilst it is growing in *twigs*, and more tough when arriv'd to a competent size: All of them useful for the *Thatcher*.

4. Of *these*, the *hopping Sallys* are in greatest esteem, being of a clearer *terse* grain, and requiring a more *succulent* soil; best planted a foot deep, and a foot and half above ground (though some will allow but a foot) for then every branch will prove excellent for future *setlings*. After three years growth (being cropp'd the second and third) the *first* years increafe will be 'twixt *eight* and *twelve* foot long generally; the *second* years growth strong enough to make *Rakes* and *Pike-staves*; and the *third* for *M. Blithes's* trenching *Plow*, and other like *Utensils* of the *Husbandman*.

5. If ye plant them at full height (as some do, at four years growth, setting them five, or six foot length, to avoid the biting of *Cattel*) they will be less useful for straight *staves*, and for *setlings*, and make less speed in their growth; yet this also is a considerable *improvement*.

6. These would require to be planted at least five foot distance (some set them as much more) and in the *Quincunx* order: If they affect the *soil*, the *leaf* will come large, half as broad as a mans hand, and of a more vivid *green*, always larger the first year, then afterwards: some plant them sloping, and cross-wise like a *hedge*; but this impedes their wonderful growth; and (though *Pliny* seems to commend it, teaching us how to *excorticate* some places of each *set*, for the sooner production of shoots) it is but a deceitful *Fence*, neither fit to keep out *Swine*, nor *Sheep*; and being set too neer, inclining to one another, they soon destroy each other.

7. The worst *Sallys* may be planted so neer yet, as to be instead of *stakes* in a *hedge*, and then their tops will supply their dwarfishness; and to prevent *Hedge-breakers* many do thus plant them; because they cannot easily be pull'd up, after once they have struck *root*.

8. If some be permitted to wear their *tops* five or six years, their

their *Palms* will be very ample, and yield the first, and most plentiful relief to *Bees*, even before our *Abricots* blossom.

The *hopping Sallys* open, and yield their *Palms* before other *Sallys*, and when they are *blown* (which is about the *exit* of *May*, or sometimes *June*) the *Palms* are four inches long, and full of a fine *Cotton*: A poor Body might in an hours space gather a pound or two of it; which resembling the finest *silk*, might doubtless be converted to some profitable use by an ingenious *House-wife*.

9. Of these *Hopping Sallys*, after three years rooting, each plant will yield about a score of *staves* of full eight foot in length; and so following, for use, as we noted above: Compute then how many fair *Pike-staves*, *Perches*, and other useful *Materials*, that will amount to in an *Acre*, if planted at five foot interval: But a fat, and moist soil requires indeed more space than a lean or dryer; namely *six* or *eight* foot distance.

10. You may plant *setlings* of the very first years growth; but the *second* year they are better, and the *third* year better than the *second*; and the *fourth* as good as the *third*; especially, if they approach the *water*. A bank at a foot distance from the *water* is kinder for them than a *Bog*, or to be altogether *immers'd* in the *water*.

11. 'Tis good to new-mould them about the *Roots* every second or third year; but *Men* seldom take the pains. It seems that *Sallys* are more hardy than even *Willows* and *Oziers*, of which *Columella* takes as much care as of *Vines* themselves. But 'tis cheaper to supply the *vacuity* of such accidental decays by a new *plantation*, then to be at the charge of *digging* about them three times a year, as that *Author* advises; seeing some of them will decay, whatever care be used.

12. *Sallys* may also be propagated like *Vines*, by *conrbing*, and bowing them in *Arches*, and covering some of their parts with mould, &c.

13. For *setlings*, those are to be preferr'd which grow neereft to the *stock*, and so (consequently) those worst which most approach the *top*. They should be planted in the first fair, and pleasant weather in *February*, before they begin to *bud*. They may be cut in *Spring* for *Fuel*; but best in *Autumn* for use; but in this work (as of *Poplar*) leave a *twig* or two; which being twisted *Arch-wise* will produce plentiful *sprouts*, and suddenly furnish a *bead*.

14. If in our *Copses* one in four were a *Sally* set, amongst the rest of varieties, the profit would recompence the care.

15. The swift growing *Sally* is not so tough, and hardy for some uses as the *slower*, which makes *stocks* for Gard'ners *spades*; but the other are proper for *Rakes*, *Pikes*, *Mops*, &c. *Sally-coal* is the soonest consum'd; but of all others the most accommodate for *Painters* to design their *Work*, and first draught on paper with, &c. as being fine, and apt to slit into *Pencils*.

16. To conclude, there is a way of *grafting* a *Sally* trunchion;

H

take

take it of two foot and half long as big as your *wrist*; Graff at both ends a *Figne*, and *Mulberry* Cion of a foot long, and so (without *claying*) set the *stock* so far into the ground as the *plant* may be three or four inches above the earth: This will thrive exceedingly the *first* year, and in *three* be fit to *transplant*. The season for this curiolity is *February*.

Oziers.

1. *Oziers* are commonly distinguish'd from *Sallyes*, as *Salleys* are from *Withies*; being so much smaller then the *Salleys*, and shorter *liv'd*, and requiring more constant *moisture*, and yielding more limber, and flexible *twigs* for *Baskets*, *Flaskets*, *Hampers*, *Chairs*, *Hurdles*, *Staves*, *Bands*, &c. likewise for fish *Wairs*, and to support the *Banks* of impetuous *Rivers*: In fine, for all *Wicker* and *Twiggy* Works:

Viminibus Salices —

2. But these sort of *Oziers* would be cut in the new *shoot*; for if they stand longer they become more inflexible; cut them close to the *head* (a foot or so above earth) about the beginning of *October*; unless you will attend till the *cold* be past, which is better; and in the *decrease*, for the benefit of the *Workman*; though not altogether for *that* of the *stock*, and succeeding *shoot*: When they are *cut*, make them up into *bundles*, and give them shelter; but such as are for *White-work* (as they call it) being thus *faggotted*, should be set in *water*, the ends dipped; but for *black*, and *unpeel'd*, preserv'd under covert only: The *peelings* of the former are for the use of the *Gardner*.

3. We have in *England* these three *vulgar* sorts; one of little worth, being brittle, and very much resembling the fore-mention'd *Sally*, with reddish twigs, and more greenish, and rounder leaves: Another kind there is, call'd *Perch*, of limber and green twigs, having a very slender leaf; the *third* sort is totally like the *second*, only the twigs are not altogether so green, but *yellowish*, and neer the *Popinjay*: This is the very *best* for *Use*, tough and hardy.

4. These choicer sorts of *Oziers*, which are ever the *smallest*; also the *golden-yellow* and *white* which is preferr'd for propagation and to *breed* of, should be planted of *slips* of two, or three years growth, a foot deep, and half a yard length, in *Moorish* ground, or *Banks*, or else in *Furrows*; so as the roots may frequently reach the *water*; for *Fluminibus Salices* — and at three, or four foot distance.

5. The *season* for *planting* is in mid-*February*; but *Cattel* being excessively licorish of their *leaves* and tender *buds*, some talk of a *grafting* them out of reach upon *Salleys*, and by *this* to advance their sprouting; but as the *work* would consume time, so have I never seen it succeed.

6. Some do also plant *Oziers* in their *Eights* like *Quick-sets*, thick, and (neer the *water*) keep them not more then half a foot above ground; but then they must be diligently cleans'd from

Moss

Moss, Slab and Oxze, and frequently *prun'd* (especially the smaller spires) to form single shoots; at least, that few, or none grow double: These they *head* every second year about *September*, the *Autumnal* cuttings being best for use: But generally

7. You may cut *Withies, Sallys, and Willows* at any mild and gentle season between *leaf* and *leaf* even in *Winter*; but the most congruous time both to *plant* and to *cut* them is *Crescente Lunâ Vere, circa calendâs Martias*; that is, about the new *Moon*, and first open weather of the early *Spring*.

8. It is in *France*, upon the *Loire*, where these *Eights* (as we call them) and Plantations of *Oziers* and *Withies* are perfectly understood; as it seems in some places also of our own *Country*, where I have heard *twenty pounds* has been given for *one Acre*. To omit nothing of the *culture* of this useful *Ozier*, *Pliny* would have the place to be prepar'd by *trenching* it a foot and half deep, and in that to fix the *sets* or *cuttings* of the same length at six foot interval. These (if the *sets* be large) will come immediately to be *Trees*; which after the first three years are to be abated within two foot of the ground. Then, in *April*, he advises to dig about them: Of these they formerly made *Vine-props*, and one *Acre* hath been known to yield *props* sufficient to serve a *Vineyard* of twenty five *Acres*.

10. *John Tradescan* brought a small *Ozier* from *St. Omers* in *Flanders*, which makes incomparable *Net-works*, not much inferior to the *Indian* twig or *Bent-works* which we have seen; but if we had them in greater abundance, we should haply want the *Artificers* who could employ them.

1. Our common *Willow* of the *woodier* sort delights in *Meads* *Willow* and *Ditch-sides*, rather *dry*, than over *wet* (for so they last longest) and would be planted of *stakes* as big as an *o's leg*, cut at the length of five or six foot, and fix'd a foot or more into the earth; the hole made with an *Oaken-stake* and *beetle*, or with an *Iron-crow* (some use a long *Augur*) so as not to be forced *in* with too great violence: But first, the *Trunchions* should be a little *flop'd* at both extrems, and the biggest planted downwards: To this, if they are *soak'd* in *water* two or three days (after they have been *fix'd* for length, and the twigs cut off ere you plant them) it will be the better. Let this be done in *February*. Arms of four years growth will yield substantial *sets* to be planted at eight or ten foot distance; and for the first three years well defended from the *Cattel*, who infinitely delight in their *leaves*, green or wither'd. Thus a *Willow* may continue *twenty, or five and twenty years*, with good profit to the industrious *Planter*, being *headed* every four or five years, some have been known to *shoot* no less than *twelve foot* in *one year*, after which the old, rotten *Dotards* may be *fell'd*, and easily supplied. But if you have ground fit for whole *Copses* of this *Wood*, cast it into double *dikes*, making every *foss* near three foot wide; two and half in depth; then leaving four foot at least of ground for the earth (because in such *Plantations* the moisture should be below the *roots*, that they may rather see, than feel the

water) and two *Tables of Sets* on each side, plant the *Ridges* of these *Banks* with but one single *Table*, longer and bigger then the *Collateral*, viz. three, four, five or six foot high, and distant from each other about two yards. These *Banks* being carefully kept weeded for the first two years, till the *Plants* have vanquish'd the *Grass*; every *Acre* at eleven, or twelve years growth, may yield you neer an *hundred load* of *wood*: Cut them in the *Spring* for dressing; but in the *Fall* for *Timber* and *Fuel*: I have been inform'd, that a *Gentleman* in *Essex* has lopp'd no less then 2000 yearly, all of his own planting.

3. 4. There is a sort of *Willow* of a slender and long leaf, resembling the smaller *Ozier*; but rising to a *Tree* as big as the *Sally*; full of *knots*, and of a very brittle *spray*, only here rehears'd to acknowledge the *variety*.

5. There is likewise the *Garden-willow*, which produces a sweet and beautiful *flower*, fit to be admitted into our *Hortulan* ornaments, and may be set for *partitions* of *squares*; but they have no affinity with other. There is also in *Shropshire* another very *odoriferous* kind.

6. What most of the former enumerated kinds differ from the *Salix*, is indeed not much considerable, they being generally useful for the same purposes; as *Boxes*, such as *Apothecaries* and *Goldsmiths* use; for *Cart-Saddle-trees*, *Harrows*, *Schoe-makers Lasts*, *Heels*, *Clogs* for *Pattens*, *Pearches*, *Hop-poles*; *Ricing* of *kidney-beans*, and for *Supporters* to *Vines*, when our *English Vineyards* come more in request: Also for *Hurdles*, *Sieves*, *Lattices*; for the *Turner*, *Coals* and *Bavin*. The *wood* being preserv'd dry will dure a very long time; but that which is found wholly *putrifi'd*, and reduc'd to a loamy earth in the hollow trunks of *superannuated Trees*, is, of all other, the fittest to be mingl'd with fine *mould* for the raising our choicest *Flowers*, such as *Anemonies*, *Ranunculus's*, *Auriculas*, and the like; for

*Quid majora sequar? Salices, humilesq; genistæ
Aut illi pecori frondem, aut pastoribus umbram
Sufficiunt, sepemq; satis, & pabula melli.*

Georg. 2.

7. Now by all these *Plantations* of the *Aquatic Trees*, it is evident the *Lords* of *Moorish Commons*, and unprofitable *Wastes*, may learn some *improvement*, and the neighbour *Bees* be gratifi'd; and many *Tools* of *Husbandry* become much cheaper. I conclude, with the learned *Stephanus's* note upon these kind of *Trees*, after he has enumerated the universal benefit of the *Salicium*: *Nullius enim tutior redditus, minorisve impendii, aut tempestatis securior.*

CHAP. XX.

Of Fences, Quick-fets, &c.

1. **O**ur main *Plantation* is now finish'd, and our *Forest* adorn'd ^{Fences.} with a just *variety*: But what is yet all this labour, but loss of *time*, and irreparable *expence*, unless our *young*, and (as yet) tender *Plants* be sufficiently *guarded* from all external *injuries*? for, as old *Tusser*,

If Cattel, or Cony may enter to crop,
Young Oak is in danger of losing his top.

But with something a more polish'd *stile*, though to the same purpose, the best of *Poets*,

Texendæ sepēs etiam, & pecus omne tenendum est:
Præcipue, dum frons tenera, imprudensq; laborum;
Cui, super indignas hyemes, solemq; potentem,
Sylvestres Viri assidue, capreaq; sequaces
Illudunt: Pascuntur Oves, avidaq; juvencæ.
Frigora nec tantum cana concreta pruina,
Aut gravis incumbens scopulis arentibus æstas
Quantum illi nocuere greges, duriq; venenum
Dentis, & admorsa signata in stirpe cicatrix.

Georg. 1.

2. For the *reason* that so many complain of the *improsperous* condition of their *Wood-lands*, and *Plantations* of this kind, proceeds from this *neglect*; though (*sheep* excepted) there is no *employment* whatsoever incident to the *Farmer*, which requires less *expence* to gratifie their expectations: One diligent, and skilful *Man* will govern *five hundred Acres*: But if through any accident a *Beast* shall break into his *Masters* field; or the wicked *Hunters* make a gap for his *dogs* and *horses*, what a clamor is there made for the disturbance of a years *Crop* at most in a little *Corn*? whiles abandoning his young *Woods* all this time, and perhaps many years, to the venomous bitings and treading of *Cattel*, and other like injuries (for want of due care) the detriment is many times *irreparable*: Young *Trees* once cropp'd hardly ever *recovering*: It is the *bane* of all our most hopeful *Timber*. But shall I provoke you by an *instance*? A *Kins-man* of mine has a *Wood* of more then 60 years standing; it was, before he purchas'd it, expos'd and abandon'd to the *Cattel* for divers years: some of the outward skirts were nothing save *shrubs* and miserable *starvings*; yet still the place had a disposition to grow *woody*; but by this neglect continually suppress'd. The industrious *Gentleman* has *Fenced* in some *Acres* of this, and cut all close to the ground; it is come in eight or nine years to be better worth then the *wood* of *sixty*; and

and will (in time) prove most incomparable *Timber*, whiles the other part so many years advanc'd, shall never recover; and all *this* from no other *cause*, then preserving it *fenc'd*: Judge then by *this*, how our *Woods* come to be so decried: Are five hundred *Sheep* worthy the care of a *Shepherd*? and are not *five thousand Oaks* worth the *Fencing*, and the inspection of a *Hayward*?

Et dubitant homines serere, atq; impendere curam?

Let us therefore shut up what we have thus laboriously planted, with some good *Quick-set hedge*.

Quick-sets.

1. The *White-thorne* which is the best for *Fencing*, is either rais'd of *Seeds* or *Plants*; but then it must not be with *despair*, because sometimes you do not see them peep the *first year*; for the *Haw*, and many other *seeds*, being invest'd with a very hard *Integument*, will now and then suffer *imprisonment* two whole years under the earth; and impatience of this does often frustrate the expectation of the *resurrection* of divers *seeds* of this nature; so as we frequently dig up, and disturb the *beds* where they have been sown, in *despair*, before they have gone their *full time*; which is also the reason of a very popular mistake in other *seeds*: especially, that of the *Holly*, concerning which there goes a *tradition*, that they will not sprout till they be pass'd through the *Maw* of a *Thrush*; whence the saying, *Turdus exitium suum cat* (alluding to the *Viscus* made thereof, not the *Mistletoe* of *Oak*) but this is an *error*, as I am able to testify on *experience*; they come up very well of the *Berries*, and *patience*; for (as I affirm'd) they will sleep sometimes two entire years in their *Graves*; as will also the seeds of *Tew*, *Sloes*, *Phytolacca angustifolia*, and sundry others, whose shells are very hard about the small *kernels*; but which is wonderfully facilitated, by being (as we directed) prepar'd in *beds*, and *magazines* of earth or sand for a competent time, and then committed to the ground before the *fall* in *March*, by which *season* they will be *chitting*, and speedily take *root*: Others bury them deep in the ground all *Winter*, and sow them in *February*: And thus I have been told of a *Gentleman* who has considerably improv'd his *Revenue*, by sowing *Haws* only, and raising *Nurseries* of *Quick-sets*, which he sells by the *hundred* far and near: This is a commendable *industry*; any neglected corners of ground will fit this *Plantation*: But *Columella* has another expedient for the raising of our *spinetum*, by rubbing the now mature *Hips* and *Haws* into the crevices of *baſt-ropes*, and then burying them in a *trench*: whether way you attempt it, they must (so soon as they peep, and as long as they require it) be sedulously cleans'd of the *weeds*; which, if in *beds* for *transplantation*, had need be at the least three or four *year*; by which time, even your *seedlings* will be of *stature* fit to *remove*; for I do by no means approve of the vulgar *premature* planting of *sets*, as is generally us'd throughout *England*; which is to take such only as are the very *smallest*, and so to crowd them into three or four *files*, which are both egregious *mistakes*.
4. Where-

4. Whereas it is found by constant experience, that *plants* as big as ones *thumb*, set in the posture, and at the distance which we spake of in the *Horn-beam*; that is, almost *perpendicular*, and single, or at most not exceeding a double *row*, do prosper infinitely, and much out-strip the densest, and closest ranges of our trifling *Sets*, which make but weak *shoots*, and whose roots do but hinder each other, and for being couch'd in that *posture* on the sides of *Banks* and *Fences* (especially where the earth is not very tenacious) are bared of the *mould* which should entertain them, by that time the *Rains* and *Storms* of one *Winter* have passed over them. In *Holland*, and *Flanders* (where they have the goodliest *Hedges* of this kind about the *Counter-scarps* of their invincible *Fortifications*, to the great security of their *Musketiers* upon occasion) they plant them according to my description, and raise *Fences* so speedily, and so impenetrable, that our *best* are not to enter into the comparison.

6. Your *Hedge* being yet *young*, should be constantly *weeded*, though some admit not of this work after *Michaelmas*, for *Reasons* that I approve not: It has been the practice of *Herefordshire*, in the plantation of *Quick-set-hedges*, to plant a *Crab-stock* at every twenty foot distance; and this they observe so *Religiously*, as if they had been under some rigorous *Statute* requiring it: But by this means they were provided in a short time with all advantages for the *grafting* of *Fruit* amongst them, which does highly recompense their industry.

7. When your *Hedge* is now about of six years stature, *plash* it about *February* or *October*; but this is the work of a very dextrous and skilful *Husbandman*; and for which our honest Country-man *M. Markam* gives excellent directions; only I approve not so well of his *deep cutting*, if it be possible to bend it, having suffered in some thing of that kind: It is almost incredible to what perfection some have laid these *Hedges*, by the *rural way* of *plashing*, better then by *clipping*; yet may both be used for *ornament*, as where they are planted about our *Garden-fences*, and *fields* near the *Mansion*. In *Scotland* by tying the young *shoots* with *bands* of *hay*, they make the *stems* grow so very close together, as that it encloseth *Rabbits* in *Warrens* instead of *pales*.

8. And now since I did mention it, and that most I find do greatly affect the ordinary way of *Quicking* (that this our *Discourse* be in nothing deficient) we will in brief give it you much after *Geo. Markams* description, because it is the best and most accurate.

In a Ground which is more *dry* then *wet* (for *watry* places it abhors) plant your *Quick* thus: Let the first row of *Sets* be placed in a *trench* of about half a foot deep, even with the top of your *ditch*, in somewhat a sloping, or inclining posture: Then having rais'd your *bank* neer a foot upon them, plant another *row*, so as their tops may just peep out over the middle of the *spaces* of your *first* row: These cover'd again to the height or thickness of the other, place a third *rank* opposite to the *first*, and then finish your

your bank to its intended height. The distances of the *plants* would not be above one *foot*; and the *season* to do the work in may be from the entry of *February* till the end of *March*; or else in *September*, to the beginning of *December*.

When this is finish'd, you must guard both the top of your *Bank* and outmost verge of your *Ditch* with a sufficient *dry-hedge*, interwoven from *stake* to *stake* into the earth (which commonly they do on the bank) to secure your *Quick* from the spoil of *Cattle*. And then being careful to repair such as decay, or do not spring, by suppling the dead, and trimming the rest; you shall after three *years* growth sprinkle some *Timber-trees* amongst them; such as *Oak*, *Beech*, *Ash*, *Maple*, *Fruit*, or the like; which being drawn young out of your *Nurseries*, may be very easily inserted.

But that which we affirm'd to require the greatest dexterity in this work, is the artificial *plashing* of our *Hedge* when it is now arriv'd to a *six* or *seven* years head.

In *February* therefore, or *October*, with a very sharp *Bill* cut away all superfluous *sprays* and *straglers* which may hinder your progress, and are useless. Then searching out the principal *stems*, with a keen and light *Hatchet* cut them *slant-wise* about three quarters through, and so lay it from you *sloping* as you go, folding in the lesser *branches* which spring from them; and ever within a *five*, or *six* foot distance, where you find an upright *set* (cutting off only the *top* to the height of your intended *hedge*) let it stand as a *stake* to fortifie your work, and to receive the *twinnings* of those *branches* about it. Lastly, at the *top* (which would be about *five* foot above ground) take the longest, most slender and flexible *twigs* which you reserved (and being cut as the former where need requires) bind in the extremities of all the rest, and thus your *work* is finish'd: This being done very close, and thick, makes an impregnable *Hedge*, in few years; for it may be repeated as you see occasion; and what you so cut away will help to make your *dry-hedges* for your young *Plantations*, or be profitable for the *Oven*, and make good *Earvin*.

9. The *Pyracanth*, *Palinurus*, and like pretioser sorts of *Thorne* might easily be propagated into plenty sufficient to store even these vulgar *Uses* were *Men* industrious; and then how beautiful, and sweet would the *environs* of our *Fields* be? for there are none of the *spinous shrubs* more hardy, nor fitter for our defence. Thus might *Berberies* now and then be also inserted among our *hedges*, which with the *Hips*, *Haws*, and *Cornel-berries*, do well in *light lands*, and would rather be planted to the *South* than *North*, or *West*, as usually we observe them.

10. Some mingle their very *hedges* with *Oaklings*, *Ash*, and *Fruit-trees* sown, or planted, and 'tis a laudable improvement.

11. In *Cornwall* they secure their *Lands* and *Woods* with high *Mounds*, and on them they plant *Acorns* whose roots bind in the looser mould, and so form a double, and most durable *Fence*, incircling the *Fields* with a *Coronet* of *Trees*. They do likewise (and

(and that with great commendation) make *hedges* of our *Genista spinosa*, prickly *Furzes*, of which they have a taller sort, such as the *French* imploy for the same purpose in *Brittain*, where they are incomparable *husbands*. Furzes.

13. It is to be sown (which is best) or planted of the roots in a furrow: If sown, weeded till it be strong: both *Tonsile*, and to be diligently clip'd, which will render it very thick, an excellent and beautiful *hedge*: Otherwise permitted to grow at large, 'twill yield very good *Fagot*.

14. Thus, in some places, they sow in barren grounds (when they lay them down) the last crop with this seed, and so let them remain till they break them up again, and during that interim, reap considerable advantage: Would you believe (writes a worthy *Correspondent* of mine) that in *Herefordshire* (famous for plenty of wood) their *Thickets* of *Furzes* (*viz.* the vulgar) should yield them more profit, than a like quantity of the best *Wheat* land of *England*? for such is theirs; and in *Devonshire* (the seat of the best *Husbands* in the *World*) they sow on their worst Land (well plow'd) the seeds of the rankest *Furzes*, which in four or five years becomes a rich *Wood*: No provender makes *horses* so hardy, as the young tops of these *Furzes*; no other *Wood* so thick, nor more excellent *Fuel*; and for some purposes also, yielding them a kind of *Timber* to their more humble buildings, and a great refuge for *Fowl* and other *Game*: I am assur'd, in *Brittain*'tis sometimes sown no less than twelve yards thick, for a speedy, profitable, and impenetrable *Mound*: If we imitated this husbandry in the barren places of *Surrey*, and other parts of this *Nation*, we might exceedingly spare our woods; and I have bought the best sort of *French seed* at the shops in *London*.

15. This puts me in mind of the *Broom*; another improvement Broom. for *Barren* grounds, and savor of more substantial *Fuel*: It may be sown *English*, or (what is more sweet, and beautiful) the *Spanish*, with equal success.

16. In the Western parts of *France*, and *Cornwall*, it grows with us, to an incredible height (however our *Poet* give it the epithete of *humilis*) and so it seems they had it of old, as appears by *Grattius* his *Genista Altinates*, with which (as he affirms) they us'd to make *staves* for their *Spears*, and hunting *Darts*.

17. Lastly, a considerable *Fence* may be made of the *Elder*, Elder. set of reasonable lusty *trunchions*; much like the *Willow*, and (as I have seen them maintain'd) laid with great curiosity, and far exceeding those extravagant plantations of them about *London*, where the *lops* are permitted to grow without due and skilful laying.

18. There is a sort of *Elder* which has hardly any *Pith*; this makes exceeding stout *Fences*, and the *Timber* very useful for *Cogs* of *Mills*, and such tough employments.

19. The *American Yucca* is a harder plant than we take it to be; for it will suffer our sharpest *Winter*, as I have seen by experience, without that trouble, and care of setting it in *Cases* in our *Conservatories* for *hyemation*; such as have beheld it in *Flower* (which is not indeed till it be of some age) must needs admire the beauty

of it; and it being easily multiplied, why should it not make one of the best and most ornamental *Fences* in the world for our *Gardens*, with its natural *palisados*, as well as the more tender, and impatient of moisture the *Aloes* does for their *Vineyards* in *Languedoc*, &c. but *We* believe nothing *improvable*, save what our *Grand-fathers* taught us.

And thus, having accomplish'd what (by your *Commands*) I had to offer concerning the *propagation* of the more *Solid*, *Material*, and useful *Trees*, as well the *Dry*, as *Aquatical*; and to the best of my *talent* fence'd our *Plantation* in, I should here *conclude*, and set a *Bound* likewise to my *Discourse*, by making an *Apologie* for the many *errors* and *impertinencies* of it; did not the *zeal*, and *ambition* of this *Illustrious Society* to promote and improve all *Attempts* which may concern the *Publick utility* or *Ornament*, persuade *Me*, that what I am adding for the farther encouragement to the *planting* of some other *useful* (though less *Vulgar*) *Trees*, will at least obtain your *pardon*, if it miss of your *Approbation*.

Fruit-Trees.

1. To discourse in this *stile* of all such *Fruit-trees* as would prove of greatest *emolument* to the whole *Nation*, were to design a just *Volume*; and there are *directions* already so many, and so accurately deliver'd and *publish'd* (but which cannot be affirm'd of any of the former *Classes* of *Forest-trees* and other remarks, at the least to my poor knowledge and research) that it would be needless to *Repeat*.

2. I do only wish (upon the prospect, and meditation of the universal *Benefit*) that every *person* whatsoever, worth *ten pounds per annum*, within his *Majesties* Dominions, were by some indispensable *Statute* oblig'd to *plant* his *Hedge-rows* with the best and most useful *kinds* of them; especially, in such places of the *Nation*, as being the more in-land *Counties*, and remote from the *Seas* and *Navigable Rivers*, might the better be excus'd from the planting of *Timber*, to the *proportion* of those who are more happily and commodiously *situated* for the *transportation* of it.

3. Undoubtedly, if this course were taken effectually, a very *considerable* part both of the *Meat* and *Drink* which is spent to our prejudice might be saved by the *Countrey-people*, even out of the *Hedges* and *Mounds*, which would afford them not only the *pleasure* and *profit* of their delicious *Fruit*, but such abundance of *Cider* and *Perry* as should suffice them to *drink* of one of the most *wholesom* and excellent *Beverages* in the *World*. Old *Gerard* did long since alledge us an *example* worthy to be pursu'd; *I have seen* (saith he, speaking of *Apple-Trees*, lib. 3. cap. 101.) *in the Pastures and Hedge-rows about the Grounds of a Worshipsul Gentleman dwelling two miles from Hereford, called Mr Roger Bodnome, so many Trees of all sorts that the Servants drink for the most part no other drink but that which is made of Apples: The quantity is such, that by the report of the Gentleman himself the Parson bath for Tythe many Hogsheads of Cider: The Hogs are fed with the fallings of them, which are so many that they make choice of those Apples they do eat, who will not taste of any but of the best. An Example doubtless to be followed*

followed of Gentlemen that have Land and Living; but Envy saith, The Poor will break down our Hedges, and we shall have the least part of the Fruit; but forward in the Name of God, Graff, Set, Plant, and nourish up Trees in every corner of your Ground; the labour is small, the cost is nothing, the commodity is great; your selves shall have plenty, the poor shall have somewhat in time of want to relieve their necessity, and God shall reward your good minds and diligence. Thus saith honest Gerard. And in truth with how small a charge and infinite pleasure this were to be effected, every one that is Patron of a little Nursery can easily calculate: But by this Expedient, many thousands of Acres, sow'd now yearly with Barley, might be cultivated for Wheat, or converted into Pasture to the increase of Corn, and Cattel: Besides the Timber which the Pear-tree affords, comparable (for divers curious Uses) with any we have enumerated. But of this I am to render a more ample Account in the Appendix to this Discourse.

4. I would farther recommend the more frequent planting and propagation of Fir, Pine-trees and some other beneficial Materials both for Ornament and profit; especially, since we find by experience, they thrive so well, where they are cultivated for Curiosity only.

CHAP. XXI.

Of the Fir, Pine, Pinafter, Pitch-tree, &c.

1. **T**hey are all of them easily rais'd of the *Kernels*, and *Nuts*, *Fir*, which may be gotten out of their *Cones* and *Clogs*, by exposing them a little before the *fire* till they begin to gape, and are ready to deliver themselves of their burthen.

2. There are of the *Fir* two principal species; the *Male* which is the bigger Tree, and of a harder wood; the *Female*, which is much the softer, and whiter. They may be sown in *beds*, or *cases*, at any time during *March*; and when they peep, carefully defended with *Furzes*, or the like fence from the rapacious *Birds*, which are very apt to pull them up, by taking hold of that little *infecund* part of the *seed* which they commonly bear upon their tops: The *Beds* wherein you sow them had need be shelter'd from the Southern *Aspects* with some *skreen* of *Reed*, or thick *hedge*: Sow them in shallow *rills*, not above half-inch-deep, and cover them with fine light mould: Being risen a finger in height, establish their weak *stalks*, by sieving some more earth about them; especially the *Pines*, which being more *top-heavy* are more apt to swag. When they are of two, or three years growth, you may *transplant* them where you please; and when they have gotten good root they will make prodigious shoots; but not for the three or four first years comparatively.

I 2

3. The

A Discourse of Forest-Trees.

3. The *Pine* is likewise of both *Sexes*, whereof the *Male* growing lower, hath its *wood* more knotty and rude then the *Female*. They would be gather'd in *June* before they gape, and cultivated like the *Fir* in most respects; only, you may bury the *Nuts* a little deeper. By a *friend* of mine they were rolled in a fine *compost* made of *Sheeps-dung*, and scatter'd in *February*, and this way never fail'd; *Fir* and *Pine*; they came to be above *Inch* high by *May*: this were an expeditious *process* for great *Plantations*: unless you would rather set the *Pine* as they do *Pease*; but at wider distances, that when there is occasion of removal, they might be taken up with earth and all; because they are (of all other *Trees*) the most obnoxious to miscarry without this caution; and therefore it were much better (where the *Nuts* might be commodiously set, and defended) never to remove them at all, it gives this *Tree* so considerable a check.

4. I am assur'd (by a person most worthy of credit) that in the *Territory* of *Alzey* (a Country in *Germany*, where they were miserably distressed for *Wood*, which they had so destroy'd as that they were reduced to make use of *Straw* for their best *Fuel*) a very large *Tract* being newly plowed, but the *War* surprizing them, not suffer'd to sow, there sprung up the next year a whole Forest of *Pine-trees*, of which sort of *Wood* there was none at all within less then *four-score* miles; so as 'tis verily conjectur'd by some, they might be wafted thither from the Country of *Westrasia*, which is the neerest part to that where they grow: If this be true, we are no more to wonder, how, when our *Oak-woods* are grubb'd up, *Beech* and *Trees* of other kinds have frequently succeeded them: What some impetuous *Winds* have done in this nature I could produce instances almost *miraculous*: I shall say nothing of the opinion of our Master *Varro*, and the learned *Theophrastus*, who were both of a faith that the *seeds* of *Plants* drop'd out of the *Air*: *Pliny* in his 16. *Book*, *Chap.* 33. upon discourse of the *Cretan Cypress*, attributes much to the *indoles* and nature of the *soil*, *virtue* of the *Climate*, and *Impressions* of the *Air*: And indeed it is very strange what is affirm'd of that *Pitchy-rain*, reported to have fallen about *Cyrene*, the year 430. *U. C.* after which, in a short time sprung up a whole wood of the *Trees* of *Laferpitium*, producing a precious *Gum* not much inferior to *Benzoin*, if at least the *story* be warrantable: But of these *Aerial irradiations*, various *conceptions* and *equivocal* productions without *seed*, &c. upon another occasion, if life and leisure permit me to finish what has been long under the hand, and file to gratifie our *Horticultores*; this present *Treatise* being but an imperfect *limb* of that more ample *Work*.

5. In transplanting of these *Resinaceous*, and *Coniferous* *Trees*, you must never diminish their *heads*, nor be at all busie with their *roots*, which pierce deep, and is all their foundation, unless you find any of them bruised, or much broken: Neither may you *disbranch* them, but with great caution, as about *March* or before, or else in *September*, when I advise you to rub over their
wounds

wounds with a mixture of *Cow-dung*; the neglect of this cost me dear, so apt are they to spend their *Gum*.

6. Some advise us to *break* the shells of *Pines* to facilitate their *delivery*, and I have essay'd it; but to my loss; *Nature* does *obstetricate*, and do that office of her self when it is the best season; neither does this preparation at all prevent those which are so buried, while their hard *Integuments* protect them both from *rotting*, and the *Vermine*.

7. The *domestic Pine* grows very well with us; but the *Pina-^{Pinafter}*ster or wilder best for *Walks*, because it grows tall, and proud, maintaining their branches at the sides, which the *Pine* does less frequently.

8. The *Fir* grows tallest being planted reasonable close together; but suffers nothing to *thrive* under them. The *Pine* not so *Inhospitable*; for (by *Plinies* good leave) it may be sown with any Tree, all things growing well under its *shade*, and excellent in *Woods*, hence *Clandian*,

Et comitem quercum Pinus amica trahit.

9. They both affect the *cold*, *high* and *rockie* grounds; yet will grow in better; but not in over rich, and *pinguid*. The worst land in *Wales* bears (as I am told) large *Pine*; and the *Fir* according to his aspiring nature, loves also the *Mountain* more than the *Valley*; though they will also descend, and succeed very well in either; being desirous of plentiful *waterings* till they arrive to some competent *stature*; and therefore they do not prosper so well in an over *sandy*, and *hungry* soil, or *gravel*, as in the very entrails of the *Rocks*, which afford more *drink* to the *Roots*, that penetrate into their *meanders*, and winding recesses. But though they require this *refreshing* at first; yet do they perfectly abhor all *stercoration*; nor will they much endure to have the earth open'd about their roots for *Ablaqueation*, or be disturb'd. This is also to be understood of *Cypress*. A *Fir* for the first half dozen years seems to stand, or at least make no considerable advance; but it is when thoroughly rooted, that it comes away miraculously. That Honourable Knight Sir Norton Knatchbull (whose delicious *Plantation* of *Pines*, and *Firs* I beheld with great satisfaction) having assur'd me that a *Fir-tree* of his raising, did shoot no less than 60 foot in *height* in little more than *twenty* years, is a pregnant instance, as of the speedy growing of that *material*; so of all the encouragement I have already given for the more frequent cultivating this ornamental, useful and profitable Tree.

10. The *Picea* is another sort of *Pine*, and to be cultivated *Pice* like it.

—*Picea tantum, taxiq, nocentes*
Interdum, aut edere pandunt Vestigia nigra.

Georg. 2.

to shew in what unprofitable *soils* they grow; And therefore I
am

am not satisfied why it might not prosper in some tolerable degree in *England*, as well as in *Germany*, *Russia*, the colder *Tracts*, and abundantly in *France* : It grows on the *Alpes* among the *Pine*; but neither so tall nor so upright.

11. There is also the *Piceaster*, out of which the greatest store of *Pitch* is boyl'd. The *Teda* likewise, which is a sort more unctuous, and more patient of the warmer situations.

12. The *Bodies* of these being cut, or burnt down to the ground, will emit frequent *suckers* from the *Roots*; but so will neither the *Pine* nor *Fir*.

13. That all these, especially the *Fir*, and *Pine*, will prosper well with us is more then probable, because it is a kind of *Demonstration* that they did heretofore grow plentifully in *Cumberland*, *Cheshire*, *Stafford*, and *Lancashire*, where multitudes of them are to this day found intire, buried under the *Earth*, though suppos'd to have been o'rethrown and cover'd so ever since the universal *Deluge*: For we will not here trouble our *Planter* with *M. Cambden's Quærie*, Whether there be not subterraneous *Trees growing under the ground?* though something to be touch'd anon might seem to excuse the presumption of it; besides that divers *Earths*, as well as *Waters*, have evidently a quality of *petrifying wood* buried therein.

14. In *Scotland* there is a most beautiful sort of *Fir* growing upon the *Mountains*; of which from that unhappy *Person* the late *Marquess of Argyle* I had sent me some seeds, which I have sown with tolerable success.

15. For the many and almost universal use of these *Trees* both *Sea*, and *Land* will plead,

————— dant utile Lignum
Navigiis Pinos—————

They make our best *Mast*, *Sheathing*, &c. heretofore the whole *Vessel*. It is pretty (saith *Pliny*) to consider that those *Trees* which are so much sought after for *Shipping* should most delight in the highest of *Mountains*, as if it fled from the *Sea* on purpose, and were afraid to descend into the *Waters*. With *Fir* we likewise make *Wainscot*, *Floors*, *Laths*, *Boxes*, and wherever we use the *Deal*; nor does there any *Wood* so well agree with the *glew* as it, or so easie to be wrought: It is also excellent for *Beams*, and other *Timber-work* in *Houses*, being both light, and exceedingly strong, where it may lie dry everlasting, and an extraordinary savor of *Oak* where it may be had at reasonable price. I will not complain what an incredible mass of ready *Money* is yearly exported into the *Northern Countrys* for this sole commodity, which might all be saved were we industrious at home. Likewise from *Fir* we have the most of our *Pot-ashes*.

The *Pine*, and *Picea* buried in the earth never decay: From the latter transudes a very bright and pellucid *Gum*; hence we have likewise *Rosin*; also of the *Pine* are made *Boxes*, and *Barrels* for
dry

dry Goods; yea, and it is cloven into *shingles* for the covering of houses in some places; not to forget the *kernels*, of such admirable use in *Emulsions*: In sum, they are *Plantations* which exceedingly improve the *Air* by their *odoriferous* and *balsamical* emissions, and for ornament create a *perpetual spring* where they are propagated.

16. But now whiles I am reciting the *Uses* of these beneficial Trees, Mr. *Winthorp* presents the *Royal Society* with the *Process* of making the *Tar* and *Pitch* in *New England*, which we thus abbreviate.

Tar is made out of that sort of *Pine-tree* from which naturally *Terpentine* extilleth; and which at its first flowing out is liquid and clear; but being hardned by the *air*, either on the *Tree*, or where-ever it falls, is nor much unlike the *Burgundy Pitch*; and we call them *Pitch-pines* out of which this *gummy* substance transudes: They grow upon the most barren *plains*, on *rocks* also and *hills* rising amongst those *plains*, where several are found blown down, that have lain so many *ages* as that the whole bodies, branches and roots of the *Trees* being perished, some certain *knots* only of the boughs have been left remaining intire (these *knots* are that part where the *bough* is joyn'd to the *body* of the *Tree*) lying at the same distance and posture as they grew upon the *Tree* for its whole length. The bodies of some of these *Trees* are not corrupted through age, but quite consum'd and reduc'd to ashes by the annual *burnings* of the *Indians*, when they set their grounds on *fire*; which yet has, it seems, no power over these hard *knots* beyond a black scorching; although being laid on heaps they are apt enough to burn.

It is of these *knots* they make their *Tar* in *New England* and the *Country* adjacent, whiles they are well impregnated with that *Terebinthine*, and *Resinous* matter, which like a *Balsam* preserves them so long from *putrifaction*. The rest of the *Tree* does indeed contain the like *Terebinthine sap*, as appears (upon any slight incision of *bark* on the stem, or boughs) by a small crystalline pearl which will sweat out; but *this*, for being more watry, and undigested by reason of the *porosity* of the wood, which exposes it to the impressions of the *air* and *wet*, renders the *Tree* more obnoxious; especially, if it lye prostrate with the *bark* on, which is a receptacle for a certain *intercutaneous* worm that accelerates its decay. They are the *knots* then alone which the *Tar-makers* amass in *heaps*, carrying them in *Carts* to some convenient place not far off, where finding *clay* or *loam* fit for their turn, they lay an *Hearth* of such ordinary stone as they have at hand: This they build to such an height from the level of the ground, that a *Vessel* may stand a little lower then the *Hearth* to receive the *Tar* as it runs out: But first, the *Hearth* is made wide according to the quantity of *knots* to be set at once, and that with a very smooth *floore* of *clay*, yet somewhat descending or dipping from the extreme parts to the *middle*, and thence towards one of the *sides*, where a *gullet* is left for the *Tar* to run out at. The *Hearth* thus
finish'd

finish'd, they pile the *knots* one upon another, after the very same manner as our *Colliers* do their *wood* for *Char-coal*; and of a height proportionable to the breadth of the *Hearth*; and then cover them over with a coat of *loam* or *clay* (which is best) or in defect of those, with the best, and most tenacious *earth* the place will afford; leaving only a small *spiracle* at the top whereat to put the *fire* in; and making some little *holes* round about at several heights, for the admission of so much *air* as is requisite to keep it burning, and to regulate the *fire* by opening, and stopping them at pleasure. The *process* is almost the same with that of making *Char-coal*, as will appear in due place; for when it is well on *fire*, that middle *hole* is also stopp'd, and the rest of the *Registers* so govern'd as the *knots* may keep burning and not be suffocated with too much *smoak*, while all being now through-heated, the *Tar* runs down to the *Hearth* together with some of the more watry *sap*, which hasting from all *parts* towards the *middle* is convey'd by the foremention'd *gutter* into the *Barrel*, or *Vessel* placed to receive it: Thus the whole *Art* of *Tar-making* is no other then a kind of rude distillation *per descensum*, and might therefore be as well done in *Furnaces* of large capacity, were it worth the expence. When the *Tar* is now all melted out, and run, they stop up all the *vents* very close; and afterwards find the *knots* made into excellent *Char-coal* preferr'd by the *Smiths* before any other whatsoever which is made of wood; and nothing so apt to burn out when their *blast* ceaseth; neither do they *sparkle* in the *fire* as many other sorts of *Coal* do; so as, in defect of *Sea-coal*, they make choice of *this* as best for their use, and give greater prices for it.

Of these *knots* likewise do the *Planters* split out small *slivers* about the thickness of one's *finger*, or somewhat thinner, which serve them to burn in stead of *Candles*; giving a very good light. This they call *Candle-wood*, and it is in much use both in *New England*, *Virginia*, and amongst the *Dutch-planters* in their *Villages*; but for that it is something offensive by reason of the much fuliginous *smoak* which comes from it, they commonly burn it in the *chimney-corner* upon a flat *stone*, or *Iron*; except, occasionally, they carry a single *stick* in their hand, as there is need of light to go about the house.

It must not be conceiv'd, by what we have mention'd in the former description of the *knots*, that they are only to be separated from the *bodies* of the *trees* by devouring *time*; or that they are the only *materials* out of which *Tar* can be extracted: For there are in these *Tracts* millions of *Trees* which abound with the same sort of *knots*, and full of *Terpentine* fit to make *Tar*: But the labour of *felling* these *Trees*, and of *cutting* out their *knots*, would far exceed the value of the *Tar*; especially in *Countries* where *Workmen* are so very dear: But those *knots*, above mention'd, are provided to hand, without any other labour then the gathering only.

There are sometimes found of those sort of *Pine-trees* the lowest

lowest part of whose stems towards the *root* is as full of *Terpentine* as the *knots*; and of these also may *Tar* be made: but such *Trees* being rarely found, are commonly preserved to split into *Candle-wood*; because they will be easily *riven* out into any lengths, and scantlings desir'd, much better than the *knots*.

There be who pretend an *art* of as fully *impregnating* the body of any living *Pine-tree* for six or eight foot high: and some have reported that such an *art* is practis'd in *Norway*: But upon several *experiments* by *girdling* the *Tree* (as they call it) and cutting some of the *bark* round, and a little *into* the *wood* of the *Tree*, six or eight foot distant from the ground, it has yet never succeeded; whether the just *season* of the year were not observ'd, or what else omitted, were worth the *disquisition*; if at least there be any such *secret* amongst the *Norwegians*, *Swedes*, or any other *Nation*.

Of *Tar*, by boiling it to a sufficient *height*, is *Pitch* made: and in some places where *Rosin* is plentiful, a fit proportion of that may be dissolved in the *Tar* while it is boiling, and this *mixture* is soonest converted to *Pitch*; but it is of somewhat a differing *kind* from that which is made of *Tar* only, without other composition.

There is a way which some *Ship-Carpenters* in those Countries have us'd to bring their *Tar* into *Pitch* for any sudden use; by making the *Tar* so very hot in an *Iron-kettle*, that it will easily take *fire*, which when *blazing* and set in an *airy* place, they let burn so long, till, by taking out some small quantity for trial, being *cold*, it appears of a sufficient *consistence*: Then by covering the *Kettle* close, the *fire* is extinguish'd, and the *Pitch* is made without more ceremony.

There is a *process* of making *Rosin* also out of the same *knots*, by splitting them out into thin pieces, and then boiling them in *water*, which will educe all the *Resinous* matter, and gather it into a *body* which (when cold) will harden into pure *Rosin*.

CHAP. XXII.

Of the Larch, Platanus, Lotus, &c.

1. **B**ut why might we not hope as well of the *Larch* from whence that useful drogue *Agaric* is gather'd? I read of *Beams* of no less than 120 foot in length made out of this goodly *Tree* which is of so strange a composition that 'twill hardly burn, as *Cæsar* found in a *Castle* he besieg'd built of it: yet the *Coals* thereof were held far better than any other for the melting of *Iron*. That which now grows some where about *Chelmsford* in *Essex*, arriv'd to a flourishing, and ample *Tree*, does sufficiently reproach our negligence and want of *industry*, as well as the incomparable and shady *Platanus*, that so beautiful and precious

ous Tree which we read the *Romans* brought out of the *Levant*, and cultivated with so much industry and cost, for its stately and proud head only; that they would irrigate them with *Wine* instead of *Water*; and so priz'd the very shadow of it, that when afterwards they transplanted them into *France*, they exacted a *Tribute* of any of the *Natives* who should presume but to put his head under it. *Pliny* tells us there is no Tree whatsoever which so well defends us from the heat of the *Sun* in *Summer*; nor that admits it more kindly in *Winter*.

Platanus.

1. There was lately at *Basil* in *Switzerland* an ancient goodly *Platanetum*: and they may with us be rais'd of their seeds with care, in a moist soil, as here I have known them: But the reason of our little success is, that we very rarely have them sent us ripe; which should be gather'd late in *Autumn*, and brought us from some more *Levantine* parts than *Italy*.

2. They come also of *Layers* abundantly; affecting a fresh and feeding ground; for so they plant them about their *Rivulets*, and *Fountains*.

Lotus.

1. The same opinion have I of the noble *Lotus*, which in *Italy* yields both an admirable shade, and *Timber* immortal.

2. The offer of *Crassus* to *Domitius* for half a dozen of these Trees growing about an house of his in *Rome*, testifies in what esteem they were had for their incomparable beauty and use.

CHAP. XXIII.

Of the Cypress-tree, and Cedar.

Cypress.

1. IF we should reason only from our common experience, even the *Cypress-tree* was, but within a few years past, reputed so tender, and nice a *Plant*, that it was cultivated with the greatest care, and to be found only amongst the *Curious*; whereas we see it now, in every *Garden*, rising to as goodly a bulk and stature, as most which you shall find even in *Italy* it self; for such I remember to have once seen in his late *Majesties Gardens* at *Theobalds*, before that *Princely* seat was demolish'd. I say, if we did argue from this *Topic*: Methinks it should rather encourage our *Countrymen* to add yet to their *Plantations* other *Forreign* and *useful* Trees, and not in the least deter them, because many of them are not as yet become *endenizon'd* amongst us.

2. We may read that the *Peach* was at first accounted so tender and delicate a *Tree*, as that it was believ'd to thrive only in *Persia*; and even in the days of *Galen* it grew no nearer then *Egypt*, of all the *Roman* Provinces, but was not seen in the *City* till more then thirty years before *Pliny's* time; whereas there is now hardly a more common and universal in *Europe*: Thus likewise the *Avellana* from *Pontus* in *Asia*; Thence into *Greece*, and so *Italy*, to the *City* of *Abellino* in *Campania*. Una

*Una tantum litera immutata, Avellina dici, quæ prius
Abellina.*

I might affirm the same of our *Damasco Plum, Quince, Medlar, Figue,* and most ordinary *Pears,* as well as of several other *Peregrine Trees, Fruit-bearers,* and *others.* It was 680 years after the foundation of *Rome* ere *Italy* had tasted a *Cherry* of their own, which being then brought thither out of *Pontus* (as the above-mention'd *Filberts* were) did afterwards travel *ad ultimos Britannos.*

3. *Josephus* tells us, *That the Cedar in Judea was first planted there by Solomon,* who doubtless try'd many rare *Experiments* of this nature; and none more *Kingly* then that of *Planting to Posterity.* I do not speak of those which grow on the *Mountains of Libanus,* in the colder and *Northern* tracts of *Syria:* But, as I am inform'd by a curious *Traveller,* there remaining now not above *twenty four* of those stately *Trees* in all those goodly *Forests,* where that mighty *Prince* set *four score thousand Hewers* at work for the *Materials* of one only *Temple* and a *Palace,* 'tis a pregnant *Example* what *Time* and *Neglect* will bring to *ruine,* if due and continual care be not taken to propagate *Timber.*

4. Nor is it any wonder if we find the whole *Species* of some *Trees* so totally lost in a *Countrey* as if there had never been any such planted in it: Be this therefore applied to *Fir, Pine,* and many others with us, since it was so long ere *Rome* was acquainted with them, or indeed with any of the *Pitch* bearers.

5. We had our first *Myrtils* out of *Greece,* and *Cypress* from *Creete,* which was yet a meer stranger in *Italy,* as *Pliny* reports, and most difficult to be raised; which made *Cato* to write more concerning the *culture* of it then of any other *Tree:* Notwithstanding we have in this *Countrey* of ours no less then *three* sorts, which are all of them easily propagated, and prosper very well if they are rightly ordered; and therefore I shall not omit to disclose one *secret,* as well to confute a *popular* *Errour,* as for the *Instruction* of our *Gard'ners.*

6. The *Tradition* is, *That the Cypress* (being a *Symbol* of *Mortality,* they should say of the contrary) is never to be cut for fear of *killling* it. This makes them to *impale* and *wind* them about like so many *Egyptian Mummies;* by which means the inward parts of the *Tree* being heated, for want of *Air* and *Refreshment,* it never arrives to any perfection, but is exceedingly troublesome, and chargeable to maintain; whereas indeed there is not a more *ton-sile* and governable *Plant* in nature: For the *Cypress* may be cut to the very *Roots,* and yet spring afresh: And this we find was the *husbandry* in the *Isle* of *Ænaria,* where they us'd to fell it for *Copse:* For the *Cypress* being rais'd from the *Nursery* of *Seeds* sown in *September* (or rather *March*), and within two years after *transplanted,* should at two years standing *more,* have the *master* stem of the *middle* shaft cut off some hand-breadth below the *summit,* the *sides* and smaller sprigs shorn into a *conique* or *pyramidal* form, and so kept *clipp'd* from *April* to *September,* as oft as there is occasion; and by this *Regiment* they will grow *furnish'd* to the *foot,* and be-

come the most *beautiful* Trees in the world, without *binding* or *stake*; still remembering to *abate* the *middle* stem, and to bring up the *collateral* branches in its stead to what altitude you please: Thus likewise may you form them into *Hedges* and *Topiary* works, or by sowing the *seeds* in a shallow *furrow*, and plucking up the *supernumeraries* where they come too close and thick: For in this *work* it shall suffice to leave them within a foot of each other; and when they are risen about a yard in height (which may be to the half of your *Palisado*) cut off their *tops*, as you are taught, and keep the sides *clipp'd*, that they ascend but by degrees, and thicken at the bottome as they climbe. Thus they will present you in half a dozen or eight years with incomparable *hedges*, preferable to all others whatsoever, because they are perpetually green, and able to resist the *Winds* better then any which I know, the *Holly* only excepted, which indeed has no *peer*.

7. When I say *Winds*, I mean their fiercest *gusts*, not their *cold*: For though it be said, *Brumaq, illæsa Cupressus*, and that indeed no *frost* impeaches them (for they grow even on the *snowy* tops of *Ida*;) yet our cruel *Eastern* winds do sometimes mortally invade them which have been late *clipp'd*, seldome the untouch'd, or that were *dressed* in the *Spring* only: The effects of this last *March* and *April* *Winds*, accompanied with cruel *Frosts* and cold *blasts*, for the space of more then two *moneths* night and day, did not amongst neer a thousand *Cypresses* (growing in my *Garden*) kill above *three* or *four*, which for being very *late* cut to the *quick*, (that is, the latter end of *October*) were raw of their *wounds*, took cold, and *gangreen'd*; some few others which were a little smitten towards the *tops*, might have escaped all their blemishes, had my *Gard'ner* capp'd them but with a *wisp* of *hay* or *straw*, as in my absence I *commanded*. As for the *frost* of the past *Winter* (then which I believe there was never known a more cruel and deadly piercing since *England* had a name) it did not touch a *Cypress* of mine till it joyn'd forces with that destructive *Wind*: Therefore for *caution*, clip not your *Cypresses* late in *Autumn*, and cloath them against these *winds*; for the *frosts* they only *discolour* them, but seldome or never hurt them, as by long *experience* I have found.

8. If you affect to see your *Cypress* in *Standard*, and grow wild (which may in time come to be of a large substance, fit for the most immortal of *Timber*) plant of the *Male* sort; it is a *Tree* which will prosper wonderfully; and where the ground is *hot*, and *gravelly*, though he be nothing so beautiful.

9. There is likewise the *Tarentine Cypress*, so much celebrated by *Cato*: I do not mean our *Savine*, (which some erroneously take for it) both *that*, and the *Milesian*, are worthy our culture.

10. I have already shew'd how this *Tree* is to be rais'd from the *seed*; but there was another *Method* amongst the *Ancients*, who (as I told you) were wont to make great *Plantations* of them for their *Timber*: I have practis'd it my self, and therefore describe it.

11. If you receive your *seed* in the *Nuts*, expose them to the
Sun

Sun till they gape, or neer a gentle fire, by which means the seeds will be easily shaken out; for if you have them open before, they do not yield you half their crop,

About the beginning of *April* (or before, if the weather be showery) prepare an even *Bed*, which being made of fine earth, clap down with your *Spade*, as *Gard'ners* do for *Purselain-seed*: (of old they roll'd it with some *Stone* or *Cylinder*) Upon this strew your seeds pretty thick; then sieft over them some more mould for almost an *inch* in height: keep them duly watered after *Sun-set*, unless the season do it for you; and after one years growth (for they will be an *inch* high in little more then a *Moneth*) you may transplant them where you please.

12. What the *Uses* of this *Timber* are, for *Chests* and other *Utenfils*; as heretofore for supporters of *Vines*, *Poles*, *Rails*, and *Planks*, (resisting the *Worm*, *Moth*, and all putrefaction to eternity) the *Venetians* sufficiently understand; who do every twenty year, and oftner (the *Romans* every thirteen) make a considerable *Revenue* of it out of *Candy*: And certainly a very gainful commodity it was, when the *Fell* of a *Cypresetum* was heretofore reputed a good *Daughters Portion*, and the *Plantation* it self call'd *Dotem filie*.

13. The *Timber* of this wood was of infinite esteem with the *Ancients*: That lasting *Bridge* built over the *Euphrates* by *Semiramis* was made of this wood; and it is reported, *Plato* chose it to write his *Laws* in before *Brass* it self, for the diuturnity of the matter: It is certain, that it never rifts, or cleaves, but with great violence; and the bitterness of its juice preserves it from all worms, and putrifaction. To this day those of *Creet*, and *Malta* make use of it for their buildings; because they have it in plenty, and there is nothing out-lasts it: Finally, (not to forget even the very chips of this precious wood, which gives that flavour to *Muscadines* and other rich *Wines*) I commend it for the improvement of the *Air*, as sending forth most sweet, and aromatick emissions, when ever it is either clipp'd, or handled: But,

Quid tibi odorato referam sudantia ligno,
if I forget

The *Cedar*? which grows in all *extreams*: In the moist *Barbados*; the hot *Bermudas*, the cold *New England*; even where the *Snow* lyes (as I am assur'd) almost half the year: Why then it should not thrive in *Old England*, I conceive is from our want of industry: It grows in the *Bogs* of *America*, and in the *Mountains* of *Asia*: It seems there is no place affrights it; and I have frequently rais'd it of the seeds, which I set like the *Bay-berries*; and we might have of the very best kind in the *World* from the *Summer Islands*, though now almost utterly exhausted there also, and so the most incomparable of that sacred wood like to be quite destroy'd by our *Negligence*, which is by nature almost eternal:

3. Thus I read that in the *Temple* of *Apollo* at *Utica* there was found *Timber* of neer two thousand years old; and in *Sagunti* of *Spain* a beam in a certain *Oratory* consecrated to *Diana*, which had been

1.

Cedar.

2.

been brought from *Zant* 200 years before the destruction of *Troy* :

4. The *Sittim* mention'd in holy *Writ* is believ'd to have been a kind of *Cedar*, of which the most precious *Utensils* were form'd ; so that when they said a thing was *cedro digna*, the meaning was, *worthy of eternity*.

CHAP. XXIV.

Of the Cork, Alaternus, Phillyrea, Granad,
Myrtil, Jasmine, &c.

Cork
2.

1. **T**He *Cork* [*Suber*] grows in the *coldest* parts of *Biscany*, and in the *North* of *New England* : Why should we despair ? That the great *Ilex* thrives well enough, his *Majesties* Privy-gardens at *White-hall* would once have shew'd, where stood a goodly *Tree*, of more then *four-score* years old ; though there be now but an *Impe* of it remaining. I wonder *Carolus Stephannus*, and *Benedictus Cursius* should write so confidently there were no *Cork-trees* in *Italy*, where I my self have travell'd through vast *Woods* of them about *Pisa*, and *Aquin*, and in divers other places between *Rome* and the *Kingdom* of *Naples* : That there were none in *France* indeed *Pliny* is express, *Nat. Hist. l. 16. c. 8.*

3. I shall not need rehearse the *Uses* of the *Bark* of this *Tree*, it is so well known ; the *Timber* is else inconsiderable.

Alaternus.

1. The *Alaternus*, which we have lately receiv'd from the hottest parts of *Languedoc* (and that is equal with the heat of almost any *Country* in *Europe*) thrives with us in *England*, as if it were an *Indigene* and *Natural*.

2. I have had the honour to be the first who brought it into *Use* and reputation in this *Kingdom* for the most beautiful, and useful of *Hedges*, and *Verdure* in the world (the *swiftness* of the *growth* consider'd) and *propagated* it from *Cornwall* even to *Cumberland* : The seed grows ripe with us in *August* ; and the honey-breathing *Blossomes* afford an early and marvellous relief to the *Bees*.

Phillyrea.

1. All the *Phillyrea's* are yet more *hardy* ; which makes me wonder to find the *Angustifolia* planted in *Cases*, and so charily set into the *stoves*, amongst the *Oranges* and *Lemmons* ; when by long *experience* I have found it equal our *Holly* in suffering the extreme rigours of our cruellest *Frosts*, and *Winds*, which is doubtless (of all our *English* *Trees*) the most insensible and stout.

2. They are (both *Alaternus* and *this*) rais'd of the *seeds* (though those of the *Phillyrea* will be long under ground) and being transplanted for *Espalier* hedges, or *Standards*, are to be govern'd by the *shears*, as oft as there is occasion : The *Alaternus* will be up in one *Moneth* after it is sown : Plant it out at two years growth, and *clip* it after *rain* in the *spring*, before it grows sticky, and

and whiles the shoots are tender; thus will it form an *hedge* (though planted but in single rows and at two foot distance) of a yard in thickness, twenty foot high (if you desire it) and furnish'd to the bottom: But for an hedge of this altitude, it would require the friendship of some *Wall*, or a *Frame* of lusty *poles*, to secure against the *Winds* one of the most delicious objects in nature: But if we could have store of the *Phillyrea folio leviter serrato* (of which I have rais'd some very fine *Plants* from the seeds) we might fear no *weather*, and the *verdure* is incomparable:

1. The culture of the *Granade* does little differ from that of the *Alaternus*, of which we might raise considerable *hedges* on all our *Southern Aspects*: They have supported this last most unmerciful *Winter* without any artifice; and if they yield us their *flowers* for our pains of well *pruning* (for they must diligently be purged of their *wood*) it is a glorious recompence: I plant them in my *Hedge-rows* even amongst the *Quick*.

1. The vulgar *Italian* wild *Myrtil* (though not indeed the most *fragrant*) grows high, and supports all *weathers*. I know of one neer *fifty* years old, which has been continually *expos'd*; unless it be, that in some exceeding *sharp* seasons a little *straw* has been thrown upon it; and where they are *smitten*, being cut down neer the ground, they put forth and recover again; which many times they do not in *Pots*, and *Cases*, where the *roots* are very obnoxious to perish with *mouldiness*. The shelter of a few *Mats*, and *straw*, secur'd very great *Trees* (both leaf and colour in perfection) this last *Winter* also, which were planted *abroad*; whiles those that were carried into the *Conserve* were most of them lost. *Myrtils* may be rais'd of *seeds*, but with great caution; and they seldom prove hardy, nor is it worth the time being so abundantly encreased of *Layers*: But,

2. I produce not these *particulars*, and other *amena vireta* already mention'd, as signifying any thing to *Timber*, the main design of this *Treatise* (though I reade of some so *tall*, as to make ~~make~~ *Spear shafts*) but to *exemplifie* in what may be farther added to *Ornament* and *Pleasure* by a cheap, and most agreeable *industry*.

The common *white* and *yellow Jasmine* would flower plentifully in our *Woods*, and is as hardy as any of the *Periclimena*; (how it is propagated by *submersion*, or *layers*, every *Gard'ner* skills) and if it were as much employ'd for *Nose-gays*, &c. with us, as it is in *France* and *Italy*, they might make *money* enough of the *Flowers*: One sorry tree in *Paris*, where they abound, has been worth to a poor *woman* neer *twenty* shillings in a year.

CHAP. XXV.

Of the Acacia, Arbutus, Bays, Box, Yew, Holly,
Juniper, and Laurel-trees.

- Acacia.* 1. **T**HE *French* have lately brought in the *Virginian Acacia*, which exceedingly adorns their *Walks*: The Tree is hardly against all the invasions of our sharpest seasons, but our high winds; which by reason of its brittle nature it does not so well resist; and the *Roots* (which insinuate and run like *liquorize* under ground) are apt to *emaciate* the soil, and therefore haply not so commendable in our *Gardens*, as they would be agreeable for variety of *Walks* and shade: They thrive well in his *Majesties* new *Plantation* in *St. James's Park*.
- 2.
- Arbutus.* 1. But why do we thus neglect the *Arbutus*, and make that such a *rarity*, which grows so common, and so naturally in *Ireland*? It is indeed with some difficulty rais'd from the *seeds*; but it may be propagated from the *Layers*, grows to a goodly *Tree*, and is patient of our severest weather.
- Bays.* 1. *Bays* are increas'd both of their *Suckers*, and *Seeds*, which should be *dropping-ripe* ere gather'd: *Pliny* has a particular *process* for the ordering of the *seeds*, and it is not to be rejected: Which is, the gathering the *Berries* dry, in *January*, and spreading them till their sweat be over; then he puts them in *dung* and sows them: As for the steeping in *wine*, *water* does altogether as well: others wash the seeds from their *mucilage*, by breaking and bruising the glutinous *Berries*; then sow them in *March* by scores in a heap; and indeed so they will come up in *clusters*, but nothing so well, nor fit for *transplantation*, as where they are *interr'd* with a competent scattering, so as you would furrow *Pease*: Both this way, and by *setting* them apart (which I most commend) I have rais'd multitudes, and that in the *berries* without any farther *preparation*; only for the first two years they would be defended from the piercing *winds* which frequently destroy them; and yet the scorching of their tender *leaves* ought not make you despair, for many of them will recover beyond expectation.
- 2.
3. This *aromatic Tree* greatly loves the *shade*, yet thrives best in our hottest *Gravel*, having once pass'd those first difficulties: *Age* and *Culture* about the roots wonderfully augment its growth; so as I have seen *Trees* neer thirty foot high of them; and almost two foot *diameter*. They are fit also both for *Arbour* and *Palisade-work*, so the *Gard'ner* understand when to prune, and keep it from growing too *woody*.
- Box.* 1. The *Box* which we begin to *proscribe* our *Gardens*, should not yet be banish'd from our care; because the excellency of the *wood* does commute for the unagreeableness of its smell: therefore, let us furnish our cold, and barren *Hills*, and declivities with this useful *Shrub*: It will increase abundantly of *slips* set in *March*.
2. The

2. The *Turner, Ingraver, Mathematical-Instrument, Comb* and *Pipe-makers* give great prizes for it by *weight*, as well as *measure*; and by the *seasoning*, and divers manner of *cutting*, vigorous *insolations*, *politure* and *grinding*, the *Roots* of this *Tree* (as of even our common, and neglected *Thorne*) do furnish the *Inlayer* and *Cabinet-makers* with pieces rarely *undulated*, and full of variety.

3. The *Chymical oyl* of this *wood* has done the feats of the best *Guajacum* (though in greater quantity) for the cure of *Venerical* diseases, as one of the most expert *Physitians* in *Europe* has confes'd.

1. Since the use of *Bows* is laid aside amongst us, the propagation of the *Eugb-tree* is likewise quite forborn; but the neglect of it is to be deplor'd; seeing that (besides the rarity of it in *Italy*, and *France*, where but little of it grows) the barrenest grounds, and coldest of our mountains (for

— *Aquilonem & frigora taxi*) might be profitably replenish'd with them: I say, profitably, for, besides the use of the *wood* for *Bows*

— *Ityreos taxi torquentur in arcus*. The foremention'd *Artists* in *Box* most gladly imploy it: And for the *cogs* of *Mills*, *Posts* to be set in moist grounds, and everlasting *Axle-trees*, there is none to be compar'd with it, likewise for the bodies of *Lutes*, *Theorbas*, &c. yea, and for *Tankards* to drink out of, whatever *Pliny* report of its *shade*, and fatal *fruit* in *Spain*, *France* and *Arcadia*.

2. The *toxic* quality was certainly in the *liquor* which those good *Fellows* tippl'd out of those *bottles*, not in the *nature* of the *wood*; which yet he affirms is cur'd of that *Venenous* quality by driving a *brazen wedge* into the body of it: This I have never tri'd, but that of the *shade* and *fruit* I have frequently, without any deadly, or noxious effects: so that I am of opinion that *Tree* which *Seftius* calls *Smilax*, and our *Historian* thinks to be our *Eugb*, was some other *Wood*.

3. This *Tree* is easily produc'd of the *seeds*, wash'd and cleans'd from their *mucilage*; and burried in the ground like *Haws*; It will commonly be the second *Winter* ere they peep, and then they rise with their *caps* on their *heads*: Being three years old you may *transplant* them, and form them into *Standards*, *Knobs*, *Walks*, *Hedges*, &c. in all which works they succeed marvellous well, and are worth our patience for their *perennial verdure*, and *durableness*.

4. He that in *Winter* should behold some of our highest *Hills* in *Surrey* clad with whole *Woods* of these two last sort of *Trees*, for divers *Miles* in *circuit*, (as in those delicious *Groves* of them, belonging to the *Honourable* my noble friend *Sir Adam Brown* of *Bech-worth-Castle*, from *Box-hill*, and neer our famous *Mole* or *Swallow*) might without the least violence to his *Imagination*, easily phantise himself transported into some new or enchanted *Country*; for, if in any spot of *England*,

Hic ver perpetuum, atque alienis mensibus aestas.

L

—'tis

—'Tis here
Eternal Spring, and Summer all the year.

Holly.

1. But, above all the natural Greens which enrich our home-born store, there is none certainly to be compar'd to the Holly; insomuch as I have often wonder'd at our Curiosity after forreign Plants, and expensive difficulties, to the neglect of the culture of this vulgar, but incomparable Tree; whether we will propagate it for Use, and Defence; or for sight and ornament.

2. Is there under heaven a more glorious and refreshing object of the kind, than an impregnable Hedge of one hundred and sixty foot in length, seven foot high, and five in diameter, which I can shew in my poor Gardens at any time of the year, glitt'ring with its arm'd and vernish'd leaves? the taller Standards at orderly distances blushing with their natural Corall: It mocks at the rudest assaults of the Weather, Beasts, or Hedge-breaker,

Et illum nemo impune lacessit.

3. I have already shew'd how it is to be rais'd of the Berries, when they are ready to drop: Remove them also after three or four years; but if you plant the Sets (which is likewise a commendable way, and the Woods will furnish enough) place 'em Northwards, as they do Quick. Of this might there living Pales and Enclosures be made (such as the Right Honourable my Lord Dacres, somewhere in Sussex, has a Park almost environ'd with, able to keep in any Game, as I am credibly inform'd) and cut into square Hedges, it becomes impenetrable, and will thrive in hottest as well as the coldest places. At Dengeness in Kent they grow naturally amongst the very beach, and pibbles: And this rare Hedge, the boast of my Villa, was planted upon a burning gravel, expos'd to the meridian Sun.

4. True it is, that time must bring this Tree to perfection; it does so to all things else, & posteritati pangimus. But what if a little culture about the Roots (not dunging, which it abhorres) and frequent stirring of the mould doubles its growth? We stay seven years for a tolerable Quick, it is worth staying it thrice for this, which has no Competitor.

5. And yet there is an expedient to effect it more insensibly, by planting it with the Quick: Let every fifth or sixth be an Holly-set, they will grow up infallibly with your Quick, and as they begin to spread, make way for them, by extirpating the White-thorn, till they quite domineer: Thus was my Hedge first planted, without the least interruption to the Fence, by a most pleasant Metamorphosis. But there is also another, not less applauded, by laying along of well rooted Sets (a yard or more in length) and stripping off the leaves and branches: these cover'd with a competent depth of earth will send forth innumerable Suckers which will suddenly advance into an Hedge.

6. The

6. The *Timber* of the *Holly* is for all sturdy *uses*; the *Mill-Wright*, *Turner* and *Engraver* prefer it to any other: It makes the best *handles*, and *stocks* for *Tools*, and of the *Bark* is compos'd our *Bird-lime*.

1. Of *Juniper* we have *two sorts*, whereof *one* is much taller, *Juniper*, and more fit for Improvement: The *wood* is *yellow*, and *sweet* as *Cedar*, whereof it is accounted a *dwarfish* sort.

2. I have rais'd them abundantly of their *seeds*, which in two months will peep, and being govern'd like the *Cypresse*, apt for all the employments of that beautiful Tree: The discreet loosening of the *Earth* about the *Roots* also makes it strangely to prevent your expectations by suddenly spreading into a *bush* fit for a thousand pretty Employments; for coming to be much unlike that which grows *wild*, and is subject to the treading and cropping of *Cattle*, &c. it may be form'd into most beautiful and useful *Hedges*: My *Brother* having cut out of one onely Tree an *Arbour* capable for *three* to fit in: It was at my last measuring *seven* foot square, and *eleven* in height; and would certainly have been of a much greater altitude and farther spreading, were it not continually kept *shorn*: But what is most considerable is the little time since it was *planted*, being yet hardly *ten years*, and then it was brought out of the *Common* a slender *Bush* of about *two foot* high: But I have experimented a proportionable improvement in my own *Garden*, where I do mingle them with *Cypresse*, and they perfectly become their stations.

3. The *Berries* afford (besides a tolerable *Pepper*) one of the most universal *Remedies* in the world to our crazy *Forester*; and the *Coals*, which are made of the *Wood*, endure the longest of any: If it arrive to full growth it is *Timber* for many curious works; the very *Chips* render a wholesom *perfume* within doors, as well as the dusty *blossoms* in *Spring* without.

1. But to *Crown* all, I will conclude with the *Laurell*, which *Laurel*, by the *Use* we commonly put it to, seems as if it had been only destin'd for *Hedges*, and to cover bare *Walls*; whereas, being planted *upright*, and kept to the *Standard*, by cutting away the collateral *Branches*, and maintaining one *stem*, it will rise to a very considerable *Tree*; and (for the first twenty years) resembling the most beautiful headed *Orange* in *shape* and *verdure*, arrive in time to emulate even some of our lusty *Timber-trees*; so as I dare pronounce the *Laurel* to be one of the most proper and ornamental *Trees* for *Walks* and *Avenues* of any growing.

2. Pity it is they are so abus'd in the *Hedges*, where the lower *Branches* growing *stickie* and *dry*, by reason of their frequent and unseasonable *cutting* (with the *genius* of the *Tree*, which is to spend much in wood) they never succeed after the first *six* or *seven years*; but are to be new *planted* again, or abated to the very *Roots* for a fresh *shoot*.

3. But would you yet improve the *Standard* which I celebrate, to greater and more speedy exaltation? bud your *Laurel* on the *Black-Cherry-stock* to what height you please; if at least the re-

port be true, which I had from an ocular testimony, and am now making an essay of, because I am more then somewhat doubtful of such *Alliances*, though something like it in *Palladius* speaks it not so impossible;

*Inferitur lauro Cerasus, partuq; coacta
Tingit adoptivus virginis ora pudor.*

4. They are rais'd of the *seeds* or *Berries* with extraordinary facility, or propagated by *Layers* and *cuttings* where-ever there is shade and moisture. I have finish'd now my *Planting*: A word or two concerning their *Preservation*, and the *Cure* of their *Infirmities*.

CHAP. XXVI.

Of the *Infirmities* of *Trees*.

Infirmities. **T**He *Diseases* of *Trees* are various, affecting the several *parts*: These invade the *Roots*; *Weeds*, *Suckers*, *Fern*, *Wet*, *Mice*, and *Moles*.

1. *Weeds* are to be diligently pull'd up by *hand* after *Rain*, whiles your *Seedlings* are very young, and till they come to be able to kill them with *shade* and *over-dripping*: And then are you for the *obstinate* to use the *Haw*, *Fork*, and *Spade*, to extirpate *Dog-grass*, *Bear-bind*, &c.

2. *Suckers* shall be duly *eradicated*, and with a sharp *spade* dexterously separated from the *Mother-roots*, and Transplanted in convenient places for *propagation*, as the *Season* requires.

3. *Fern* is best destroy'd by *striking* off the *Tops*, as *Tarquin* did the *heads* of the *Poppies*: This done with a good *wand* or *cudgel*, at the *decrease* in the *Spring*, and now and then in *Summer*, kills it in a *year* or *two* beyond the vulgar way of *Mowing*, or *burning*, which rather encreases then diminishes it.

4. *Over-much Wet* is to be drain'd by *Trenches*, where it infests the *Roots* of such kinds as require drier ground: But if a *drip* do fret into the body of a *Tree* by the head, (which will certainly decay it) cutting first the place smooth, *stop* and cover it with *loam* and *hay* till a new *bark* succeed.

These infest the *Bark*; *Bark-bound*, *Teredo*, or *Worm*, *Conys*, *Moss*, *Ivy*, &c.

5. The *Bark-bound* are to be released by drawing your *knife* rind-deep from the *Root*, as far as you can conveniently; and if the *gaping* be much, filling the *rift* with a little *Cow-dung*; do this on each side, and at *Spring*, *February* or *March*; also cutting off some *branches* is profitable; especially such as are *blasted* or *lightning-struck*.

6. The

6. The *Teredo*, *Coffin*, and other *Worms*, lying between the *Body* and the *Bark*, poyson that passage to the great prejudice of some *Trees*; but the *holes* being once found, they are to be taken out with a light *Incision*.

7. *Cones* and *Hares* by barking the *Trees* in hard *Winters* spoil very many tender *Plantations*: Next to the utter destroying them there is nothing better then to anoint that part which is within their reach with *stercus humanum*, tempered with a little *Water* or *Urine*, and lightly brushed on; this renew'd after every great *Rain*.

8. *Moss* is to be rubb'd and scrap'd off with some fit instrument of *Wood*, which may not excorticate the *Tree*, or with a piece of *Hair-cloth* after a sobbing *Rain*: But the most infallible Art of *Emuscation* is taking away the *cause*, which is superfluous *moisture* in *clayie* and spewing grounds.

9. *Ivy* is destroy'd by digging up the *Roots*, and loosning its hold: *Mistletoe*, and other *Excrescences* to be cut and broken off.

10. The *Bodies* of *Trees* are visited with *Canker*, *Hollowness*, *Hornets*, *Earwigs*, *Snails*, &c.

11. *Cankers* (caused by some stroak or galling) are to be cut out to the *quick*, the scars *emplastred* with *Tar* mingled with *Oil*, and over that a thin spreading of *loam*; or else with *clay* and *Horf-dung*; or by laying *Wood-ashes*, *Nettles*, or *Fern* to the roots, &c.

12. *Hollowness* is contracted when by reason of the ignorant or careless lopping of a *Tree* the wet is suffer'd to fall *perpendicularly* upon a part, especially the *Head*: In this case if there be sufficient sound *wood* cut it to the *quick* and close to the body, and cap the *hollow* part with a *Tarpanlin*, or fill it with good stiff *loam* and fine *hay* mingled. This is one of the worst of *Evils*, and to which the *Elm* is most obnoxious.

13. *Hornets* and *Wasps*, &c. by breeding in the hollownes of *Trees* infest them, and are therefore to be destroy'd by stopping up their entrances with *Tar* and *Goof-dung*, or by conveying the fumes of *brimstone* into their *Cells*.

14. *Earwigs* and *Snails* do seldom infest *Forest-trees*, but those which are *Fruit-bearers*, and are destroy'd by enticing them into sweet waters, and by picking the *snails* off betimes in the *Morning*, and rainy *Evenings*. Lastly,

Branches, *Buds*, and *Leaves* extremely suffer from the *Blasts*, *Jaundies*, and *Caterpillars*, *Rooks*, &c.

15. The *blasted* parts of *Trees* are to be cut away to the *quick*; and to prevent it, *smoak* them in suspicious *weather*, by burning moist *straw* with the *wind*, or rather the dry and superfluous *cuttings* of *Arromatick* plants, such as *Rosemary*, *Lavender*, *Juniper*, *Bays*, &c.

Mice, *Moles*, and *Pismires* cause the *Jaundies* in *Trees*, known by the *discolour* of the *Leaves* and *Buds*.

16. The *Moles* may be taken in *Traps*, and kill'd, as every *Woodman* knows: It is certain that they are driven from their *haunts* by *Garlick* for a time, and other heady *finells* buried in their passages.

17. *Mice*

17. *Mice* with *Traps*, or by sinking some *Vessel* almost level with the surface of the ground, the *Vessel* half full of *Water*, upon which let there be strew'd some *huls* or *chaff* of *Oates*; also with *Bane*.

18. Destroy *Pismires* with scalding water, and disturbing their *hills*.

19. *Caterpillars*, by cutting off their *webs* from the twigs before the end of *February*, and burning them; the sooner the better: If they be already *hatched* wash them off, or choak and dry them with *smoak*.

20. *Rooks* do in time, by pinching off the *buds* and tops of *Trees* for their *Nests*, cause many *Trees* and *Groves* to decay.

These (amongst many others) are the *Infirmities* to which *Forest-Trees* are subject whilst they are standing; and when they are *fell'd*, to the *Worm*; especially if *cut* before the *Sap* be perfectly at rest: But to *prevent* or *cure* it in the *Timber*, I recommend this *Secret* as the most approv'd.

21. Let common yellow *Sulphur* be put into a *cucurbit-glass*, upon which pour so much of the strongest *Aqua-fortis* as may cover it three fingers deep: *Distil* this to dryness, which is done by two or three *Rectifications*: Let the *Sulphur* remaining in the bottom (being of a blackish or fad red colour) be laid on a *Marble*, or put into a *Glass*, where it will easily dissolve into *Oil*: With this *anoint* what is either *infected* or to be preserved of *Timber*. It is a great and excellent *Arcanum* for tinging the *Wood* with no unpleasant colour, by no Art to be washed out; and such a preservative of all manner of *Woods*, nay of many other things; as *Ropes*, *Cables*, *Fishing-nets*, *Masts of Ships*, &c. that it defends them from *putrefaction*, either in *Waters*, under or above the earth, in the *Snow*, *Ice*, *Air*, *Winter* or *Summer*, &c.

It were superfluous to describe the *process* of the *Aqua-fortis*; It shall be sufficient to let you know, That our common *Coperas* makes this *Aqua-fortis* well enough for our purpose, being drawn over by a *Retort*: And for *Sulphur* the *Island* of *St Christophers* yields enough (which hardly needs any *Refining*) to furnish the whole world. This *Secret* (for the *Curious*) I thought fit not to omit; though a more compendious three or four *anointings* with *Linseed Oil*, has prov'd very effectual: It was experimented in a *Wall-nut Table*, where it destroy'd millions of *Worms* immediately, and is to be practis'd for *Tables*, *Tubes*, *Mathematical Instruments*, *Boxes*, *Bedsteads*, *Chairs*, *Rarities*, &c. *Oyl* of *Wall-nuts* will doubtless do the same, is sweeter, and a better *Vernish*; but above all is commended *Oyl* of *Cedar*, or that of *Juniper*.

Hitherto I have spoken of *Trees*, their *kinds*, and *propagation* in particular: Now a *word* or two concerning their *ordering* in general, as it relates to *Copses*, *Lopping*, *Felling*, &c.

Then I shall add something more concerning their *Uses*, as to *Fewel*, &c. and cast such accidental *Lessons* into a few *Aphorisms*, as could not well be more regularly inserted.

Lastly,

Lastly, I shall conclude with some more serious *Observations* in reference to the main *Design* and project of this *Discourse*, as it concerns the *Improvement* of His Majesty's *Forests*, for the honour and security of the whole *Kingdom*.

CHAP. XXVII.

Of Copses.

1. *Silva Cædua* is as well *Copse* to cut for *Fewel* as for use of *Copses*. *Timber*; and we have already shew'd how it is to be rais'd, both by *sowing* and *Planting*. Our ordinary *Copses* are chiefly upon *Hazel*, or the *Birch*; but if amongst the other kinds store of *Asb* and *Sallow* (at least one in four) were sprinkled in the *Planting*, the *profit* would soon discover a difference, and well recompence the *Industry*. Others advise us to plant shoots of *Sallow*, *Willow*, *Alder*, and of all the *swift* growing *Trees*, being of seven years growth, *sloping* off both the ends towards the ground to the length of a *Billet*, and burying them a reasonable depth in the earth. This will cause them to put forth seven or eight *branches*, each of which will become a *Tree* in a short time, especially if the soil be moist.

2. *Copses* being of a competent growth, as of *twelve* or *fifteen* years, are esteem'd fit for the *Ax*; but those of *twenty* years standing are better, and far advance the price. Some of our old *Clergy* *Spring-woods* heretofore have been let rest till twenty five or thirty years, and have prov'd highly worth the attendance; for by that time even a *Seminary* of *Acorns* will render a considerable advance, as I have already exemplified in the *Northamptonshire Lady*. And if *Copses* were so divided as that every year there might be some *fell'd*, it were a continual and a present profit: Seventeen years growth affords a tolerable *Fell*; supposing the *Copse* of seventeen *Acres*, one *Acre* might be yearly *fell'd* for ever; and so more, according to proportion.

3. As to what *Numbers* and *Scantlings* you are to leave on every *Acre*, the *Statutes* are our generall *guides*, at least the legal. It is a very ordinary *Copse* which will not afford three or four *Firfts*, that is, *Eests*; fourteen *Seconds*; twelve *Thirds*; eight *Wavers*, &c. according to which *proportions* the sizes of young *Trees* in *Copsing* are to succeed one another. By the *Statute* of 35 *Hen. 8.* in *Copses* or *Under-woods* fell'd at twenty four years growth, there were to be left twelve *Standils*, or *Stores* of *Oak*, upon each *Acre*; in defect of so many *Oaks*, the same number of *Elms*, *Asb*, *Asp*, or *Beech*; and they to be such as are of likely *Trees* for *Timber*, and of such as have been spar'd at some former *Felling*, unless there were none, in which case they are to be then left, and so to continue without *Felling* till they are ten inch square within a yard of ground.

Copses

A Discourse of Forest-Trees.

Copses above this growth *fell'd*, to leave 12 great *Oaks*; or in defect of them other *Timber-trees* (as above) and so to be left for 20 years longer, and to be enclosed seven years.

4. In summe, you are to spare as many likely *Trees* for *Timber* as with discretion you can. And as to the felling, (beginning at one side, that the *Carts* may enter without detriment to what you leave standing) the *Under-wood* may be cut from *January* at the latest, till mid-*March*, or *April*; or from mid-*September*, till near the end of *November*; so as all be avoided by *Midsomer* at the latest, and then *fenced* (Where the *Rowes* and *Brush* lye longer unbound or made up, you endanger the loss of a *second Spring*) and not to stay so long as usually they are a *clearing*, that the *Young*, and the *Seedlings* may suffer the least interruption.

5. It is advis'd not to cut off the *Browse-wood* of *Oaks* in *Copses*, but to suffer it to fall off, as where *Trees* stand very close it usually does: I do not well comprehend why yet it should be *spared* so long.

6. When you espy a *cluster* of *Plants* growing as it were all in a bunch, it shall suffice that you preserve the fairest *Sapling*, cutting all the rest away. And if it chance to be a *Chest-nut*, *Service*, or like profitable *Tree*, clear it from the droppings and incumbrances of other *Trees*, that it may thrive the better: Then as you pass along, *prune*, and *trim* up all the young *Wavers*, covering such *Roots* as lye bare and expos'd with fresh mould.

7. Cut not above *half a foot* from the *Ground*, and that slope-wise; *stripping* up such as you spare from their extravagant *Branches*, *Water-boughs*, &c. that hinder the growth of *others*: Always remembring (before you so much as enter upon this work) to preserve sufficient *Plash-pole* about the *verge* and bounds of the *Copse* for *Fence*, and security of what you leave; and for this something less than a *Rod* may suffice: Then *raking* your *Wood* clear of *Spray*, *Chips*, and all *Incumbrances*, shut it up from the *Cattle*; the longer the better.

8. By the *statute* men were bound to enclose *Copses* after *Felling*, of or under 14 years growth for 4 years: Those above 14 years growth to be 16 years *Enclos'd*: And for *Woods* in *common*, a fourth part to be shut up; and at *Felling* the like proportion of great *Trees* to be left, and 7 years *Enclos'd*: This was enlarg'd by 13 *Eliz.*

Your elder *Under-woods* may be *graz'd* about *July*.

Then for the *Measure* of *Fuel* these *proportions* were to be observ'd.

9. Statutable *Billet* should hold *three foot* in *length*, and *seven* inch and half *compass*; 10 or 14 as they are counted for 1, 2, or 3, &c.

A *stack* of *Wood* (which is the *boughs* and *offal* of the *Trees* to be converted to *Charecoal*) is 4 *yards* long, *three foot and half* high, (in some places but a *yard*) and as much *over*: In other places the *Cord* is 4 *foot* in *height* and 4 *foot* over; or, (to speak more *Geometrically*) a *solid* made up of three *dimensions*, 4 *foot* high, four

four broad, and eight foot long; the content 128 cubique feet.

Fagots ought to be a full yard in length, and two foot in circumference, made round, and not flat; for so they contain less Fuel, though equal in the bulk appearing. But of these particulars when we come to speak expressly of Fuel.

10. In the mean time it were to be wish'd, that some approv'd Experiments were sedulouly try'd (with the advice of skillful and ingenious *Physitians*) for the making of Beer without Hops; as possibly with the white *Marrubium* (a Plant of singular virtue) or with dry'd *Heath-tops* (*viz.* that sort which bears no *Berries*) or the like, far more wholesom, and less bitter then either *Tamarisk*, *Carduus*, or *Broom*, which divers have essay'd; it might prove a means to save a world of Fuel, and in divers places young *Timber* and *Copse-wood*, which is yearly spent for *Poles*; especially in Countries where *Wood* is very precious.

CHAP. XXVIII.

Of Pruning.

1. **P**runing I call all purgation of *Trees* from what is superfluous. The *Ancients* found such benefit in *Pruning*, that they feign'd a *Godess* presided over it, as *Arnobius* tells us: And in truth, it is in the discreet performance of this *Work* that the Improvement of our *Timber* and *Woods* does as much consist as in any thing whatsoever. A skillful *Planter* should therefore be early at this work: Shall old *Gratius* give you *Reason* and *Direction*?

*Nunquam sponte sua procerus ad n̄ra termes
Exiit, inque ipsa curvantur stirpe genista.
Ergo age luxuriam primò fætusque nocentis
Detrahe: frondosas gravat indulgentia silvas.
Post ubi proceris generosa stirpibus arbor
Se dederit, teretesque ferent ad sidera virgæ,
Stringe notas circum, & gemmantis exige versus.
His, si quis vitium nociturus sufficit humor,
Visceribus fluit, & venas durabit inertes.*

Gra. fal.
Cynæget.

And his incomparable *Interpreter* thus in *English*.

Twigs of themselves never rise strait and high,
And Under-woods are bow'd as first they shoot.
Then prune the boughs; and suckers from the root
Discharge. The leavy wood fond pity tires;
After, when with tall rods the tree aspires,
And the round staves to heaven advance their twigs,
Pluck all the buds, and strip off all the sprigs;

M

These

A Discourse of Forest-Trees.

These issues vent what moisture still abound,
And the veins unemploy'd grow hard and found.

Wase.

2. For 'tis a misery to see how our fairest *Trees* are defac'd, and mangl'd by unskilful *Wood-men*, and mischievous *Bordurers*, who go always arm'd with short *Hand-bills*, hacking and chopping off all that comes in their way; by which our *Trees* are made full of *knots, boils, cankers*, and deform'd bunches, to their utter destruction: *Good husbands* should be asham'd of it. As much to be reprehended are those who either begin this work at unseasonable times, or so maim the poor *branches*, that either out of laziness, or want of skill, they leave most of them *stubs*, and instead of cutting the *Arms* and *Branches* close to the *boale*, hack them off a foot or two from the body of the *Tree*, by which means they become *hollow* and *rotten*, and are as so many *conduits* to receive the *Rain* and the *Weather*, which perishes them to the very *head*, deforming the whole *Tree* with many ugly *botches*, which shorten its life, and utterly marre the *Timber*.

3. By this *Animadversion* alone it were easie for an ingenious man to understand how *Trees* are to be govern'd; which is in a word, by cutting *clean, smooth, and close*, making the stroke *upward*, and with a sharp *Bill*, so as the weight of an untractable *bough* do not *splice*, and carry the *bark* with it, which is both dangerous and unsightly.

4. The proper season for this work is a little after the *change* in *January*:

—Tunc stringe comas, tunc brachia tonde:

—Tunc denique dura

Exerce Imperia, & ramos compeſce fluentis.

But this ought not to be too much in young *Fruit-trees*, after they once come to form a handsom *head*; in which period you should but only pare them over about *March*, to cover the *stock* the sooner, if the *Tree* be very choice: To the *aged*, this is plainly a renewing of their *Youth*, and an extraordinary refreshment: Besides, for *Interlucation*, exuberant *branches*, & *spiffæ nemorum come*, where the *boughs* grow too thick and are cumbersome, to let in the *Sun* and *Air*, this is of great importance.

5. Divers other precepts of this nature I could here enumerate, had not the great *experience*, faithful and accurate *description* how this necessary *Work* is to be perform'd, set down by our Country-man honest *Lawson* (*Orchard*, cap. 11.) prevented all that the most *Inquisitive* can suggest: The particulars are so ingenuous, and highly material, that you will not be displeas'd to read them in his own style.

All ages (saith he) by Rules and experience do consent to a pruning, and lopping of *Trees*: Yet have not any that I know described unto us (except in dark, and general words) what, or which

which are those superfluous boughs, which we must take away; and that is the most chief, and most needful point to be known in lopping. And we may well assure our selves (as in all other Arts, so in this) there is a vantage, and dexterity by skill; an habit by practice out of experience, in the performance hereof, for the profit of mankind: Yet do I not know (let me speak it with patience of our cunning Arborists) any thing within the compass of humane affairs so necessary, and so little regarded; not only in Orchards, but also in all other Timber-trees, where, or whatsoever.

Now to our purpose:

How many Forests, and Woods, wherein you shall have for one lively thriving Tree, four (nay sometimes twenty four) evil thriving, rotten and dying Trees, even whiles they live; and instead of Trees, thousands of bushes and shrubs? what rottenness? what hollowness? what dead arms? wither'd tops? curtail'd trunks? what loads of Moss? drooping boughs? and dying branches shall you see every where? and those that like in this sort are in a manner all unprofitable boughs, canker'd arms, crooked, little and short boals. What an infinite number of bushes, shrubs, and skrags of Haws, Thorns and other profitable wood, which might be brought by dressing to become great, and goodly trees? Consider now the Cause.

The lesser Wood hath been spoil'd with careles, unskillful, and untimely stowing; and much also of the great Wood. The greater Trees at the first rising have fill'd and overladen themselves with a number of wastefull boughs and suckers, which have not only drawn the sap from the boal, but also have made it knotty, and themselves, and the boal mossie, for want of drying; whereas, if in the prime of growth they had been taken away close, all but one top, and clean by the bulk, the strength of all the sap should have gone to the bulk, and so he would have recovered, and cover'd his knots, and have put forth a fair, long and straight body, for Timber profitable, huge great of bulk, and of infinite last.

If all Timber-trees were such (will some say) how should we have crooked wood for Wheels, Coorbs, &c?

Answer. Dyes all you can, and there will be enough crooked for those uses.

Doze then this; in most places they grow so thick, that neither themselves, nor earth, nor any thing under or near them can thrive; nor Sun, nor Rain, nor Air can do them, nor any thing near, or under them, any profit or comfort.

I see a number of Hags, where out of one root you shall see three or four (nay more, such is mens unskillful greediness, who desiring many, have none good) pretty Oaks, or Ashes, straight and tall; because the root at the first shoot gives sap again: but if one only of them might be suffer'd to grow, and that well, and cleanly prun'd, all to his very top, what a Tree should we

have in time? And we see by those roots continually, and plentifully springing, notwithstanding so deadly wounded, what a commodity should arise to the Owner, and the Commonwealth if wood were cherished, and orderly dress'd. The waste boughs closely, and skilfully taken away, would give us store of Fences, and Fuel; and the bulk of the Tree in time would grow of huge length and bigness: But here (methinks) I hear an unskilful Arborist say, that Trees have their several forms, even by nature; the Pear, the Holly, the Aspe, &c. grow long in bulk, with few and little armes. The Oak by nature broad, and such like. All this I grant: But grant me also, that there is a profitable end and use of every Tree, from which if it decline (though by Nature) yet Man by Art may (nay must) correct it. Now other end of Trees I never could learn, than good Timber, Fruit much and good, and pleasure: Unless Physical hinder nothing a good form.

Neither let any Man ever so much as think, that it is unprobable, much less impossible, to reform any Tree of what kind soever: For (believe me) I have tried it: I can bring any Tree (beginning by time) to any form. The Pear, and Holly may be made spread, and the Oak to close.

Thus far the good *Man* out of his *eight* and *forty* years *experience* concerning *Timber-trees*: He descends then to the *Orchards*; which because it may likewise be acceptable to our industrious *Planter*, I thus contract.

6. Such as stand for *Fruits* should be *parted* from within two foot (or thereabouts) of the earth; so high, as to give liberty to dress the *Root*, and no higher; because of exhausting the *sap* that should feed his *Fruit*: For the *boal* will be first, and best served and fed, being next to the *root*, and of greatest substance. These should be *parted* into two, three, or four *Arms*, as your *graffs* yield twigs; and every *Arm* into two, or more *Branches*, every *Branch* into his several *Cyons*: still spreading by equal degrees; so as his *lowest* spray be hardly without the reach of a mans *hand*, and his *highest* not past two yards higher: That no *twig* (especially in the midst) *touch* his fellow; let him spread as far as his list without any master-bough, or top, equally; and when any fall lower then his fellows (as they will with weight of *Fruit*) ease him the next *spring* of his superfluous *twigs*, and he will rise: When any mount above the rest, *top* him with a *nip* between your *fingers*, or with a *knife*: Thus reform any *Cyon*; and, as your Tree grows in *stature*, and *strength*, so let him rise with his tops, but *slowly*, and early; especially in the midst, and equally in breadth also; following him upward, with lopping his under-growth, and *water-boughs*, keeping the same distance of *two yards*, not above *three*, in any wise, betwixt the lowest and highest twigs.

1. Thus shall you have handsome, clear, healthful, great and lasting *Trees*.

2. Thus

2. Thus will they grow safe from *Winds*, yet the top spreading.

3. Thus shall they bear much *Fruit*; I dare say, one as much as five of your common *Trees*, all his branches loaden.

4. Thus shall your *Boal* being low defraud the branches but little of their *sap*.

5. Thus shall your *Trees* be easie to *dress*, and as easie to gather the *Fruit* from, without bruising the *Cyons*, &c.

6. The fittest time of the *Moon* for *Pruning* is (as of *Grafting*) when the *sap* is ready to stir (not proudly stirring) and so to cover the *wound*. Old *Trees* would be prun'd before young *Plants*: And *note*, that wheresoever you take any thing away, the *sap* the next *Summer* will be putting: be sure therefore when he puts to bud in any unfit place, you *rub* it off with your finger: Thus begin timely with your *Trees*, and you may bring them to what form you please. If you desire any *Tree* should be taller, let him *break*, or divide higher: This for young *Trees*: The *old* are reformed by curing of their *diseases*, of which we have already discours'd. There is this only to be consider'd, in reference to *Foresters*, out of what he has spoken concerning *Fruit-trees*; that where *Trees* are planted for shadow, and meer *ornament*, as in *Walks*, and *Avenues*, the *Browse-wood* (as they call it) should most of it be cherished; whereas in *Fruit*, and *Timber-trees* (*Oak* excepted) it is best to free them of it: As for *Pollards* (to which I am no great friend because it makes so many *scrags* and *dwarfs* of many *Trees* which would else be good *Timber*, endangering them with *drips* and the like *injuries*) they should not be *headed* above once in ten or twelve years, at the beginning of the *spring*, or end of the *Fall*.

7. For the improvement of the speedy growth of *Trees*, there is not a more excellent thing then the frequent *rubbing* of the *Boal* or *Stem*, with some piece of *hair-cloth*, or ruder stuff, at the beginning of *Spring*: some I have known done with *Seales-skin*; the more rugged bark with a piece of *Coat of Maile*, which is made of small *wyres*; this done, when the body of the *Trees* are wet, as after a soaking *Rain*; yet so, as not to *excorticate*, or gall the *Tree*, has exceedingly accelerated its growth, by opening the *pores*; freeing them of *moss*, and killing the *worm*.

8. Lastly, *Fronation*, or the taking off some of the luxuriant *branches*, and *sprays*, of such *Trees*, especially whose leaves are profitable for *Cattel* (whereof already) is a kind of *pruning*: and so is the *scarifying*, and *cross hatching* of some *Fruit-bearers*, and others, to abate that *superfluousness* which spends all the *juice* in the leaves to the prejudice of the rest of the parts.

9. This, and the like, belonging to the *care* of the *Wood-ward*, will mind him of his continual duty; which is to walk about, and survey his young *Plantations* daily; and to see that all *Gaps* be immediately stopp'd; trespassing *Cattle* impounded; and (where they are infested) the *Deer* chased out, &c. It is most certain that *Trees* prefer'd, and govern'd by this *discipline*, and according to
the

the *Rules* mention'd, would increase the beauty of *Forests*, and value of *Timber*, more in ten, or twelve years, then all other imaginable *Plantations* (accompanied with our usual neglect) can do in forty or fifty.

10. To conclude, in the time of this *Work* would our ingenious *Arborator* frequently *incorporate*, *mingle*, and unite the *Arms* and *Branches* of some young and flexible *Trees* which grow in *consort*, and neer to one another; by entering them into their mutual *barks* with a convenient *infusion*: This, especially, about *Fields*, and *Hedge-rows* for *Fence* and *Ornament*; also by bowing, and bending of others, especially *Oak* and *Asb*, into various *flexures*, *curbs* and *postures*, oblig'd to ply themselves into different *Modes*, which may be done by humbling and binding them down with tough *bands* and *withs*, till the *tenor* of the *sap*, and custom of being so constrain'd, did render them apt to grow so of themselves, without power of redressing; This course would wonderfully accommodate Materials for *Knee-timber* and *shipping*, the *Wheelwright* and other uses; conform it to their *Moulds*, and save infinite labour, and abbreviate the work of *hewing* and *waste*,

— *adeo in teneris consuescere multum est.*

the *Poet*, it seems, knew it well, and for what purposes,

*Continuò in Sylvis magna vi flexa domatur
In burim, & curvi formam accipit Ulmus aratri: Gco. I.*

so as it even half made the *Plow* to their hands.

CHAP. XXIX.

Of the Age, Stature, and Felling of Trees.

Felling.

1. **I**T is not till a *Tree* is arriv'd to his perfect *Age*, and full *vigor*, that the *Lord* of the *Forest* should consult, or determine concerning a *Felling*. For there is certainly in *Trees* (as in all things else) a time of *Increment*, or growth; a *Status* or season when they are at *best* (which is also that of *Felling*) and a *decrement* or *period* when they *decay*.

To the first of these they proceed with more, or less *velocity*, as they consist of more strict and compacted *particles*, or are of a flighter, and more lax'd *texture*; by which they receive a speedier, or slower *defluxion* of *Aliment*: This is apparent in *Box*, and *Willow*; the one of a harder, the other of a more tender *substance*: But as they proceed, so they likewise continue.

By the *state* of *Trees* I would signifie their utmost *effort*, growth, and

and maturity, which are all of them different as to *time*, and *kind*; yet do not I intend by this any *period* or instant in which they do not continually either Improve or Decay (the *end* of *one* being still the *beginning* of the *other*) but farther then which their *Natures* do not extend; but immediately (though to our senses *imperceptibly*) through some *infirmity* (to which all things sublunary be obnoxious) dwindle and impair, either through *Age*, defect of *Nourishment*, by *sickness*, and decay of principal *parts*; but especially, and more inevitably, when violently invaded by mortal and incurable *Infirmities*, or by what other extinction of their native *heat*, *subtraction*, or *obstruction* of *Air* and *Moisture*, which making all *motions* whatsoever to cease and determine, is the cause of their final destruction.

2. Our honest *Country-man*, to whose *Experience* we have been obliged for something I have lately *Animadverted* concerning the *Pruning* of *Trees*, does in another *Chapter* of the same *Treatise* speak of the *Age* of *Trees*. The *Discourse* is both learned, rational, and full of encouragement: For he does not scruple to affirm, That even some *Fruit-Trees* may possibly arrive to a *thousand* years of *Age*; and if so *Fruit-Trees* whose continual bearing does so much impair and shorten their lives, as we see it does their form and beauty; How much longer might we reasonably imagine some hardy and slow-growing *Forest-trees* may probably last? I remember *Pliny* tells us of some *Oaks* growing in his time in the *Hercynian* Forest, which were thought co-evous with the *World* it self; their roots had even raised *Mountains*, and where they encounter'd swell'd into goodly *Arches* like the *Gates* of a *City*: But to our more modern *Author's* calculation for *Fruit-trees* (I suppose he means *Pears*, *Apples*, &c.) his allowance is *three hundred* years for *growth*, as much for their *stand* (as he terms it), and *three hundred* for their *Decay*, which does in the total amount to no less then *nine hundred* years. This conjecture is deduc'd from *Apple-Trees* growing in his *Orchard*, which having known for forty years, and upon diligent enquiry of sundry aged Persons of eighty years and more, who remembred them *Trees* all their time, he finds by comparing their growth with others of that *kind*, to be far short in bigness and perfection, (*viz.* by more then two parts of three) yea albeit those other *Trees* have been much hindered in their stature through ill government and ordering.

3. To establish this he assembles many *Arguments* from the age of *Animals*, whose *state* and *decay* double the time of their *increase* by the same proportion: *If then* (saith he) *those frail* Creatures, whose bodies are nothing (in a manner) but a tender rottenness, may live to that age, I see not but a *Tree* of a solid substance, not damnified by heat or cold, capable of and subject to any kind of ordering or dressing, feeding naturally, and from the beginning disburthen'd of all superfluities, eased of, and of his own accord avoiding the causes that may annoy him, should double the life of other Creatures by very many years. He proceeds, *What else* are *Trees* in comparison with the *Earth*, but as hairs to the body of *Man*? And it is certain, that

that (without some distemper, or forcible cause) the hairs dure with the body, and are esteem'd excrements but from their superfluous growth: So as he resolves upon good Reason, that Fruit-trees well ordered may live a thousand years, and bear Fruit, and the longer the more, the greater, and the better (for which an Instance also in M^r Beale's Hereford-shire Orchards, pag. 21, 22.) because his vigour is proud and stronger, when his years are many. Thus shall you see old Trees put forth their Buds and Blossomes both sooner and more plentifully than young Trees by much; And I sensibly perceive (saith he) my young Trees to enlarge their Fruit as they grow greater, &c. And if Fruit-Trees continue to this Age, how many Ages is it to be supposed strong and huge Timber-trees will last? whose massie bodies require the years of divers Methusala's before they determine their days; whose Sap is strong and bitter; whose Bark is hard and thick, and their substance solid and stiff; all which are defences of health and long life. Their strength withstands all forceable Winds; their Sap of that quality is not subject to Worms and tainting; their Bark receives seldome or never by casualty any wound; and not only so, but he is free from Removals, which are the death of millions of Trees; whereas the Fruit-tree (in comparison) is little, and frequently blown down; his Sap sweet, easily and soon tainted; his Bark tender, and soon wounded; and himself used by Man as Man uses himself; that is, either unskillfully, or carelessly. Thus he.

4. I might to this add much more, and truly with sufficient probability, that the Age of Timber-trees, especially of such as be of a compact, resinous, or balsamical nature (for of this kind are the Eugh, Box, Horn-beam, White-thorn, Oak, Walnut, Cedar, Juniper, &c.) are capable of very long duration and continuance: those of largest Roots, longer liv'd then the shorter; the dry, then the wet; and the gummy, then the watry: For not to conclude from Pliny's Hercynian Oaks, or the Terpentine Tree of Idumæa, which Josephus ranks also with the Creation: I read of a Cypress yet remaining some where in Persia neer an old Sepulchre, whose stem is as large as five men can encompass, the boughs extending fifteen paces every way; This must needs be a very old Tree, believ'd by my Author little less then 2500 years of age: The particulars were too long to recount. The old Platanus set by Agamemnon, and the Herculean Oaks, the Laurel neer Hippocren, the Vatican Ilex, and old Lotus Trees, recorded by Valerius Maximus, were famous for their age: St Hierome affirms he saw the Sycomore that Zaccheus climb'd up, to see our LORD ride in Triumph to Jerusalem: And now in the Aventine Mount they shew us the Malus Medica, planted by the hand of St Dominic: To which add those superannuated Tilia's now at Basil, and that of Anspurg, under whose prodigious shade they so often feast, and celebrate their Weddings; because they are all of them noted for their reverend Antiquity; for to such Trees it seems they paid Divine honours, as the nearest Emblems of Eternity, & tanquam sacros ex vetustate, as Quintilian speaks: And like to these might that be which is celebrated

celebrated by our Poet, neer to another Monument,

— *juxta que antiqua Cupressus*
Relligione patrum multos servata per annos. Æn. 2.

5. But we will spare our Reader, and refer him that has a desire to multiply examples of this kind, to those undoubted Records our Naturalist mentions in his 44. Chap. Lib. 16. where he shall read of *Scipio Africanus's* Olive-trees; *Dianas Lotus*; the overgrown *Myrtil*; the *Vatican Holm*, those of *Tyberwine*, and especially, that neer to *Tusculum*, whose body was thirty five foot about; besides divers others which he there enumerates in a large Chapter: And what shall we conjecture of the age of *Xerxes's* huge *Platanus*, in admiration whereof he staid the march of so many hundred thousand men for so many days: by which the wise *Socrates* was us'd to swear? And certainly, a goodly Tree was a powerful attractive, when that prudent *Consul Passienus Crispus* fell in love with a prodigious *Beech* of a wonderful age and stature.

6. We have already made mention of *Tiberius's Larch*, and that of the *Float* which wafted *Caligulas Obelisks* out of *Agypt*, four fathoms in circumference: We read also of a *Cedar* growing in the Island of *Cyprus* which was 130 foot long, and 18 in diameter; of the *Plane* in *Athens* whose roots extended 36 Cubits farther then the boughs, which were yet exceedingly large; and such another was that most famous Tree at *Veliternus*, whose arms stretch'd out 80 foot from the stem: But these were solid: Now if we will calculate from the hollow, besides those mention'd by *Pliny* in the *Hercynian Forest*; the *Germans* (as now the *Indians*) had of old some *Punti* or *Canoes* of excavated *Oak* which would well contain thirty, some forty persons: And the *Lician Platanus* recorded by the *Naturalist*, and remaining long after his days, had a room in it of eighty one feet in compals, adorn'd with *Fountains*, stately *Seats* and *Tables* of stone; for it seems it was so glorious a Tree both in body, and head, that *Licinius Mutianus* (three times *Consul*, and Governour of that *Province*) us'd to feast his whole Retinue in it, chusing rather to lodge in it, then in his golden-roofed *Palace*.

7. Compare me then with these that nine-fathom'd deep Tree spoken of by *Josephus à Costã*; the *Mastick-tree* seen and measur'd by *Sir Francis Drake*, which was four and thirty yards in circuit; and for prodigious height the two, and three hundred foot unparallel'd *Palms-royal* describ'd by *Captain Ligon* growing in our *Plantations* of the *Barbados*; or those goodly *Masts* of *Fir*, which I have seen, and measur'd, brought from *New England*; not to omit the vast, and incredible bulk of some *Oaks* standing lately in *Weßphalia*, whereof one serv'd both for a *Castle* and *Fort*; because in this *resention* we will endeavour to give a taste of more fresh observations, and to compare our modern *Timber* with the *Ancient*, and that, not only abroad, but without travelling into forreign Countries for these wonders.

N

8. What

8. What goodly *Trees* were of old *ador'd*, and consecrated by the *Dryads* I leave to conjecture from the stories of our ancient *Britains*, who had they left *Records* of their *prodigies* in this kind, would doubtless have furnish'd us with *examples* as remarkable for the *growth* and *stature* of *Trees*, as any which we have deduc'd from the *Writers* of *forreign* places, since the remains of what are yet in being (notwithstanding the havock which has universally been made, and the little care to improve our *Woods*) may stand in fair competition with any thing that *Antiquity* can produce.

9. There is somewhere in *Wales* an *Inscription* extant, cut into the wood of an old *Beam*, thus

SEXAGINTA PEDES FUERANT IN STIPITE NOSTRO,
EXCEPTA COMA QUÆ SPECIOSA FUIT.

This must needs have been a noble *Tree*, but not without later *parallels*; for to instance in the several *species*, and speak first of the bulks of some immense *Trees*; there was standing an old and decay'd *Chest-nut* at *Fraining* in *Essex*, whose very stump did yield thirty sizable load of *Logs*; I could produce you another of the same kind in *Glocestershire* which contains within the bowels of it a pretty wain-scotted Room inlighten'd with windows, and furnish'd with seats, &c. to answer the *Lician Platanus* lately mention'd.

10. But whilest I am on this period; see what a *Tilia* that most learn'd, and obliging person, *D. Brown* of *Norwich*, describes to me in a *Letter* just now receiv'd.

An extraordinary large, and stately *Tilia*, Linden or Lime-tree, there groweth at *Depeham* in *Norfolk*, ten miles from *Norwich* whose measure is this. The compass in the least part of the Trunk or body about two yards from the ground is at least eight yards and half: about the root nigh the earth, sixteen yards; about half a yard above that, neer twelve yards in circuit: The height to the uppermost boughs about thirty yards, which surmounts the famous *Tilia* of *Zurich* in *Switzerland*; and uncertain it is whether in any *Tilicetum*, or *Lime-walk* abroad it be considerably exceeded: Yet was the first motive I had to view it not so much the largeness of the *Tree*, as the general opinion that no man could ever name it; but I found it to be a *Tilia femina*; and (if the distinction of *Baughinus* be admitted from the greater, and lesser leaf) a *Tilia Platyphyllos* or *Latifolia*; some leaves being three inches broad; but to distinguish it from others in the Country, I call'd it *Tilia Colossæa Depehamensis*. Thus the *Doctor*.

A *Poplar-tree* not much inferior to this he informs me grew lately at *Harlingly Thetford*, at *Sir William Gawdies* gate, blown down by that terrible *Hurrocan* about four years since.

11. I am told of a very *Withy-tree* to be seen somewhere in *Barkshire* which is increas'd to a most stupendious bulk: But these for arriving hastily to their *Acme*, and *period*, and generally not so considerable for their use; I pass to the *Ash*, *Elm*, *Oak*, &c.

There

There were of the *first* of these divers which measur'd in length *one hundred and thirty two foot*, sold lately in *Essex*: And in the *Manor of Horton* (to go no farther then the *Parish of Ebsam* in *Surrey*, belonging to my Brother *Richard Evelyn Esq.*) there are *Elms* now standing in good numbers, which will bear almost three foot square for more then forty foot in height, which is (in my judgement) a very extraordinary matter. They grow in a moist *Gravel*, and in the *Hedge-rows*.

Not to insist upon *Beech*, which are frequently very large; there are *Oaks* of forty foot high; and five foot *diameter* yet flourishing in divers old *Parks* of our *Nobility* and *Gentry*.

A large and goodly *Oak* there is at *Reedham* in *Sir Richard Bernes Park* of *Norfolk*, which I am inform'd was valu'd at forty pounds the *Timber*, and twelve pounds the lopping wood.

12. Nor are we to over-pass those memorable *Trees* which so lately flourished in *Dennington Park* near *Newberry*: amongst which three were most remarkable from the ingenious *Planter*, and *dedication* (if *Tradition* hold) the famous English *Bard*, *Jeofry Chaucer*; of which one was call'd the *Kings*, another the *Queens*, and a third *Chaucers-Oak*. The *first* of these was fifty foot in height before any *bough* or *knot* appear'd, and cut five foot square at the *butt end*, all clear *Timber*. The *Queens* was fell'd since the *Wars*, and held forty foot excellent *Timber*, straight as an arrow in growth and grain, and cutting four foot at the *finb*, and near a yard at the top; besides a fork of almost ten foot clear timber above the shaft, which was crown'd with a shady *tust* of boughs, amongst which, some were on each side curved like *Rams-horns*, as if they had been so industriously bent by hand. This *Oak* was of a kind so excellent, cutting a grain clear as any *Clap-board* (as appear'd in the *Wainscot* which was made thereof) that a thousand pities it is some *seminary* of the *Acorns* had not been propagated, to preserve the species. *Chaucers Oak*, though it were not of these dimensions, yet was it a very goodly *Tree*: And this account I receiv'd from my most honour'd friend *Phil. Packer Esq.* whose *Father* (as now the *Gentleman* his *Brother*) was proprietor of this *Park*: But that which I would farther remark, upon this occasion, is, the *bulk*, and *stature* to which an *Oak* may possibly arrive within less then two *hundred year*, since it is not so long that our *Poet* flourish'd (being in the *Reign* of *King Edward the fourth*) if at least he were indeed the *Planter* of thole *Trees*, as 'tis confidently affirm'd. I will not labour much in this enquiry; because an *implicit* faith is here of great encouragement; and it is not to be conceiv'd what *Trees* of a good kind, and apt *soil*, will perform in a few years; and this (I am inform'd) is a sort of *gravelly clay* moistn'd with small and frequent springs.

13. There was in *Cuns-burrow* (sometimes belonging to my Lord of *Dover*) several *Trees* bought by a *Conper*, of which he made *ten pound per yard* for three or four yards, as I have been credibly assur'd: But where shall we parallel that mighty *Tree* which furnish'd the *Main-mast* to the *Sovereign* of our *Seas*, which

being one hundred foot long save one, bare thirty five inches diameter. Yet was this exceeded in proportion, and use, by that Oak which furnish'd those prodigious beams that lye thwart her. The diameter of this Tree was four foot nine inches, which yielded four square beams of four and forty foot long each of them. The Oak grew about Framingham in Suffolk; and indeed it would be thought fabulous, but to recount only the extraordinary dimensions of some Timber-trees growing in that County; and of the excessive sizes of these materials, had not mine own hands measur'd a Table (more then once) of above five foot in breadth, nine and an half in length, and six inches thick, all intire and clear: This plank cut out of a Tree fell'd down by my Fathers order, was made a Pastry-board, and lyes now on a frame of solid Brick-work at Wotton in Surrey, where it was so placed before the room was finish'd about it, or wall built, and yet abated by one foot shorter, to confine it to the intended dimensions of the place: for at first, it held this breadth, full ten foot and an half in length.

14. To these I might add that supranuated Engle-tree growing now in Braburne Church-yard, not far from Scots-hall in Kent; which being 58 foot 11 inches in the circumference, will bear near twenty foot diameter, as it was measur'd first by my self imperfectly, and then more exactly for me, by order of the Right Honourable Sir George Carteret, Vice-Chamberlain to his Majesty, and Treasurer of the Navy: not to mention the goodly planks, and other considerable pieces of squar'd, and clear Timber, which I observ'd to lye about it, that had been bew'd, and sawn out of some of the Arms only, torn from it by impetuous winds. Such another Monster I am inform'd is also to be seen in Sutton Church-yard near Winchester: But these (with infinite others, which I am ready to produce) might fairly suffice to vindicate, and assert our Proposition, as it relates to modern examples, and sizes of Timber-trees, comparable to any of the Ancients, remaining upon laudable and unsuspected Record; were it not great ingratitude to conceal a most industrious, and no less accurate Accompt, which comes just now to my hands from M^r. Halton, Auditor to the Right Honourable, the most Illustrious, and Noble, Henry Howard of Norfolk.

In Sheffield Lordship.

The names of
the persons
who gave in-
telligence of
the particu-
lars.
Ed. Rawfon.

15. In the Hall Park, neer unto Rivelin, stood an Oak which had eighteen yards without bough, or knot; and carried a yard and six inches square at the said height, or length, and not much bigger neer the root: Sold twelve years ago for 11 li. Consider the distance of the place, and Country, and what so prodigious a Tree would have been worth neer London.

In Firth's Farme within Sheffield Lordship, about twenty years since, a Tree blown down by the wind, made or would have made two Forge-hammer-beams, and in those, and the other wood of that Tree, there was of worth, or made 50 li. and Godfrey Frogat (who is now

now living) did oft say, he lost 30 *li.* by the not buying of it.

A *Hammer-beam* is not less then 7½ yards long, and 4 foot square at the *barrel*.

In *Sheffield Park*, below the *Manor*, a *Tree* was standing which was sold by one *Giffard* (servant to the then *Countess* of *Kent*) for 2 *li.* 10 *s.* to one *Nich. Hicks*; which yielded of sawn *Wair* fourteen hundred, and by estimation, twenty *Chords* of wood.

A *Wair* is two yards long, and one foot broad, sixscore to the hundred: so that, in the said *Tree* was 10080 foot of *Boards*; which, if any of the said *Boards* were more then half-inch thick, renders the thing yet more admirable.

Ed. Morphy,
Wood-ward.

In the upper end of *Rivelin* stood a *Tree*, call'd the *Lords-Oak*, of twelve yards about, and the top yielded twenty one *Chord*, cut down about thirteen years since.

In *Sheffield Park An.* 1646. stood above 100 *Trees* worth 1000 *li.* and there are yet two worth above 20 *li.* still note the place, and market.

In the same *Park*, about eight years ago, *Ralph Archdall* cut a *Tree* that was thirteen foot diameter at the *Kerf*, or cutting place near the *Root*.

In the same *Park* two years since *Mr. Sittwell*, with *Jo. Magson* did chuse a *Tree*, which after it was cut, and laid aside flat upon a level ground, *Sam. Staniforth* a *Keeper*, and *Ed. Morphy*, both on horse-back, could not see over the *Tree* one anothers *Hat-crowns*. This *Tree* was afterwards sold for 20 *li.*

In the same *Park*, near the old foord, is an *Oak-tree* yet standing, of ten yards circumference.

In the same *Park*, below the *Conduit Plain*, is an *Oak-tree* which bears a top, whose boughs shoot from the *boal* some fifteen, and some sixteen yards.

Jo. Halton.

Then admitting 15½ yards for the common, or mean extent of the boughs from the *boal*, which being doubled is 31 yards; and if it be imagin'd for a diameter, because the *Ratio* of the diameter to the circumference is $\frac{7}{22}$ it follows 113.355 :: 31.97 $\frac{11}{17}$ yards which is the circumference belonging to this diameter.

Then farther it is demonstrable in *Geometry*, that half the diameter multiplied into half the circumference produces the *Area* or quantity of the *Circle*, and that will be found to be 754 $\frac{11}{17}$ which is 755 square yards ferè.

Then lastly, if a *Horse* can be limited to three square yards of ground to stand on (which may seem a competent proportion of three yards long, and one yard broad) then may 251 *Horse* be well said to stand under the shade of this *Tree*. But of *Scotch Cattle* certainly, more then twice that number.

Work-

Workfopp-Park.

16. In this *Park*, at the corner of the *Bradshaw-rail*, lyeth the *boal* of an *Oak-tree* which is twenty nine foot about, and would be found thirty, if it could be justly meaur'd; because it lyeth upon the ground; and the length of this boal is ten foot, and no arm, nor branch upon it.

Kenhelm
Homer.

In the same *Park*, at the white-gate, a *Tree* did stand that was from bough end to bough end (that is, from the extream ends of two opposite boughs) 180 foot; which is witness'd by *Jo. Magson* and *Geo. Hall*, and meaur'd by them both.

Jo. Magson.
Geo. Hall.

Then because 180 foot, or 60 yards is the *diameter*; 30 yards will be the *semidiameter*: And by the former *Analogies*

$$113. 355 :: 60. 188\frac{1}{2}$$

and

$$1. 30 :: 94\frac{1}{2}. 2827\frac{1}{2}$$

That is, the *Content* of ground upon which this *Tree* *perpendicularly* drops, is above 2827 square yards, which is above half an *Acre* of ground: And the assigning three square yards (as above) for an *Horse*, there may 942 be well said to stand in this compass.

In the same *Park* (after many hundreds sold, and carried away) there is a *Tree* which did yield *quarter-cliff bottoms* that were a yard square: and there is of them to be seen in *workfopp*, at this day, and some *Tables* made of the said *quarter-cliff* likewise.

Jo. Magson.

In the same *Park*, in the place there call'd the *Hawks-nest*, are *Trees* forty foot long of *Timber* which will bear two foot square at the top-end or height of forty foot.

If then a *square* whose side is two foot, be inscribed in a *Circle*, the proportions at that *Circle* are

	feet
<i>Diameter</i>	2 : 8284
<i>Circumference</i>	8 : 8858
<i>Area</i>	6 : 2831

And because a *Tun* of *Timber* is said to contain forty solid feet: one of these *Columns* of *Oak* will contain above six *Tun* of *Timber* and a quarter: in this computation taking them to be *Cylinders*, and not tapering like the *segment* of a *Cone*.

Welbeck-Lane.

17. The *Oak* which stands in this *Lane* call'd *Grindal-Oak* hath at these several distances from the ground these *Circumferences*

	foot	inch
at 1	33	: 01
at 2	28	: 05
at 6	25	: 07

The breadth is from bough-end to bough-end (*i.*) *diametrically*

cally 88 foot; the height from the ground to the top-most bough 81 foot [this *dimension* taken from the proportion that a *Gnomon* bears to the shadow] there are three *Arms* broken off and gone, and eight very large ones yet remaining, which are very fresh and good *Timber*.

88 foot is $29\frac{1}{2}$ yards, which being in this case admitted for the *diameter* of a *circle*, the *square yards* in that *circumference* will be 676 *ferè*; and then allowing three yards (as before) for a beast, leaves 225 beasts, which may possibly stand under this *Tree*.

But the *Lords-Oak* that stood in *Rivelin* was in *diameter* three yards, and twenty eight inches; and exceeded this in *circumference* three feet at one foot from the ground.

Shire-Oak.

Shire-Oak is a *Tree* standing in the ground late Sir *Tho. Hewets*, about a mile from *Worksop-Park*, which drops into three *Shires*, viz. *Tork*, *Nottingham*, and *Derby*, and the distance from bough-end to bough-end is ninety foot, or thirty yards. Hen. Homer.

This *circumference* will contain neer 707 *square-yards*, sufficient to shade 235 *horse*.

Thus for the accurate *M. Halton*.

18. Being inform'd by a *person* of credit, that an *Oak* in *Sheffield-Park*, call'd the *Ladies-Oak*, fell'd, contain'd forty two *Tun* of *Timber*, which had *Arms* that held at least four foot square for ten yards in length; the *Body* six foot of clear *Timber*: That in the same *Park* one might have chosen above 1000 *Trees* worth above 6000 *li.* another 1000 worth 4000 *li.* & sic de *cateris*: To this *M. Halton* replies, That it might possibly be meant of the *Lords-Oak* already mention'd to have grown in *Rivelin*: For now *Rivelin* it self is totally destitute of that issue she once might have gloried in of *Oaks*; there being only the *Hall-park* adjoining which keeps up with its number of *Oaks*. And as to the computation of 1000 *Trees* formerly in *Sheffield-Park* worth 6000 *li.* it is believ'd there were a *thousand* much above that value; since in what is now inclos'd, it is evident touching 100, worth a *thousand pounds*.

My worthy friend *Leonard Pinckney Esq.* first *Clerk* of his *Majesties Kitchen* (from whom I receiv'd the first hints of many of these particulars) did assure me, that one *John Garland* built a very handsome *Barne* containing five *Baies*, with *Pan*, *Posts*, *Beams*, *Spars*, &c. of one sole *Tree* growing in *Worksop-park*. But these shall suffice, I should never finish to pursue these *Instances* through our once goodly *Magazines* of *Timber* for all uses, growing in this our native *Country*, comparable (as I said) to any we can produce of *elder times*; and that not only (though chiefly) for the encouragement of *Planters*, and *Preservers* of one of the most excellent, and necessary *Materials* in the *World* for the benefit of *Man*; but to evince the continu'd *vigor* of *Nature*, and to reproach the want

want of *Industry* in this *Age* of ours; and (that we may return to the *Argument* of this large *Chapter*) to assert the *procerity* and *stature* of *Trees* from their very great *Antiquity*: For certainly if that be true, which is by divers affirmed concerning the *Quercetum* of *Mambre*, recorded by *Eusebius* to have continued till the time of *Constantine* the Great, we are not too prejudicately to censure what has been produc'd for the proofs of their *Antiquity*; nor for my part do I much question the *Authorities*: But let this suffice; what has been produc'd being only an historical *speculation*, of more *encouragement* haply then other *use*, but such as was pertinent to the *subject* under consideration, as well as what I am about to add concerning the *Texture* and *similar* parts of the body of *Trees*, which may also hold in *shrubs*, and other *lignous* plants, because it is both a *curious* and *Rational* account of their *Anatomization*, and worthy of the sagacious *Inquiry* of that incomparably learned Person *D^r Goddard*, as I find it entered amongst other of those precious *Collections* of this *Illustrious Society*.

19. The *Trunk* or bough of a *Tree* being cut *transversely* plain and smooth, sheweth several *Circles* or *Rings* more or less *Orbicular*, according to the external figure, in some *parallel* proportion, one without the other, from the *centre* of the *Wood* to the inside of the *Bark*, dividing the whole into so many *circular* spaces. These *Rings* are more large, gross, and distinct in colour and substance in some kind of *Trees*, generally in such as grow to a great bulk in a short time, as *Fir*, *Ash*, &c. smaller or less distinct in those that either not at all or in a longer time grow great, as *Quince*, *Holly*, *Box*, *Lignum-vitæ*, *Ebony*, and the like sad colour'd and hard *woods*; so that by the largeness or smallness of the *Rings*, the quickness or slowness of the growth of any *Tree* may perhaps at certainty be estimated.

These *spaces* are manifestly broader on the one side then on the other, especially the more outer, to a double proportion, or more; the inner being neer an equality.

It is asserted, that the larger parts of these *Rings* are on the *South* and *sunny* side of the *Tree* (which is very rational and probable) insomuch that by cutting a *Tree* *transverse*, and drawing a *diameter* through the broadest and narrowest parts of the *Rings*, a *Meridian* line may be described.

The outer spaces are generally narrower then the inner, not only on their narrower sides, but also on their broader, compared with the same sides of the inner: Notwithstanding which, they are for the most part, if not altogether, bigger upon the whole account.

Of these spaces, the *outer* extremities in *Fir*, and the like *woods*, that have them larger and grosser, are more dense, hard, and compact; the inner more soft and spungy; by which difference of substance it is that the *Rings* themselves come to be distinguished.

According as the bodies and boughs of *Trees*, or several parts of the same, are bigger or lesier, so is the *number* as well as the *breadth* of the *circular* spaces greater or less; and the like according to the *age*, especially the number. It

It is commonly and very probably asserted, That a Tree gains a *new* one every year. In the body of a great *Oak* in the *New-Forest*, cut *transversely even* (where many of the Trees are accounted to be some hundreds of years old) three and four hundred have been distinguish'd. In a *Fir-tree*, which is said to have just so many rows of boughs about it as it is of years growth, there has been observed just *one* less immediately above one row, then immediately below: Hence some probable account may be given of the difference between the outer and the inner parts of the *Rings*, that the outermost being newly produced in the *Summer*, the exterior superficies is condens'd in the *Winter*.

20. In the young branches and twigs of *Trees* there is a *pith* in the middle, which in some, as *Ash*, and especially *Elder*, equals or exceeds in dimensions the rest of the substance, but waxes less as they grow bigger, and in the great boughs and trunk scarce is to be found: This gives way for the growth of the inward *Rings*, which at first were less than the outer (as may be seen in any *shoot* of the first year) and after grow thicker, being it self *absorb'd*, or perhaps converted into *Wood*; as it is certain *Cartilages* or *Gristles* are into bones (in the bodies of *Animals*) from which to sense they differ even as much as *pith* from *Wood*.

These *Rings* or spaces appearing upon transverse *Section* (as they appear *elliptical* upon *oblique*, and strait lines upon direct *Section*) are no other than the extremities of so many *Integuments* investing the whole Tree, and (perhaps) all the boughs that are of the same age with any of them, or older.

In the *growth* of *Trees* *Augmentation* in all dimensions is acquired, not only by *Accession* of a new *Integument* yearly, but also by the *Reception* of nourishment into the *Pores*, and substance of the rest, upon which they also become thicker; not only those towards the middle, but also the rest, in a thriving Tree: Yet the principal growth is between the *Bark* and *Body*, by *Accession* of a new *Integument* yearly, as hath been mentioned: Whence the cutting of the *Bark* of any Tree or Bough round about will certainly kill it.

The *Bark* of a Tree is distinguished into *Rings* or *Integuments* no less than the *Wood*, though much smaller or thinner, and therefore not distinguishable except in the thick barks of great old Trees, and toward the *inside* next the *Wood*; the outer parts drying and breaking with innumerable *fissures*, growing wider and deeper, as the body of the *Tree* grows bigger, and mouldering away on the out side.

Though it cannot appear by reason of the continual decay of it upon the account aforesaid; yet it is probable the *Bark* of a Tree hath had successively as many *Integuments* as the *wood*; and that it doth grow by acquisition of a *new one* yearly on the inside, as the *wood* doth on the out-side; so that the chief way, and conveyance of nourishment to both the *Wood* and the *Bark*, is between them both.

The least *End* appearing on the body of a *Tree* doth as it

were make *perforation* through the several *Integuments* to the middle, or very neer; which part is, as it were, a *Root* of the bough into the body of the Tree; and after becomes a *knot*, more hard then the other *wood*: And when it is larger, manifestly shewing it self also to consist of several *Integuments*, by the *circles* appearing in it, as in the body: more hard, probably; because streightned in room for growth; as appears by its distending, buckling, as it were, the *Integuments* of the *wood* about it; so implicating them the more; whence a *knotty* piece of *wood* is so much harder to cleave.

It is probable, that a *Cience* or Bud, upon *Graffing*, or *Inoculating*, doth, as it were, *Root* it self into the *stock* in the same manner as the *branches*, by producing a kind of knot. Thus far the accurate *Doctor*.

20. To this might be subjoyn'd the *vegetative* motion of *Plants*, with the *diagrams* of the *Jesuite Kercher*, where he discourses of their stupendious *Magnetisms*, &c. could there any thing material be added to what has already been so ingeniously inquir'd into: therefore let us proceed to their *Felling*.

Felling.

21. It should be in this *status*, vigour and perfection of Trees, that a *Felling* should be celebrated; since whiles our *Woods* are *growing* it is pity, and indeed too soon; and when they are *decaying*, too late: I do not pretend that a man (who has occasion for *Timber*) is obliged to attend so many ages ere he fell his Trees; but I do by this infer, how highly necessary it were, that men should perpetually be *planting*; that so *posterity* might have Trees fit for their service of *competent*, that is, of a *middle* growth and age, which it is impossible they should have, if we thus continue to destroy our *Woods*, without this providential *planting* in their stead, and *felling* what we do cut down, with great discretion, and regard of the future.

22. Such therefore as we shall perceive to *decay* are first to be picked out for the *Ax*; and then those which are in their *state*, or approaching to it; but the very thriving, and manifestly improving, indulg'd as much as possible.

23. The time of the *year* for this destructive *work* is not usually till about the end of *April* (at which season the *bark* does commonly rise freely) though the opinions and practice of men have been very different: *Vitruvius* is for an *Autumnal Fall*; others advise *December* and *January*: *Cato* was of opinion *Trees* should have first born their *Fruit*, or, at least, not till full *ripe*, which agrees with that of the *Architect*: And though *Timber unbarked* be indeed more obnoxious to the *Worm*, and to contract somewhat a darker hue (which is the reason so many have commended the *season* when it will most freely *strip*) yet were this to be rather consider'd for such *Trees* as one would leave *round*, and *unsquar'd*; since we finde the wilde *Oak*, and many other sorts, fell'd over late, and when the *sap* begins to grow proud, to be very subject to the *worm*; whereas being cut about mid-*winter* it neither *casts*, *rists*, nor *twines*; because the cold of the *winter* does both

both dry, and consolidate; while in *spring*, and when pregnant, so much of the virtue goes into the *leaves* and *branches*: Happy therefore were it for our *Timber*, some real *Invention* of *Tanning* without so much *Bark* (as the Honourable M^r *Charles Howard* has most ingeniously offer'd) were become universal, that *Trees* being more early fell'd, the *Timber* might be better *season'd* and condition'd for its various *Uses*. But as the custom is, men have now time to *fell* their *woods*, even from *mid-winter* to the *spring*; but never any after the *Summer Solstice*.

24. Then for the *Age* of the *Moon*, it has religiously been observ'd; and that *Dianas* presidency in *Sylvis* was not so much celebrated to credit the *fictions* of the *Poets*; as for the dominion of that moist *Planet*, and her influence over *Timber*: For my part, I am not so much inclin'd to these *Criticisms*, that I should altogether govern a *Felling* at the pleasure of this mutable *Lady*; however there is doubtless some regard to be had,

Nec frustra signorum obitus specularum & ortus.

The *old Rules* are these:

Fell in the *decrease*, or four days after *conjunction* of the two great *Luminaries*; some the last *quarter* of it; or (as *Pliny*) in the very article of the *change*, if possible; which hapning (saith he) in the last day of the *Winter Solstice*, that *Timber* will prove *immortal*: At least should it be from the twentieth to the thirtieth day, according to *Columella*: *Cato* four days after the *Full*, as far better for the growth: But all *viminious* *Trees* *silente Lunâ*; such as *Sallies*, *Birch*, *Poplar*, &c. *Vegetius* for *Ship-timber*, from the 15th, to the 25th, the *Moon* as before; but never during the *Increase*, *Trees* being then most abounding with moisture, which is the only source of putrifaction.

25. Then for the *Temper*, and time of *day*: The *wind* low, neither *East* nor *West*; neither in *frosty*, *wet* or *dewy* weather; and therefore never in a *Fore-noone*. Lastly, touching the *species*; Fell *Fir* when it begins to *spring*; not only because it will then best quit its *coat* and *strip*; but for that they hold it will never decay in *water*; which howsoever *Theophrastus* deduce from the old *Bridge* made of this material over a certain *River* in *Arcadia*, cut in this *season*, is hardly sufficient to satisfy our inquiry.

26. Previous to this work of *Felling* is the advice of our *Country-man Markham*, and it is not to be rejected: Survey (saith he) your *Woods* as they stand immediately after *Christmas*, and then divide the *species* in your mind; (I add, rather in some *Note Book*, or *Tablets*) and consider for what *purposes* every several *kind* is most *useful*: After this, reckon the *bad* and *good* together, so as one may put off the other, without being forc'd to glean your *Woods* of all your best *Timber*. This done (or before) you shall acquaint your self with the *marketable prices* of the *Country* where your *Fell* is made, and that of the several *sorts*; as what so many *inches*, or *foot square* and *long*, is worth for the several *employments*: What *planks*? what other *scantlings* for so many

Spoaks, Naves, Rings, Pales, Spars, &c. allowing the *waste* for the charges of *Felling, &c.* all which you shall *compute* with greater certainty, if you have leisure, and will take the pains to examine some of the *Trees* either by your own *Fathom*; or (more accurately) by *girting* it about with a *string*, and so reducing it to the *square, &c.* by which means you may give a neer guess: or, you may mark such as you intend to *fell*; and then begin your *sale* about *Candlemas* till the *Spring*; before which you must not (according as our *Custom* is) lay the *Ax* to the *Root*; though some, for particular employments, as for *Timber* to make *Plows, Carts, Axel-trees, Naves, Harrows,* and the like *Husbandry-tools,* do frequently cut in *October*.

Being now entering with your *Work-men,* one of the first, and most principal things is, the skilful *disbranching* of the *Boal* of all such *Arms* and *Limbs* as may endanger it in the *Fall,* wherein much forecast and skill is requir'd of the *Wood-man*; so many excellent *Trees* being utterly spoiled for want of this only consideration: And therefore in arms of *Timber* which are very great, chop a *nick* under it close to the *Boal,* so meeting it with the down-right strokes, it will be cut without *splicing*.

27. Some there are who cut a *kerse* round the body, almost to the very *pitch,* or heart, and so let it remain a while; by this means to drain away the moisture, which will distill out of the wounded *Veins,* and is chiefly good for the *moister* sort of *Trees*: And in this work the very *Ax* will well tell you the difference of the *Sex*; the *Male* being so much harder, and browner than the *Female*: But here (and wherever we speak thus of *Plants*) you are to understand the *analogical,* not *proper* distinction. Fell as close to the *ground* as possible may be, if you design a *renascency* from the *roots*; unless you will *grub* for a total destruction, or the use of that part we have already mention'd, so far superiour in goodness to what is more remote from the *Root*. Some are of opinion, that the *seedling Oak* should never be cut to improve his *Boal*; because, say they, it produces a reddish wood not so acceptable to the *Work-man*; and that the *Tree* which grows on the *head* of his *Mother* does seldom prove good *Timber*: It is observ'd, indeed, that *one* foot of *Timber* neer the *Root* (which is the proper *kerse,* or cutting place) is worth *three* farther off: And haply, the *successor* is more apt to be tender, than what was cut off to give it place; but let this be inquir'd into at leisure.

28. When your *Tree* is thus prostrate, strip off the *Bark*; and set it so as it may best dry; then cleanse the *Boal* of the *Branches* which were left, and saw it into *lengths* for the *squaring,* to which belongs the *Measure,* and *Girth* (as our *Work-men* call it) which I refer to the *Buyer,* and to many subsidiary *Books* lately printed, wherein it is taught by a very familiar and easie Method: A *Tun* of *Timber* is forty *solid* feet, a *load* fifty.

29. If you are to remove your *Timber,* let the *Dew* be first off, and the *South-wind* blow before you *draw* it: Neither should you by any means put it to use for three, or four *moneths* after, unless great

great necessity urge you, as it did *Duilius*, who in the *Punic War* built his *Fleet of Timber* before it was *season'd*, being not above two moneths from the very *Felling* to the *Launching*: and as were also those *Navies of Hiero* after forty days; and that of *Scipio*, in the third *Carthaginean War*, from the very *Forest* to the *Sea*. *July* is a good time for bringing home your *fell'd Timber*.

30. To make excellent *Boards and Planks*, 'tis the advice of some, you should *Bark* your *Trees* in a fit season, and so let them stand *naked* a full year before the *felling*; and in some cases, and grounds, it may be profitable: But let these, with what has been already said in the foregoing *Chapters* of the several *kinds*, suffice for this *Article*: I shall add one *Advertisement of Caution* to those *Noble persons*, and others who have *Groves and Trees* of ornament near their *houses*, and in their *Gardens* in *London*, and the *Circle* of it; especially, if they be of great *stature*, and well grown; such as are the *Groves* in the several *Inns of Court*; nay, even that (comparatively, new *Plantation*) in my Lord of *Bedfords Garden*, &c. and wherever they stand in the more interior parts of the *City*; that they be not over hasty, or by any means perswaded to cut down any of their *old Trees*, upon hope of new, more flourishing *Plantations*; thickning, or repairing deformities; because they grow so well when first they were set: It is to be consider'd how exceedingly that pernicious *smoak* of the *Sea-coal* is increas'd in and about *London* since they were first *planted*, and the buildings environing them, and inclosing it in amongst them, which does so universally contaminate the *Air*, that what *Plantations* of *Trees* shall be now begun in any of those places will have much ado, great difficulty, and require a long time, to be brought to any tolerable perfection: Therefore let them make much of what they have; and though I discourage none, yet I can animate none to *cut down the old*.

 CHAP. XXX.

Of Timber the Seasoning and Uses, and of Fuel.

WE have before spoken concerning some preparations of *Seasoning*. *Standing Trees* design'd for *Timber*, by a half-cutting, *disbarking*, and the seasons of *drawing*, and *using* it.

1. Lay up your *Timber* very dry, in an airy place (yet out of the *Wind*, or *Sun*) and not standing upright, but lying along one piece upon another, interposing some short *blocks* between them, to preserve them from a certain *mouldiness* which they usually contract while they *sweat*, and which frequently produces a kind of *fungus*, especially if there be any *sappy* parts remaining.

2. Some there are yet, who keep their *Timber* as moist as they can, by *submerging* it in *Water*, where they let it imbibe to hinder
the

the cleaving; and this is good in *Fir*, both for the better stripping and seasoning.

3. Some again commend *Buryings* in the *Earth*; others in *Wheat*; and there be seasonings of the *Fire*, as for the scorching and hardning of *Piles* which are to stand either in the *water*, or the *earth*: Thus do all the *Elements* contribute to the Art of *Seasoning*.

4. And yet even the greenest *Timber* is sometimes desirable for such as *Carve* and *Turn*; but it choaks the teeth of our *Saws*; and for *Doors*, *Windows*, *Floors*, and other close Works, it is altogether to be rejected; especially where *Walnut-tree* is the *material*, which will be sure to shrink: Therefore it is best to chuse such as is of *two* or *three* years *seasoning*, and that is neither moist nor over-dry; the *mean* is best. Sir *Hugh Plat* informs us that the *Venetians* use to burn and scorch their *Timber* in a flaming *fire*; continually turning it round with an *Engine*, till they have gotten upon it an hard, black, *coaly* crust; and the *secret* carries with it great probability; for that the wood is brought by it to such a hardness and driness, *ut cum omnis putrefactio incipiat ab humido*, nor earth nor water can penetrate it; I my self remembring to have seen *Char-coals* dug out of the ground amongst the ruines of ancient buildings, which have in all probability lain cover'd with earth above 1500 years.

5. *Timber* which is *cleft* is nothing so obnoxious to *rift* and cleave as what is *hewn*; nor that which is *squar'd*, as what is *round*; and therefore where use is to be made of huge and massive *Columns*, let them be *boarded* through from end to end; it is an excellent preservative from splitting, and not *un-philosophical*; though to cure this accident, the rubbing them over with a *wax-cloth* is good, *Painters Putty*, &c. or before it be *converted*, the smearing the *Timber* over with *Cow-dung*, which prevents the effects both of *Sun* and *Air* upon it, if of necessity it must lye expos'd: But besides the former remedies I find *this* for the closing of the chops and clefts of *green Timber*, to anoint and supple it with the fat of *powder'd-beef-broth*, with which it must be well soak'd, the *chasm's* fill'd with *sponges* dipt into it; *this* to be twice done over: Some *Carpenters* make use of *grease* and *saw-dust* mingled; but the first is so good a way (says my *Author*) that I have seen *Wind-shock-timber* so exquisitely closed, as not to be discerned where the defects were: This must be us'd when the *Timber* is green: Finally,

6. I must not omit to take notice of the *coating* of *Timber* in *Work*, us'd by the *Hollanders* for the preservation of their *Gates*, *Port-cullis's*, *Draw-bridges*, *Sluces*, and other huge *Beams*, and *Contignations* of *Timber* expos'd to the *Sun*, and perpetual injuries of the *Weather*, by a certain mixture of *Pitch* and *Tar*, upon which they strew small pieces of *Cockle* and other *shells*, beaten almost to *powder*, and mingled with *Sea-sand*, which *incrysts* and arms it after an incredible manner against all these assaults and foreign invaders.

Uses.

7. For all uses that *Timber* is esteem'd the best which is the most

most *light*, without *knots*, yet firm, and free from *sap*; which is that fatty, *whiter*, and *softer* part, call'd by the Ancients *Alburnum*, which you are diligently to hew away : You shall perceive some which has a *spiral* convolution of the *veins* ; but it is a vice proceeding from the severity of unseasonable *Winters*, and defect of good nutriment.

8. Moreover, it is expedient that you know which is the *Grain*, and which are the *Veins* in *Timber* ; because of the difficulty of working against it : Those therefore be the *veins* which grow largest, and are softer for the benefit of cleaving and hewing ; that the *Grain* which runs in waves, and makes the divers and beautiful *chamfers* which some woods abound in to admiration. The *Grain* of *Beech* runs two contrary ways, and is therefore to be wrought accordingly.

9. For the *place* of growth, that *Timber* is esteem'd best which grows most in the *Sun*, and on a dry and hale ground ; The *Climate* contributes much to its *quality*, and the *Northern* situation is prefer'd to the rest of the *quarters* ; so as that which grew in *Tuscany* was of old thought better than that of the *Venetian* side ; and *Trees* of the *wilder kind*, and *barren*, than the over much cultivated, and great bearers : but of this already.

10. To omit nothing, *Authors* have summ'd up the *natures* of *Timber* ; as the hardest *Ebeny*, *Box*, *Larch*, *Lotus*, *Terebinth*, *Eugh*, &c. which are best to receive *polishing* ; and for this *Lin-feed*, or the sweeter *Nut-oyl* does the effect best : *Pliny* gives us the *Receipt*, with a decoction of *Walnut-shales*, and certain *wild-pears* : Next to these, *Oak* for *Ships*, and *Houses* ; *Cornel*, *Holly*, &c. for *Pins*, *Wedges*, &c. *Chest-nut*, *Horn-beam*, *Poplar*, &c. Then for *Bucklers*, and *Targets*, were commended the more soft and moist ; because apt to close, swell, and make up their wounds again ; such as *Willow*, *Lime*, *Birch*, *Alder*, *Elder*, *Ash*, *Poplar*, &c.

The *Robur*, or *Wild-oak* *Timber*, best to stand *in ground* ; the *Quercus* without.

Pines, *Pitch*, *Alder* and *Elm*, are excellent to make *Pumps* and *Conduit-pipes*, and for all *Water-works*, &c. *Fir* for *Beams*, *Bolts*, *Bars* ; being tough, and not so apt to break as the hardest *Oak* : In sum, the more *odoriferous* *Trees* are the more durable and lasting.

11. We did, in *Chap. 21.* mention certain *Subterranean Trees*, which Mr *Cambden* supposes grew altogether under the ground : And truly, it did appear a very *Paradox* to me, till I both saw and diligently examin'd that piece (*Plank*, *Stone*, or both shall I name it) of *Lignum fossilis* taken out of a certain *Quarry* thereof at *Aqua Sparta* not far from *Rome*, and sent to the most incomparably learn'd Dr *Ent*, by that obliging *Virtuoso Cavalier dal Pozzo*. He that shall examine the *hardness*, and feel the *ponderousness* of it, sinking in *water*, &c. will easily take it for a *stone* ; but he that shall behold its *grain*, so exquisitely *undulated*, and varied, together with its *colour*, manner of *hewing*, *chips*, and other most perfect resemblances, will never scruple to pronounce it arrant *wood*.

Signor

Signor Stelluti (an *Italian*) has publish'd a whole *Treatise* expressly to describe this great *curiosity*: But, while others have *Philosophiz'd* according to their manner upon these extraordinary *Concretions*; see what the most industrious, and knowing *M. Hook*, *Curator* of this *Royal Society*, has with no less *Reason*, but more succinctness, observ'd from a late *Microscopical* Examen of another piece of *petrifi'd-wood*; the Description, and Ingenuity whereof cannot but gratifie the *Curious*, who will by this *Instance*, not only be instructed how to make *Inquiries* upon the like *occasions*; but see also with what *accurateness* the *Society* constantly proceeds in all their *Indagations*, and *Experiments*; and with what *Candor* they relate, and communicate them.

12. "It resembl'd *Wood*, in that

"First, all the parts of the *petrifi'd* substance seem'd not at all dislocated, or alter'd from their natural position while they were *wood*; but the whole piece retain'd the exact shape of *wood*, having many of the conspicuous *pores* of *wood* still remaining *pores*, and shewing a manifest difference visible enough between the *grain* of the *wood* and that of the *Bark*; especially, when any side of it was cut smooth and polite; for then it appear'd to have a very lovely *grain*, like that of some curious close *wood*.

"Next (it resembled *wood*) in that all the smaller and (if so I may call those which are only to be seen by a good glass) *microscopical* pores of it, appear (both when the substance is cut and polish'd *transversely*, and *parallel* to the pores) perfectly like the *Microscopical* pores of several kinds of *wood*, retaining both the shape, and position of such pores.

"It was differing from *wood*.

"First, in *weight*, being to common water, as $3\frac{1}{2}$ to 1. whereas there are few of our *English* woods that, when dry, are found to be full as heavy as *water*.

"Secondly, in *hardness*, being very neer as hard as a *Flint*, and in some places of it also resembling the grain of a *Flint*: it would very readily cut *Glass*, and would not without difficulty (especially in some parts of it) be scratch'd by a black hard *Flint*: it would also as readily strike *fire* against a *Steel*, as also against a *Flint*.

"Thirdly, In the closeness of it; for, though all the *microscopical* pores of the *wood* were very conspicuous in one position, yet by altering that position of the polish'd surface to the light, it also was manifest that those pores appear'd darker than the rest of the body, only because they were fill'd up with a more dusky substance, and not because they were hollow.

"Fourthly, in that it would not *burn* in the *Fire*; nay, though I kept it a good while red-hot in the flame of a *Lamp*, very intently cast on it by a *blast* through a small *pipe*; yet it seem'd not at all to have diminish'd its extension; but only I found it to have chang'd its colour, and to have put on a more dark, and dusky brown *hue*. Nor could I perceive that those parts which

"seem'd

“ seem'd to have been *Wood* at first, were any thing wasted, but
 “ the parts appear'd as solid, and close, as before. It was farther
 “ observable also, that as it did not consume like *wood*; so neither
 “ did it crack and fly like a *Flint*, or such like hard *stone*; nor was
 “ it long before it appeared *red-hot*.

“ Fifthly, in its dissolubleness; for putting some *drops* of *distil-*
 “ *led Vinegar* upon the *stone*, I found it presently to yield very
 “ many *bubbles*, just like those which may be observed in *spirit* of
 “ *Vinegar* when it corrodes *Coral*; though I guess many of those
 “ *bubbles* proceeded from the small parcels of *Air*, which were
 “ driven out of the pores of this *petrifi'd* substance, by the insinu-
 “ ating liquid *menstruum*.

“ Sixthly, in its *Rigidness*, and *friability*; being not at all *flexi-*
 “ *ble*, but *brittle* like a *Flint*; insomuch that with one knock of a
 “ *Hammer* I broke off a small piece of it, and with the same *ham-*
 “ *mer* quickly beat it to pretty fine *powder* upon an *Anvil*.

“ Seventhly, it seem'd also very differing from *wood*, to the
 “ touch, feeling more cold than *wood* usually does, and much like
 “ other close *Stones* and *Minerals*.

“ The *Reasons* of all which *Phenomena* seem to be.

“ That this *petrifi'd wood* having lain in some place where it was
 “ well soaked with *petrifying water* (that is, such a *water* as is well
 “ impregnated with *stony* and *earthy* particles) did by degrees se-
 “ parate, by *straining* and *filtration*, or perhaps by *precipitation*,
 “ *co-hesion* or *co-agulation*, abundance of *stony particles* from that
 “ permeating water, which *stony particles* having, by means of the
 “ fluid *Vehicle*, convey'd themselves not only into the *microscopi-*
 “ *cal pores*, and perfectly stop'd up them; but also into the *pores*,
 “ which may perhaps be even in that part of the *Wood* which
 “ through the *microscope* appears most solid; do thereby so aug-
 “ ment the weight of the *wood*, as to make it above three times
 “ heavier than *water*, and perhaps six times as heavy as it was
 “ when *wood*; next, they hereby so lock up and fetter the parts
 “ of the *wood*, that the *fire* cannot easily make them fly away, but
 “ the action of the *Fire* upon them is only able to *Char* those parts,
 “ as it were, like as a piece of *wood* if it be closed very fast up in
 “ *clay*, and kept a good while *red-hot* in the *fire*, will by the heat
 “ of the *fire* be *charr'd*, and not consum'd; which may perhaps
 “ be the Reason why the *petrifi'd substance* appear'd of a blakish
 “ brown colour after it had been burnt. By this intrusion of the
 “ *petrifi'd particles* it also becomes *hard*, and *friable*; for the
 “ smaller *pores* of the *wood* being perfectly stuffed up with these
 “ *stony particles*, the *particles* of the *wood* have few, or no *pores*
 “ in which they can reside, and consequently, no *flexion* or *yield-*
 “ *ing* can be caus'd in such a *substance*. The remaining *particles*
 “ likewise of the *wood* among the *stony particles* may keep them
 “ from cracking and flying, as they do in a *Flint*.

Finally, for the use of our *Chimneys*, and maintenance of *fire*,
 the plenty of *wood* for *Fuel*, rather than the *quality* is to be looked
 after; and yet are there some greatly to be preferr'd before

others, as harder, longer-lasting, better beating, and cheerfully burning; for which we have commended the *Asb*, &c. in the foregoing *Paragraphs*, and to which I pretend not here to add much, for the avoiding repetitions; though even an *History* of the best way of *Charking* would not mis-become this *Discourse*.
 2. But in this penury of that dear Commodity, to incite all ingenious persons, studious of the benefit of their *Country*, to think of ways how our *Woods* may be preserved, by all manner of *Arts* which may prolong the lasting of our *Fuel*, I would give the best encouragements. Those that shall seriously consider the intolerable misery of the poor *Cauchi*, the then inhabitants of the *Low-Countries* describ'd by *Pliny*, lib.16.cap.1. (how opulent soever their late *Industry* has render'd them) for want only of *wood* for *Fuel*, will have reason to deplore the excessive decay of our former store of that useful Commodity; and by what shifts our Neighbours the *Hollanders* do yet repair that defect, be invited to exercise their ingenuity: For besides the *Dung* of *Beasts*, and the *Turf* for their *Chimneys*, they make use of *Stoves* both portable, and standing; and truly the more frequent use of those *Inventions* in our great, wasting *Cities* (as the custom is through all *Germany*) as also of those new, and excellent *Ovens* invented by *Dr. Keffler*, for the incomparably baking of *Bread*, &c. would be an extraordinary expedient of husbanding our *Fuel*; as well as the right mingling, and making up of *Char-coal-dust*, and *loam*, as 'tis hinted to us by *Sir Hugh Plat*, and is generally us'd in *Mastricht* and the Country about it; then which there is not a more sweet, lasting and beautiful *Fuel*; The manner of it is thus:

4. Take about one *third part* of the smallest of any *Coal*, *Pit*, *Sea* or *Char-coal*; and commix them very well with *loam* (whereof there is in some places to be found a sort somewhat combustibile) make these up into *balls*, as big as an ordinary *Cannon-bullet*, or somewhat bigger; or if you will in any other form, like *brick-bats*, &c. expose these in the *air* till they are throughly dry; they will be built into the most orderly *fires* you can imagine, burn very clear, give a wonderful heat, and continue a very long time.

Two or three short *Billets* cover'd with *Char-coal* last much longer, and with more life, then twice the quantity by it self, whether *Char-coal* alone, or *Billet*; and the *Billets* under the *Char-coal* being undisturb'd, will melt as it were into *Char-coals* of such a lasting lize.

If *Small-coals* be spread over the *Char-coal*, where you burn it alone, 'twill bind it to longer continuance; and yet more, if the *Small-coal* be made of the *roots* of *Thornes*, *Briers* and *Brambles*. Consult *L. Bacon*, *Exp.* 775.

The *Sea-weed* which comes in our *Oyster-barrels* laid under *New-Castle-coal* to kindle it (as the use is in some places) will (as I am inform'd) make it out-last two great *fires* of simple *coals*, and maintain a glowing *luculent* heat without waste: It was not try'd by my *Friend*, what it would do as to *Fuel* burnt by it self; but, that it adds much life, continuance and aid, to our sullen *Sea-coal*

coal fuel; and if the main Ocean should afford Fuel, (as the *Bernacles* and *Soland-Geese* are said to do in some parts of *Scotland* with the very sticks of their Nests) we in these *Isles* may thank our selves if we be not warm: These few particulars I have but mention'd to animate *Improvements*, and ingenious Attempts of detecting more cheap, and useful *processes*, for ways of *Charking-coals*, *Peat*, and the like *fuliginous* materials; as the accomplish'd *M. Boyle* has intimated to us in the *Fift* of those his precious *Essays* concerning the *usefulness* of *Natural Philosophy*, *Part 2. cap. 7. &c.* to which I refer the curious.

6, By the *Preamble* of the *Statute 7. Ed. 6.* one may perceive (the *Measures* compar'd) how plentiful *Fuel* was in the time of *Edward* the 4th to what it was in the *Reigns* of his *Successors*: This suggested a review of *Sizes*, and a reformation of *Abuses*; in which it was *Enacted*, that every *Sack* of *Coals* should contain four *Bushels*: Every *Taleshide* to be four foot long, besides the *carf*; and if nam'd of one, mark'd one, to contain 16 inches *circumference*, within a foot of the middle: If of two marks, 23 inches; of 3. 28. of 4. 35; of 5. 38. inches about, and so proportionably.

6. *Billets* were to be of three foot, and four inches in length: the single to be 17 inches and an half about; and every *Billet* of one *cast* (as they term the mark) to be ten inches about: of two cast, fourteen inches, and to be marked (unless for the private use of the *Owner*) within six inches of the middle: of one cast within four inches of the end, &c.

Every bound *Fagot* should be three foot long; the *band* twenty four inches *circumference*, besides the knot.

In the 43. *Eliz.* the same *Statute* (which before only concern'd *London* and its *Suburbs*) was made more universal; and that of *Edw. 6.* explain'd with this addition: For such *Taleshides* as were of necessity to be made of *cleft-wood*, if of one mark, and half round, to be 19 inches about; if quarter-cleft, 18 inches; Marked two, being round it shall be 23 inches compass: half-round 27: quarter-cleft 26: marked three, round 28: half-round 33: quarter-cleft 32: marked four, being round 33 inches about: half-round 39: quarter-cleft 38: marked five round, 38 inches about: half-round 44: quarter-cleft 43: the measure to be taken within half a foot of middle of the length mention'd in the former *Statute*.

Then for the *Billet* every one nam'd a *single*; being round to have 7 inches; *circumference*; but no *single* to be made of *cleft wood*: If marked one, and round, to contain 11 inches compass: if half-round 13: quarter-cleft 12:

If marked two, being round, to contain 16 inches: half-round 19: quarter-cleft 18; the length as in the *Statute* of *King Ed. 6.*

7. *Fagots* to be every stick of three foot in length, excepting only one stick of one foot long, to harden and wedge the binding of it: This to prevent the abuse (too much practis'd) of filling the middle part, and ends with trash, and short sticks, which had been omitted in the former *Statute*: concerning this and of

the *dimensions* of wood in the *Stack*, see *Chap. 27.* to direct the less instructed *Purchaser*: and I have been the more particular upon this occasion; because then our *Fuel* bought in *Billet* by the *Notch* (as they call it in *London*) there is nothing more deceitful; for by the vile iniquity of some *Wretches*, marking the *Billets* as they come to the *Wharf*, Gentlemen are egregiously cheated. I could produce an instance of a *Friend* of mine (and a *Member* of this *Society*) for which the *Wood-monger* has little cause to brag; since he never durst come at him, or challenge his *Money* for the *Commodity* he bought; because he durst not stand to the *measure*.

8. But I will now describe to you the *Mystery* of *Charking* (whereof something was but touch'd in the *Process* of extracting *Tar* out of the *Pines*) as I receiv'd it from a most industrious *person*, and so conclude the *Chapter*.

There is made of *Char-coal* usually *three* sorts, *viz.* one for the *Iron-works*, a second for *Gun-powder*, and a third for *London* and the *Court*, besides *Small-coals*, of which we shall also speak in its due place.

We will begin with that sort which is us'd for the *Iron-works*, because the rest are made much after the same manner, and with very little difference.

The best *Wood* for this is good *Oak*, cut into lengths of three foot, as they size it for the *Stack*: This is better than the *Cord-wood*, though of a larger measure, and much us'd in *Sussex*.

The *wood* cut, and set in *stacks* ready for the *Coaling*; chuse out some level place in the *Copse*, the most free from stubs, &c. to make the *Hearth* on: In the midst of this *area* drive down a stake for your *Centre*, and with a *pole*, having a *ring* fastn'd to one of the extrems (or else with a *Cord* put over the *Centre*) describe a *Circumference* from twenty, or more feet *semidiameter*, according to the quantity of your *wood* design'd for *coaling*, which being neer may conveniently be charked in that *Hearth*; and which at one time may be 12, 16, 20, 24, even to 30 *stack*: If 12 therefore be the quantity you will *coal*, a *Circle* whose *diameter* is 24 foot, will suffice for the *Hearth*; If 20 *stack*, a diameter of 32 foot; If 30, 40 foot, and so proportionably.

Having thus marked out the ground, with *Mattocks*, *haws* and fit *Instruments*, *bare* it of the *Turf*, and of all other combustible stuff whatsoever, which you are to rake up towards the *Peripherie*, or out-side of the *circumference*, for an *use* to be afterwards made of it; plaining, and levelling the ground within the *circle*: This done, the *wood* is to be brought from the neereft parts where it is *stack'd*, in *wheel-barrows*; and first the smallest of it plac'd at the utmost limit, or very margent of the *Hearth*, where it is to be set long-ways, as it lay in the *stack*; the biggest of the wood pitch, or set up on end round about against the *small-wood*, and all this within the *circle*, till you come within five, or six foot of the *centre*; at which distance you shall begin to set the *wood* in a *Triangular* form (as in *Fig. 2. A*) till it come to be three foot high:
Against

Against *this* again place your greater wood almost *perpendicular*, reducing it from the *triangular* to a circular form, till being come within a yard of the *centre* you may pile the wood long-ways, as it lay in the *stack*, being careful that the ends of the *wood* do not touch the *Pole*, which must now be erected in the *centre*, nine foot in height, that so there may remain a round *hole*, which is to be form'd in working up the *stack-wood*, for a *tunnel*, and the more commodious *string* of the *pit*, as they call it. This provided for, go on to *pile*, and set your wood upright to the *other*, as before; till having gain'd a yard more, you lay it long-ways again as was shew'd: And thus continue the work, still enterchanging the *position* of the wood till the whole *Area* of the *Hearth* and *Circle* be fill'd, and pil'd up at the least eight foot high, and so drawn *in* by degrees in *piling*, that it resemble the form of a *copped* brown *Houfhold-loaf*, filling all inequalities with the smaller *truncbions* till it lye very close, and be perfectly, and evenly shaped. This done, then take *straw*, *banne* or *ferne*, and lay it on the out-side of the bottom of the *heap* or *wood*, to keep the next *cover* from falling amongst the sticks: Upon *this* put on the *turf*, and cast on the *dust* and *rubbish* which was grubb'd and raked up at the making of the *Hearth*, and reserved neer the *circle* of it; with *this* cover the whole heap of *wood* to the very top of the *pit*, or *tunnel*, to a reasonable and competent thickness beaten close and even, that so the *fire* may not *vent* but in the places where you intend it; and if in preparing the *Hearth*, at first, there did not rise sufficient *turf* and *rubbish* for this work, supply it from some convenient place neer to your *heap*: There be who cover this again with a *sandy*, or finer mould, which if it close well need not be above an *inch* or two thick: This done, provide a *Screene*, by making light *hurdles* with *slits*, *rods*, and *straw* of a competent thickness, to keep off the *wind*; and broad, and high enough to defend an opposite side to the very top of your *pit*, being eight or nine foot; and so as to be easily remov'd as need shall require for the luing of your *pit*.

When now all is in this posture, and the *wood* well rang'd, and clos'd, as has been directed, set *fire* to your *heap*: But first, you must provide you of a *Ladder* to ascend the top of your *pit*: this they usually make of a curved *Tiller* fit to apply to the *convex* shape of the *heap*, and cut it full of notches for the more commodious setting their feet whiles they govern the *fire* above; therefore now they pull up, and take away the *stake* which was erected at the *centre* to guide the building of the *pile*, and cavity of the *Tunnel*. This done, put in a quantity of *Char-coals* (about a *peck*) and let them fall to the bottom of the *Hearth*; upon them cast in *coals* that are fully kindled; and when those which were first put in are beginning to sink, throw in more *fuel*; and so, from time to time, till the *Coals* have universally taken *fire* up to the top: Then cut an ample, and reasonable thick *turf*, and clap it over the hole, or *mouth* of the *Tunnel*, stopping it as close as may be with some of the former *dust* and *rubbish*. Lastly, with the handles of your *Rakers*, or the like, you must make *Vent-holes*, or
Registers

Registers (as our *Chymists* would name them) through the stuff which covers your *heap* to the very *wood*, these in ranges of two or three foot distance quite round within a foot (or thereabout) of the top, though some begin them at the bottom: A day after begin another row of *holes* a foot and half beneath the former; and so more, till they arrive to the ground, as occasion requires. Note, that as the *Pit* does *coal* and sink towards the *centre*, it is continually to be fed with short, and fitting *wood*, that no part remain unfir'd; and if it *charks* faster at one part then at another, *there* close up the *vent-holes*, and open them where need is: A *pit* will in this manner be burning off, and *Charking*, five, or six days, and as it coals the *smoak* from thick and gross clouds will grow more blew, and livid, and the whole mals sink accordingly; so as by these indications you may the better know how to stop, and govern your *spiracles*. Two or three days it will only require for cooling, which (the *vents* being stopp'd) they assist, by taking now off the outward covering with a *Rabil* or *Rubber*; but *this* not for above the space of one *yard* breadth at a time; and first they remove the coursest, and grossest of it, throwing the finer over the *heap* again, that so it may neither *cool* too hastily, nor endanger the burning and reducing all to *Ashes*, should the whole *pit* be uncover'd and expos'd to the *air* at once; therefore they open it thus round by degrees.

When now by all the former *Symptoms* you judge it fully *chark'd*, you may begin to *draw*; that is, to take out the *Coals*, first round the bottom, by which means the *Coals*, *Rubbish* and *Dust* sinking and falling in together may choak, and extinguish the *fire*.

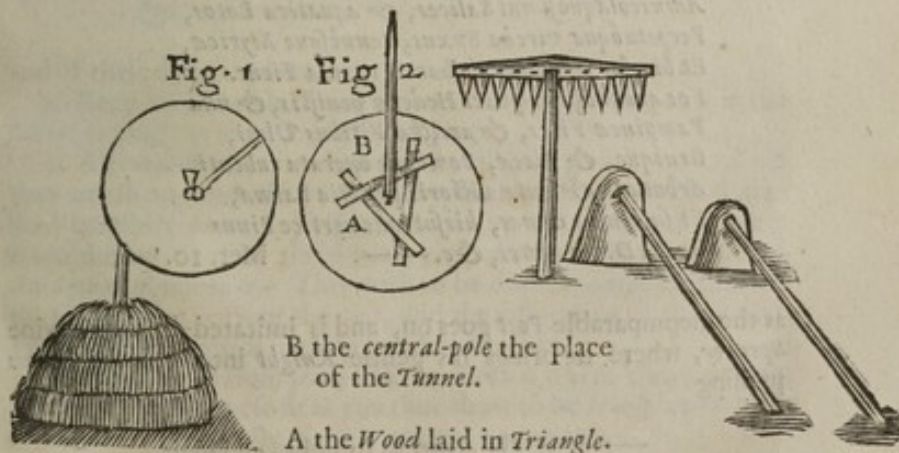
Your *Coals* sufficiently *cool'd*, with a very long-tooth'd *Rake*, and a *Vann*, you may load them into the *Coal-wains*, which are made close with boards, purposely to carry them to *Market*: Of these *Coals* the grossest sort are commonly reserv'd for the *Forges*, and *Iron-works*, the middling and smoother put up in *sacks* and carried by the *Colliers* to *London* and the adjacent *Towns*; those which are *chark'd* of the roots, if pick'd out, are accounted best for *Chymical* fires, and where a lasting, and extraordinary *blast* is requir'd.

9. *Coal* for the *Powder-mills* is made of *Alder-wood* (but *Lime-tree* were much better had we it in that plenty as we easily might) cut, *stack'd*, and set on the *Hearth* like the former: But first ought the *wood* to be wholly *disbark'd* (which work is to be done about *Mid-summer* before) and being thoroughly dry it may be *coaled* in the same method, the *heap* or *pits* only somewhat smaller, by reason that they seldom *Coal* above five, or six *stack* a time, laying it but two *lengths* of the *wood* one above the other, in form somewhat flatter on the *top* then what we have describ'd. Likewise do they fling all their *rubbish* and *dust* on the *top*, and begin not to cover at the *bottom*, as in the former example. In like sort, when they have drawn up the *fire* in the *Tunnel*, and stopp'd it, they begin to draw down their *dust* by degrees round the *heap*; and this *proportionably*,

portionably as it fires, till they come about to the *bottom*; all which is dispatch'd in the space of two days. One of these *heaps* will *char* three score *sacks* of *Coal*, which may all be carried at one time in a *Waggon*; and some make the *Court-coals* after the same manner. Lastly,

10. *Small-coals* are made of the *spray*, and *brush-wood* which is stripped off from the *branches* of *Copse-wood*, and which is sometimes bound up into *Bavins* for this use; though also it be as frequently *charked* without binding, and then they call it *cooming* it together: This they place in some neer *floor*, made level, and freed of incumbrances, where setting one of the *Bavins* or part of the *spray*, on *fire*, two men stand ready to throw on *Bavin* upon *Bavin* (as fast as they can take *fire*, which makes a very great and sudden blaze) till they have burnt all that lyes neer the place, to the number (it may be) of five, or six hundred *Bavins*: But ere they begin to set *fire* they fill great *Tubs* or *Vessels* with *water*, which stand ready by them, and this they dash on with a great *dish* or *scoop* so soon as ever they have thrown on all their *Bavins*, continually plying the great *heap* of glowing *Coals*, which gives a sudden stop to the fury of the *fire*, whiles with a great *Rake* they lay, and spread it abroad, and ply their casting of *water* still on the *Coals*, which are now perpetually turn'd by two men with great *Shovels*, a third throwing on the *water*: This they continue till no more *fire* appears, though they cease not from being very hot: After this, they *shovel* them up into great *heaps*, and when they are thoroughly *cold*, put them up in *sacks* for *London*, where they use them amongst divers *Artificers*, both to kindle greater *fires*, and to temper, and *aneal* their several *Works*.

The best season for the fetching home of other *Fuel*, is from *June*; the *ways* being then most dry, and passable.



11. And thus we have seen how for *House-boot*, and *Ship-boot*, *Plow-boot*, *Hey-boot* and *Fire-boot*, the *Planting*, and *Propagation* of

of *Timber* and *Forest-trees* is requisite; so as it was not for nothing, that the very name (which the *Greeks* generally apply'd to *Timber*) ἕλκη, by *Seneca*, was taken always *pro Materia*; since we hardly find any thing in *Nature* more universally useful; or, in comparison with it, deserving the name of *Material*.

9. To sum up all the good *qualities* then, and *transcendent* perfections of *Trees*, let us hear the harmonious *Poets*, in this comfort of their *Elogies*:

————— dant utile lignum

Navigiis pinos, domibus cedrosque cupressosque;
Hinc radios trivere rotis, hinc tympana plaustris
Agricolæ, & pandas ratibus posuere carinas.
Viminibus salices, fecundæ frondibus Ulmi:
At Myrtus validis hastilibus, & bona bello
Cornus: Ityros Taxi torquentur in arcus.
Nec Tiliæ læves, aut torno rasile Buxum,
Non formam accipiunt ferròque cavantur acuto.
Nec non & torrentem undam in levis innatat Alnus
Missâ Pado; nec non & apes examina condunt
Corticibusque cavis, vitiosèq; Ilicis alvo: Georg. 2.

and the most ingenious *Ovid*, where he introduces the miraculous *Grove* rais'd by the melodious *Song* of *Orpheus*,

————— non chaonis absuit arbor,

Non nemus Heliadum, non frondibus æsculus altis,
Nec Tiliæ molles, nec Fagus, & innuba Laurus,
Et Coryli fragiles, & Fraxinus utilis hastis;
Enodisque Abies, curvataque glandibus Ilex,
Et Platanus genialis, Acérque coloribus impar.
Amnicolæque simul Salices, & aquatica Lotos,
Perpetuòque virens Buxus, tennèsq; Myricæ,
Et bicolor Myrtus, & baccis cærula Ficus.
Vos quoque flexi-pedes Hederæ venistis, & unâ
Pampineæ Vites, & amictæ Vitibus Ulmi,
Orniq; & Piceæ, Pomòque onerata rubenti
Arbutus, & lentæ victoris præmia Palmæ,
Et succinctæ comas, hirsutæque vertice Pinus
Grata Deûm matri, &c. ——— Met. 10.

as the incomparable *Poet* goes on, and is imitated by our divine *Spencer*, where he brings his gentle *Knight* into a shady *Grove* praising

————— the Trees so straight, and high,
The sailing *Pine*, the *Cedar* proud, and tall,
The Vine-prop *Elm*, the *Poplar* never dry
The builder *Oak*, sole King of *Forests* all;

The

The *Aspine*, good for *staves*; the *Cypress* funeral;
 The *Laurel*, meede of mighty Conquerours
 And Poets sage; the *Fir*, that weepeth still;
 The *Willow*, worn of forlorne Paramours;
 The *Eugh*, obedient to the benders will;
 The *Birch* for shafts; the *Sallow* for the Mill;
 The *Myrrhe* sweet bleeding in the bitter wound;
 The war-like *Beech*; the *Asb* for nothing ill;
 The fruitful *Olive*, and the *Platane* round;
 The Carver *Holm*; the *Maple*, seldom inward found.

Canto. I.

And in this *Symphony* might the noble *Tasso* bear likewise his part; but that these are sufficient, & *tria sunt omnia*. What now remains concerns only some general *Præcepts*, and *Directions* applicable to most of that we have formerly touched; together with a *Brief* of what farther *Laws* have been enacted for the *Improvement*, and preservation of *Woods*; and which having dispatch'd, shall with a short *Parænests* touching the present ordering, and disposing of his *Majesties Plantations* for the future benefit of the *Nation*, put an end to this rustick Discourse.

CHAP. XXXI.

Aphorisms, or certain general Præcepts of use to the foregoing Chapters.

1. **T**Ry all sorts of *Seeds*, and by their thriving you shall best discern what are the most proper *kinds* for Grounds,

Quippe solo natura subest—

and of these design the main of your *Plantation*.

2. Keep your newly sown *seeds* continually fresh, and in the *shade* (as much as may be) till they peep.

3. All *curious* seeds, and plants are diligently to be *weeded* till they are strong enough to over-drop or suppress them: And you shall carefully *haw*, *half-dig*, and stir up the earth about their *Roots* during the first three years; especially in the *Vernal*, and *Autumnal Equinoxes*: This work to be done in a *moist* season for the *first* year to prevent the *dust*, and the suffocating of the tender *buds*; but afterwards in the more dry weather.

4. *Plants* rais'd from *seed*, shall be *thinn'd* where they come up too *thick*; and none so fit as you thus draw to be *transplanted* into *Hedge-rows*; especially, where ground is precious.

5. In *transplanting*, omit not the placing of your *Trees* towards their accustom'd *Aspect*.

6. Remove the *softest* wood to the *moistest* grounds,

Q

Divisæ

Divisæ arboribus patriæ —

7. Begin to Transplant *Forest-trees* when the leaves *fall* after *Michaelmas*; you may adventure when they are *tarnish'd*, and grow yellow: It is lost time to commence *later*, and for the most part of your *Trees*, early *Transplanters* seldom repent; for sometimes a tedious band of *Frost* prevents the whole *season*, and the *baldness* of the *Tree* is a note of deceipt; for some *Oaks*, and most *Beeches*, preserve their dead-leaves till new ones push them off.

8. Set deeper in the *lighter grounds* than in the *strong*; but shallowest in *Clay*: five inches is sufficient for the dryest, and one or two for the moist, provided you establish them against *winds*.

9. Plant forth in *warm*, and *moist* seasons; the *Air* tranquil and serene; the *wind* westerly; but never whiles it actually *freezes*, *rains*, or in *misty* weather; for it moulds, and infects the *Roots*.

10. What you gather, and draw out of *Woods*, plant immediately, for their roots are very apt to be mortified by the winds and cold air.

11. *Trees* produc'd from *seeds* must have the *Tap-roots* abated (the *Walnut-tree*, and some others excepted) and the bruised parts cut away; but sparing the *fibrous*, for they are the principal feeders; and those who cleanse them too much, are punish'd for the mistake.

12. In *spring* rub off some of the *Collateral Buds*, to check the exuberancy of *sap* in the *Branches*, till the *Roots* be well establish'd.

13. *Transplant* no more than you well *Fence*; for that neglected, *Tree-culture* comes to nothing: Therefore all young set *Trees* should be defended from the *winds*, and *Sun*; especially the *East*, and *North*, till their *roots* are fixed; that is, till you perceive them *shoot*; and the not exactly observing of this *Article* is cause of the perishing of the most tender *Plantations*; for it is the invasion of these two assailants which does more mischief to our new set, and less hardy *Trees*, than the most severe and durable *Frosts* of a whole *Winter*.

14. The properest *soil*, and most natural, apply to distinct *Species*, *Nec verò terræ ferre omnes omnia possunt*. Yet we find by experience, that most of our *Forest-trees* grow well enough in the *coursest* lands; provided there be a competent depth of *mould*: For albeit most of our *wild plants* covet to run just under the *surface*, yet where there is not sufficient depth to *cool* them, and entertain the *Moisture* and *Influences*, they are neither lasting, nor prosperous.

15. *Wood* well planted will grow in *Moorish*, *Boggy*, *Heathy*, and the *stoniest* grounds: Only the white and blew *Clay* (which is commonly the best *Pasture*) is the worst for wood; and such good *Timber* as we find in any of these (*Oaks* excepted) is of an excel-

excessive age, requiring thrice the time to arrive at their stature.

16. If the *season* require it, all new *Plantations* are to be plied with *waterings*, which is better pour'd into a *circle* at some distance from the *Roots*, that *percolating* through a quantity of *earth* it may carry the *nitrous* virtue of the *soil* with it; and by no means at the *stem*; because it washes the mould from the *Root*, comes too crude, and endangers their rotting: But,

17. For the cooling, and refreshing *Tree-roots*, the congeisting of *Flints*, or *Pibbles* neer the foot of the *stem*, is preferable to all other; and so the *Poet*,

*Aut lapidem bibulum, aut squallenteis infode conchas,
Inter enim labentur aquæ, tenuisque subibit
Halitus* ————— Georg. 2.

18. Cut no *Trees* when either *heat*, or *cold* are in extreame; nor in very *wet*, or *snowy* weather; and in this work it is profitable to discharge all *Trees* of unthriving, broaken, wind-shaken, *browse*, and such as our *Law* terms *Cablicia*, and to take them off to the quick,

————— *ne pars sincera trabatur.*

Many more useful *Observations* are to be collected, and added to these, from the diligent experience of *Planters*.

CHAP. XXXII.

Of the Laws and Statutes for the Preservation, and Improvement of Woods, &c.

1. **T**O let pass the *Laws*, and civil *Constitutions* of great *Antiquity*, by which *Servius* informs us 'twas no less then *Capital*, *alienas arbores incidere*; the *lex Aquilia*, and those of the *xii. Tabb.* mention'd by *Paulus*, *Cajus*, *Julianus* and others of that *Robe* repeated divers more. The wise *Solon* prescribed *Ordinances* for the very *distances* of *Trees*; as the divine *Plato* did against stealing of *Fruit*, and violating of *Plantations*: And the interdiction *de Glande legenda* runs thus in *Ulpian*, *AIT PRÆTOR, GLANDEM, QUÆ EX ILLIUS AGRO IN TUUM CADIT, QUO MINUS ILLI TERTIO QUOQUE DIE LEGERE AUFERRE LICEAT, VIM FIERI VETO.* But it is not here that I design to enlarge, as those who have *philologiz'd* on this occasion *de Sycophantis*, and other curious *Criticisimes*; but pass on, and confine my self to the prudent *sanctions* of our own *Parliaments*, which I deduce in this *Order*.

2. From the time of *Edward* the *fourth*, were enacted many
Q 2 excel-

excellent *Laws* for the *planting, securing, cutting, and ordering* of *Woods, Coppes, and Under-woods*, as then they took cognizance of them; together with the several *penalties* upon the *Infringers*; especially from the 25. of *Hen. 8. 17. &c.* confirm'd by the 13. and 27. of *Q. Eliz. cap. 25. 19. &c.* which are diligently to be consulted, revived, put in execution, and enlarg'd where any defect is apparent; as in particular the *Act* of exempting of *Timber* of 22 years growth from *Tythe*, for a longer period, to render it compleat, and more effectual to their *Improvement*: And that *Law* repealed, by which *Willows, Sallows, Oziers, &c.* which they term *Sub-bois*, are reputed but as *Weeds*.

3. *Severer punishments* have lately been ordain'd against our *Wood-stealers*, destroyers of young *Trees, &c.* I cannot say they are sharp ones, when I compare the severity of our *Laws* against *Mare-stealers*; nor am I by inclination the least *cruel*; But I do affirm, we might as well live without *Mares*, as without *Ships*, which are our *Wooden*, but no less profitable *Horses*.

4. I have heard, that in the great *Expedition* of 88, it was expressly enjoyn'd the *Spanish* Commanders of that signal *Armada*; that if when landed they should not be able to subdue our *Nation*, and make good their *Conquest*; they should yet be sure not to leave a *Tree* standing in the *Forest* of *Dean*: It was like the *Policy* of the *Philistines*, when the poor *Israelites* went down to their *Enemies Smiths* to sharpen every man his *Tools*; for as they said, *lest the Hebrews make them Swords, or Spears*; so these, *lest the English build them Ships, and Men of War*: Whether this were so, or not; certain it is, we cannot be too *jealous* for the preservation of our *Woods*; and especially of those eminent, and with care inexhaustible *Magazines*: I dare not suggest the encouragement of a yet farther *restraint*, that even *Proprietors* themselves should not presume to make havock of some of their own *Woods*, to feed their *prodigality*, and heap fuel to their *vices*; but it is worthy of our observation, that (in that inimitable *Oration*, the second *Philippic*) *Cicero* does not so sharply reproach his great *Antagonist* for any other of his *extravagancies* (which yet he there enumerates) as for his *wasteful* disposure of certain *Wood-lands* belonging to the *Commonwealth*; amongst his jovial *Bravo's*, and leud companions; *tua ista detrimenta sunt* (meaning his *Debauches*) *illa nostra*; speaking of the *Timber*.

5. But to the *Laws*: it were to be wish'd that our tender, and improvable *Woods*, should not admit of *Cattle*, by any means, till they were quite grown out of *reach*; the *Statutes* which connive at it, in favour of *Custom*, and for the satisfying of a few clamorous, and rude *Commoners*, being too *indulgent*; since it is very evident that less than a 14 or 15 years *enclosure* is, in most places, too soon; and our most *material* *Trees* would be of *infinite* more worth and improvement, were the *Standards* suffer'd to grow to *Timber*, and not so frequently cut, at the next *Felling* of the *Wood*, as the general custom is. In 22. *Edw. 4.* the liberty arriv'd but to seven years after a *felling* of a *Forest* or *Purlieu*; and but

but *three* years before, without special *license*: This was very narrow; but let us then look on *England* as an over-grown Country.

6. *Wood* in *Parks* was afterwards to be four years fenced upon *falling*: and yearling *Colts*, and *Calves* might be put into inclosed *Woods* after two: By the 13. *Eliz.* five years, and no other *Cattle* till six, if the growth was under fourteen years; or untill eight, if exceeding that age till the last *falling*: All which *Statutes* being by the *Act* of *Hen. 8.* but *temporal*, this *Parliament* of *Eliz.* thought fit to make *perpetual*.

7. Then to prevent the destructive razing and converting of *Woods* to *Pasture*: No wood of two *Acres*, and above two *furlongs* from the *Mansion* house, should be indulg'd: And the *prohibitions* are good against *Assarts* made in *Forests*, &c. without *license*: The *penalties* are indeed great; but how seldom inflicted; and what is now more easie, then compounding for such a *license*?

In some parts of *Germany*, where a single *Tree* is observ'd to be extraordinary fertile, a constant, and plentiful *Mast-bearer*; there are *Laws* to prohibite their *falling* without special leave: And it was well *Enacted* amongst us, that even the *Owners* of *Woods* within *Chases* should not cut down the *Timber* without view of *Officers*; or if not within *Chases*, yet where a *Common-person* had liberty of *Chase*, &c. and this would be of much benefit, had the *Regarders* perform'd their duty, as 'tis at large describ'd in the *Writ* of the 12. *Articles*; and that the *Surcharge* of the *Forests* had been honestly inspected with the due *Perambulations*, and ancient *Metes*: Thus should the *Justices* of *Eire* dispose of no *Woods* without exprels *Commission*, and in convenient places: *Minuti blaterones quercuum, culi, & curbi*, as our *Law* terms *wind-falls, dotterels, scrags, &c.* and no others.

8. Care is likewise by our *Laws* to be taken that no unnecessary *Imbezement* be made by pretences of *Repair* of *Paling*, *Lodges-Browse* for *Deer*, &c. *Wind-falls, Root-falls*; dead, and *Sear-trees*, all which is subject to the *Inspection* of the *Warders, Justices, &c.* and even *trespasses* done *de Viridi* on boughs of *Trees, Thickets* and the like; which (as has been shew'd) are very great impediments to their growth and prosperity, be duly looked after, and punished: See *Consuet. & Assis. Forest. Pannagium, or Pastura pecorum & de Glandibus, Fleta, &c. Man-woods Forest-Laws: Cook pla. fol. 366. li. 8. fol. 138.*

9. Finally, that the exorbitance, and increase of devouring *Iron-mills* were looked into, as to their *distance*, and *number* neer the *Seas*, or navigable *Rivers*; And what if some of them were even remov'd into another *World*? 'twere better to purchase all our *Iron* out of *America*, then thus to exhaust our *Woods* at *home*, although (I doubt not) they might be so order'd, as to be rather a means of conserving them. There was a *Statute* made by *Queen Eliz.* to prohibite the converting of *Timber-trees* to *Coal*, or other *Fuel* for the use of *Iron-mills*; if the *Tree* were of one foot square, and growing within 14 miles of
the

the *Sea*, or the greater *Rivers*, &c. 'tis pity some of those places in *Kent*, *Sussex* and *Surrey* were excepted in the *Proviso*, for the reason express'd in a *Statute* made 23. *Eliz.* by which even the employing of any *under-wood*, as well as *great Trees*, was prohibited within 22 miles of *London*, and many other navigable *Rivers*, *Creeks*, and other lesser distances from some parts of *Sussex Downs*, *Cinque-ports*, *Havens*, &c.

10. And yet to prove what it is to manage *Woods* discreetly; I reade of one Mr *Christopher Darell* a *Surrey* Gent. of *Nudigate*, that had a particular *Indulgence* for the cutting of his *Woods* at pleasure, though a great *Iron-master*; because he so order'd his *Works*, that they were a means of preserving even his *Woods*; notwithstanding those insatiable *devourers*: This may appear a *Paradox*, but is to be made out; and I have heard my own *Father* (whose *Estate* was none of the least wooded in *England*) affirm, that a *Forge*, and some other *Mills*, to which he furnish'd much *Fuel*, were a means of maintaining, and improving his *Woods*; I suppose, by increasing the *Industry* of *planting*, and care; as what he has now left standing of his own *planting*, *enclosing* and *cherishing* in the possession of my most honour'd Brother, *Geo. Evelin* of *Wotton* in the same *County*, does sufficiently evince; a most laudable *Monument* of his *Industry*, and rare Example.

11. The same *Act* we have confirmed, and enlarg'd in the 17th of the said *Queen*, for the preserving of *Timber-Trees*, and the penalties of impairing *Woods* much increased; the *tops*, and *offals* only permitted to be made use of for this employment: But let us see what others do.

12. The King of *Spain* has neer *Bilbao* sixteen times as many Acres of *Copse-wood* as are fit to be cut for *Coal* in one year; so that when 'tis ready to be fell'd, an *Officer* first marks such as are like to prove *Ship-timber*, which are let stand, as so many *sacred*, and *dedicate* *Trees*: But by this means the *Iron-works* are plentifully supplied in the same place, without at all diminishing the stock of *Timber*. Then in *Biscay* again, every *proprietor*, and other, plants three for one which he cuts down; and the *Law* obliging them is most severely executed. There indeed are few, or no *Copses*; but all are *Pollards*; and the very *lopping* (I am assur'd) does furnish the *Iron-works* with sufficient to support them.

13. What the practice is for the maintaining of these kind of *Plantations* in *Germany*, and *France*, has already been observ'd to this *Illustrious Society* by the learned D^r *Meret*; viz. that the *Lords* and (for the *Crown-lands*) the *Kings Commissioners*, divide the *Woods*, and *Forests*, into eighty partitions; every year felling one of the divisions; so as no *Wood* is fell'd in less than fourscore years: And when any one *partition* is to be cut down, the *Officer*, or *Lord* contracts with the *Buyer* that he shall at the distance of every twenty foot (which is somewhat neer) leave a good, fair, sound and fruitful *Oak* standing. Those of 'twixt forty, and fifty years they reckon for the best, and then they are to fence these *Trees* from all sorts of *Beasts*, and injuries, for a competent time; which being

being done, at the *season*, down fall the *Acorns*, which (with the *Autumnal* rains beaten into the earth) take *root*, and in a short time furnish all the *Wood* again, where they let them grow for four, or five years; and then grub up some of them for *Fuel*, or *transplantions*, and leave the most *provable* of them to continue for *Timber*.

14. The *French King* permits none of his *Oak-woods*, though belonging (some of them) to *Monsieur* (his *Royal Brother*) in *Appenage*, to be cut down; till his own *Surveyors*, and *Officers*, have first *marked* them out; nor are any *fell'd* beyond such a *circuit*: Then are they sufficiently *fenc'd* by him who *buys*; and no *Cattle* whatsoever suffer'd to be put in, till the very *seedlings* which spring up of the *Acorns* are perfectly out of danger. And to these I might superadd divers others, but I hasten to an end.

The Parænesis, and Conclusion.

1. Since our *Forests* are undoubtedly the greatest *Magazines* of the *wealth*, and glory of this *Nation*; and our *Oaks* the truest *Oracles* of the *perpetuity* of our *happiness*, as being the only support of that *Navigation* which makes us fear'd *abroad*, and flourish at *Home*; it has been strangely wonder'd at by some good *Patriots*, how it comes to pass that many *Gentlemen* have frequently repair'd, or gain'd a sudden *Fortune*, with *plowing* part of their *Parks*, and setting out their fat grounds to *Dutch-gard'ners*, &c. and very wild *Wood-land* parcels (as may be *instanc'd* in several places) to dressers of *Hop-yards*, &c. while the *Royal portion* lies folded up in a *Napkin*, uncultivated, and neglected; especially, those *great*, and ample *Forests*; where though *plowing*, and *sowing* has been forbidden, a *Royal command*, and *Design*, may well dispense with it, and the breaking up of those *Intervals* advance the growth of the *Trees* to an incredible *Improvement*.

2. It is therefore insisted on, that there is not a cheaper, easier, or more prompt *expedient* to advance *Ship-timber*, than to solicit, that in all his *Majesties Forests*, *Woods*, and *Parks*, the spreading *Oak* (which we have formerly described) be cherish'd, by *plowing*, and *sowing Barley*, *Rye*, &c. (with due supply of *culture*, and *soil*, between them) as far as may (without danger of the *Plow-share*) be broken up. But this is only where *these Trees* are arriv'd to some magnitude, and stand at competent distances; a *hundred*, or *fifty yards* (for their *Roots* derive relief far beyond the reach of any *boughs*) as do the *Walnut-trees* in *Burgundy*, which stand in their best *plow'd-lands*.

3. But that we may particularize in his *Majesties Forests* of *Dean*, *Sherwood*, &c. and in some sort gratifie the *Queries* of the Honourable the principal *Officers* and *Commissioners* of the *Navy*; I am advis'd by such as are every way *judicious*, and of long *experience* in those parts; that to *enclose* would be an excellent way: But it is to be consider'd, that the *people*, viz. *Foresters* and *Eordurers*, are not generally so *civil*, and reasonable, as might be wish'd; and therefore

fore to design a solid *Improvement* in such places, his *Majesty* must assert his *power*, with a firme and high Resolution to *Reduce* these men to their due *Obedience*, and to a necessity of submitting to their *own*, and the *publick* utility; though they preserv'd their *industry* this way at a very tolerable rate upon that *condition*, whiles some *person* of *trust*, and integrity did regulate, and supervise the *Mounds* and *Fences*, and destine some portions frequently set a part, for the raising, and propagating of *Woods*, till the whole *Nation* were furnish'd for *posterity*.

4. And which work if his *Majesty* shall resolve to accomplish, he will leave such an everlasting *obligation* on his *people*, and raise such a *Monument* to his *Fame*, as the *Ages* for a *thousand* years to come shall have cause to celebrate his precious *memory*, and his Royal *Successors* to emulate his *Virtue*. For thus (besides the future expectations) it would in present be no deduction from his *Majesties* *Treasure*; but some increase; and fall in time to be a fair, and worthy *Accession* to it; whiles this kind of *propriety* would be the most likely expedient to *civilize* those wild and poor *Bordurers*; and to secure the vast and spreading heart of the *Forest*, which with all this *Indulgence* would be ample enough for a Princely *Demeasnes*: And if the difficulty be to find out who *knows*, or *acknowledges* what are the *Bordures*; this *Article* were worthy, and becoming of as serious an *Inquisition*, as the *Legislative* power of the whole *Nation* can contrive.

5. The Sum of all is; get the *Bordures* well *Tenanted*, by long *Terms*, and easie *Rents*, and this will invite and encourage *Takers*; whilst the *middle*, most secure, and interiour parts would be a *Royal* portion. Let his *Majesty* therefore admit of any willing *Adventurers* in this vast *Circle* for such *Enclosures* in the *Precincts*; and rather of *more*, then of *few*, though an *hundred*, or *two* should joyn together for any *Enclosure* of *five* hundred *Acres* more, or less; that *multitudes* being thus engaged, the consideration might procure, and facilitate a full *discovery* of latter *Encroachments*, and fortifie the recovery by favourable *Rents*, *Improvements* and *Reversions* by *Copy-hold*, or what other *Tennures* and *Services* his *Majesty* shall please to accept of.

6. Now for the planting of *Woods* in such places (which is the only design of this whole *Treatise*) the *Hills*, and *rough* *Grounds* will do well; but they are the rich fat *Vales*, and *flats* which do best deserve the charge of *Walls*; such as that *spot* affords; and the *Haw-thorn* well plash'd (single or double) is a better, and more natural *Fence* then *unmorter'd* *walls*, could our *industry* arrive to the making of such, as we have describ'd: besides, they are lasting, and profitable; and then one might allow sufficient *bordure* for a *Mound* of any thickness, which may be the first charge, and well supported, and rewarded by the culture of the Land thus enclosed.

7. For *Example*, suppose a man would take in 500 *Acres* of good *Land*, let the *Mounds* be of the wildest ground, as fittest for *wood*: Two *hedges* with their *Valations*, and *Trenches* will be requisite

requisite in all the Round; viz. one next to the *Enclosure*, the other about the *Thicket* to fence it from *Cattle*. This between the two *bedges* (of whatsoever breadth) is fittest for *Plantation*: In these *bedges* might be tryed the plantation of *stocks*; in the *intervals* all manner of *wood-seeds* sown (after competent plowings) as *Acorns*, *Maſt*, *Fir*, *Pine*, *Nuts*, &c. the *first* year chasing away the *Birds*, because of the *Fir* and *Pine* seeds, for reasons given; the *second* year loosning the ground, and thinning the supernumeraries, &c. this is the most frugal way: Or by another Method the *Waste* places of *Forests* and *Woods* (which by through experience is known and tried) might be perfectly extirpated; and then allowing two or three *plowings*, well-rooted *stocks* be set, cut and trimm'd as is requisite; and that the *Timber-trees* may be excellent, those after wards *copped*, and the choicest *stocks* kept shreaded. If an *Enclosure* be sow'd, the *Seeds* may be (as was directed) of all the *species*, not forgetting the best *Pines*, *Fir*, &c. whiles the yearly removal of very incumbrances only will repay the *Work-men*, who sell the *Quick*, or reserve it to store other *Enclosures*, and soften the circumjacent grounds to the very great improvement of what remains.

9. And how if in such *Fencing-works* we did sometimes imitate what *Quintus Curtius*, lib. 6. has recorded of the *Mardoruni gens*, neer to the *Confines* of *Hyrcania*, who did by the close planting of *Trees* alone upon the *bordures* give so strange a check to the power of that great *Conqueror Alexander*? They were a barbarous people indeed, but in this worthy our imitation; and the work so handsomly and particularly describ'd that I shall not grieve to recite it. *Arbores dense sunt de industria consita, quarum teneros adhuc ramos manu flectunt, quos intortos rursus inserunt terræ: Inde velut ex alia radice latiores virent trunci: hos, qua natura fert, adoleſcere non sinunt: quippe alium alii, quasi nexu conferunt: qui ubi multa fronde vestiti sunt, operiunt terram. Itaque occulti ramorum velut laquei perpetuâ sepe iter claudunt, &c.* The *Trees* (saith he) were planted so neer and thick together of purpose, that when the boughs were yet young and flexible, bent and wreath'd within one another, their tops were bowed into the earth (as we *submerge our Layers*) whence taking fresh roots, they shot up new stems, which not being permitted to grow as of themselves they would have done, they so knit and perplex'd one within another, that when they were clad with leaves, they even cover'd the ground, and enclosed the whole *Country* with a kind of living net, and impenetrable hedge, as the *Historian* continues the description. such works as these would become a *Cato*, or *Varro* indeed, one that were *Pater Patriæ, non sibi soli natus* born for *Posterity*; but we are commonly of another mould,

— & fruges consumere nati.

10. A fair advance for speedy growth, and noble *Trees* (especially for *Walks* and *Avenues*) may be assuredly expected from the *Grafting* of young *Oaks*, and *Elms* with the best of their kinds; and where the goodliest of these *last* are growing, the ground would be *plow'd*, and finely *raked* in the season when the *Scales*

fall; that the showers and dews fastning the *Seed* where the wind drives it, it may take root, and hasten (as it will) to a sudden Tree; especially, if seasonable *shreading* be appli'd, which has sometimes made them arrive to the height of twelve foot by the first three years, after which they grow a main. And if such were planted as neer to one another as in the *Examples* we have alledg'd, it is almost incredible what a *paling* they would be to our most expos'd *Plantations* mounting up their wooden *walls* to the clouds: And indeed the shelving and natural declivity of the *Ground* more or less to our unkind *Aspects*, and bleak *Winds* does best direct to the thickning of these protections; and the benefit of *that* soon appear, and recompence our industry in the smoothness and integrity of the *Plantations* so defended.

11. That great care be had of the *Seeds* which we intend to sow has been already advised; for it has been seen that *Woods* of the same age, planted in the same *soil* discover a visible difference in the *Timber* and *growth*; and where this variety should happen if not from the *seed* will be hard to interpret; therefore let the *place*, *soil* and *growth* of such *Trees* from whence you have your *seeds* be diligently examin'd; and why not this, as well as in our care of *Animals* for our breed and store?

12. As to the *Form*, obey the natural *site*, and submit to the several guizes; but ever declining to enclose *High-ways* and *Common-roads* as much as possible. For the rest, be pleased to reflect on what we have already said to encourage the planting of the large spreading *Oak* above all that *species*; the amplitude of the *distance* which they require resign'd to the care of the *Verderer* for grazing *Cattle*, *Deer*, &c. and for the great, and masculine beauty which a wild *Quincunx*, as it were, of such *Trees* would present to your eye.

13. But to advance his *Majesties Forests* to this height of perfection, I should again urge the removal of some of our most mischievous plac'd *Iron-mills*; if that at least be true which some have affirm'd, that we had better *Iron*, and cheaper from *Foreigners* when those *Works* were strangers amongst us. I am inform'd that the *New-English* (who are now become very numerous, and hindred in their advance and prospect of the *Continent* by their surfeit of the *Woods* which we want) did about twelve years since begin to clear their *High-ways* by two *Iron-mills*: I am sure their zeal has sufficiently wasted our stately *Woods*, and *Steel* in the bowels of their *Mother* old *England*; and 'twere now but expedient their *Brethren* should hasten thither to supply us with *Iron* for the peace of our days; whilst His Majesty becomes the great *Sovereign* of the *Ocean*, free *Commerce*, *Nemorum Vindex* & *Instaurator magnus*. This were the only way to render both our *Countries* habitable indeed, and the fittest sacrifice for the *Royal-Oaks*, and their *Hamadryads* to whom they ow more then a slight submission.

14. Another thing to be recommended (and which would prove no less then thirty years, in some places forty, and generally twenty years advance) were a good, (if well executed) *Act* to save

save our *Standards* and *borduring Trees* from the *Axe* of the Neighbourhood: And who would not preserve *Timber* when within so few years the *price* is almost quadrupl'd? I assure you *standards* of 20, 30, or 40 years growth are of a long day for the concerns of a Nation.

15. And though we have in our general *Chapter of Coppes* declar'd what by our *Laws*, and common usage is expected at every *Fell* (and which is indeed most requisite till our store be otherwise suppli'd) yet might much even of that rigor be abated by no unfrugal permissions to take down more of the *standards* for the benefit of the *Under-woods* (especially where by over-dropping, and shade they interrupt the kindly dews, rains and influences which nourish them) provided that there were a proportionable number of *Timber-trees* duly, and throughly planted, and preserved in the *Hedge-rows* and *Bordures* of our grounds: in which case even the total clearing of some *Coppes* would be to their great advance, as by sad experience has been taught some good *Husbands*, whose necessities sometimes forced them to violate their *Standards*, and more grown Trees during the late *Tyranny*.

16. Nor will it be here unseasonable to advise, that where *Trees* are manifestly perceiv'd to *decay*, they be marked out for the *Axe* that so the younger may come on for a supply; especially, where they are chiefly *Elms*; because their *successors* hasten to their height and perfection in a competent time; but beginning once to grow sick of *age*, or other infirmity, suddenly impair, and lose much of their value yearly: besides that the increase of *this*, and other speedy *Timber* would spare the more *Oak* for *Navigation* and the sturdier uses.

How goodly a sight were it if most of the *Demefnes* of our *Country Gentlemen* were crown'd and incircled with such stately rows of *Limes*, *Firs*, *Elms* and other ample, shady and venerable *Trees* as adorn *New-Hall* in *Essex*, the Seat of that *Suffolk Knight* near *Tarmouth*, and our neighbouring *Pastures* at *Barnes*? Yet were these *Plantations* but of late years in comparifon: It were a noble and immortal *providence* to imitate these good *Husbands* in larger and more august *Plantations* of such useful *Trees* for *Timber* and *Fuel*, as well as for shade and ornament to our dwellings.

17. But these incomparable undertakings will best of all become the *Inspection* and care of the Honorable *Lieutenants*, and *Rangers*, when they delight themselves as much in the goodliness of their *Trees*, as other men generally do in their *Dogs*, and *Horses*, for *Races* and *Hunting*; neither of which *Recreations* is comparable to that of *Planting*, either for *virtue* or *pleasure*, were things justly consider'd according to their true estimation: Not yet that I am of so morose an *humour*, that I reprove any of those noble, and manly *Diversions* seasonably us'd; but because I would court the *Industry* of great, and opulent *persons* to profitable and permanent *delights*: For suppose that *Ambition* were chang'd into a laudable *emulation* who should best, and with most artifice, raise a *Plantation* of *Trees* that should have all the proper *orna-*

ments, and *perfections* their *nature* is susceptible of by their direction and encouragement; such as *Ælian*, sums up, *lib. 25. c. 14.* *εὐγαθὸς οἰ κλάδοι, εἰς ἡ κίμων πολλὰ, &c.* kind, and gentle *Limbs*, plenty of large *leaves*; an ample and fair *body*; profound, or spreading *roots*, strong against impetuous *winds*; (for so I affect to read it) extensive, and venerable *shade* and the like: Methinks there were as much a subject of *glory* as could be phancied of the kind; and *comparable*, I durst pronounce, *preferable*, to any of their *Recreations*; and how goodly an *Ornament* to their *Demefnes* and *Dwellings*, let their own *eyes* be the judges. But I now proceed to more general *Concerns*, in order to the *Queries*, and first to the *proportion*.

18. It were but just, and infinitely befitting the miserable *needs* of the whole *Nation*, that every *twenty Acres* of *Pasture* made an allowance for half an *Acre* of *Timber*, to be planted in a *clump*, well preserv'd, and *fenc'd* for 14, or 15 years: And where the young *Trees* stand too thick, there to *draw*, and *transplant* them in the *Hedge-rows*, which would also prove excellent *shelter* for the *Cattle*: This *Husbandry* would more especially become *Northamptonshire*, *Lincolnshire*, *Cornwall*, and such other of our *Countries* as are the most naked of *Timber*, *Fuel*, &c. and unprovided of covert: For it is rightly observ'd, that the most *fruitful places* least abound in *wood*, and do most stand in need of it.

19. Such as are ready to tell ye their *Lands* are so *wet* that their *Woods* do not thrive in them, let them be converted to *Pasture*; or bestow the same industry on them which good *husbands* do in *Meadows* by *draining*: It is a *sloathfulness* unpardonable; as if the *pains* would not be as fully recompenc'd in the growth of their *Timber*, as in *that* of their *grass*: Where poor hungry *Woods* grow, rich *Corn*, and good *Cattle* would be more plentifully bred; and it were beneficial to convert some *Wood-land* (where the proper vertue is exhausted) to *Pasture* and *Tillage*; provided that fresh *land* were improved also to *wood* in recompence, and to balance the other.

20. Where we find *uliginous*, and starv'd places (which sometimes obey no Art or Industry to *drain*, and of which our pale and fading *Corn* is a sure indication) we are, as it were, courted to obey *Nature*; and improve them for the propagation of *Sallyes*, *Willows*, *Alders*, *Scycomor*, *Aspine*, *Birch* and the like hasty and profitable growers, by ranging them, casting of *Ditches*, *Trenches*, &c. as before has been taught.

21. In the mean while 'tis a thing to be deplor'd, that some persons bestow more in *grubbing*, and dressing a few *Acres* which has been excellent *wood*, to convert it into wretched *pasture*, not worth a quarter of what the *Trees* would have yielded, well order'd, and left standing; since it is certain, that *barren land* planted with *wood* will *trebble* the *expence* in a short time: This I am able to confirm by instancing a *noble person*, who (a little before our unhappy *Wars*) having sown three or four *Acres* with *Acorns*, the fourth year *transplanted* them which grew too thick all about his

Lordship

Lordship: These Trees are now of that *stature*, and so likely to prove excellent *Timber*, that they are already judg'd to be almost as much worth as the whole *Demesnes*; and yet they take off nothing from other *profits*, having been discreetly dispos'd of at the first *designment*. The Prince *Electör Fredric IV*, in the year 1606. sow'd a part of that most barren *Heath* of *Lambertheim* with *Acorns* after *plowing*, as I have been inform'd; it is now likely to prove a most goodly *Forest*, though all this while miserably neglected by reason of the *Wars*.

The Right Honorable my Lord *Viscount Mountague* has planted many thousands of *Oaks*, which I am told he draws out of *Copses*, big enough to defend themselves; and that with such success as has exceedingly improv'd his *possessions*; and it is a worthy *example*. To conclude, I can shew an *Avenue* planted to a house standing in a barren *Park*, the soil a cold *Clay*; it consists totally of *Oaks*, one hundred in number: The person who first set them (dying very lately) lived to see them spread their *branches* 123 foot in compass, which at distance of 24 foot mingling their shady *treffes* for above 1000 in length, form themselves into one of the most venerable and stately *Arbour-Walks* that in my life I ever beheld: This is at *Baynards* in *Surrey*, and belonging to my most honour'd Brother (because a most industrious Planter of wood) *Richard Evelyn Esq.* The Walk is broad 56 foot, and one Tree with another containing by estimation three quarters of a load of *Timber* in each Tree, and in their *lops* three Cord of fire-wood: Their bodies are not of the tallest, having been topped when they were young to reduce them to an uniform *height*; yet is the *Timber* most excellent for its scantling, and for their heads few in *England* excelling them: where some of their contemporaries were planted single in the *Park* without cumber, they spread above *four-score* foot in *arms*.

22. I have produced these *Examples* because they are *conspicuous*, full of *encouragement*, worthy our *imitation*; and that from these, and sundry others which I might enumerate, we have made this observation, that almost any *soil* is proper for some profitable *Timber-trees* or other which is good for very little else.

23. The bottoms of *Downs's* and like places well *plow'd*, and *sown* will bear lusty *Timber*, being *broken up*, and let lye till *Midsummer*, and then *stirr'd* again before *sowing* about *November*: so likewise in most *craggy*, *uneven*, *cold* and *exposed* places, not fit for *Arable*, as in *Biscay*, &c. And it is truly from these *Indications*, more then from any other whatsoever, that a broken, and decaying *Farmer* is to be distinguish'd from a substantial *Freeholder*, the very *Trees* speaking the *conditions* of the *Master*: let not then the *Royal Patrimony* bear a *Bankrupts* reproach: But to descend yet lower;

24. Had every *Acre* but *three*, or *four Trees*, and as many of *Fruit* in it as would a little adorn the *Hedge-rows*, the *Improvement* would be of fair advantage in a few years; for it is a thame that *Turnep-planters* should demolish and undo *hedge-rows* near

London,

London, where the *Mounds* and *Fences* are stripp'd naked to give *Sun* to a few miserable *Roots*, which would thrive altogether as well under them being skilfully *prun'd* and *lopp'd*: Our *Gard'ners* will not believe me, but I know it to be true, though *Pliny* had not affirm'd it: As for *Elms* (saith he) their *shade* is so *gentle* and *benigne*, that it *nourishes* whatsoever grows under it: and (*lib. 17. c. 22.*) it is his opinion of all other *Trees* (very few excepted) provided their branches be par'd away, which being discreetly done, improves the *Timber* as we have already shew'd.

25. Now let us *calculate* a little at adventure, and much within what is both *faissible*, and very *possible*; and we shall find, that *four Fruit-trees* in each *Acre* throughout *England*, the product sold but at *six pence* the *Bushel*, will be worth above a *Million* yearly: What then may we reasonably judge of *Timber*, admit but at the *growth* of *four pence* per *Acre* yearly, (which is the lowest that can be estimated) it amounting to neer *two Millions*? if (as 'tis suppos'd) there may be *five* or *six* and *twenty Millions* of *square Acres* in the *Kingdom* (besides *Fens*, *High-ways*, *Rivers*, &c. not counted) and without reckoning in the *Mast*, or *loppings*, which whosoever shall *calculate* from the annual *Revenue* the *Mast* only of *Westphalia*, a small and wretched Country in *Germany* does yield to that *Prince*, will conclude to be no despicable *Improvement*.

26. In this poor *Territory*, every *Farmer* does by ancient *custom* plant so many *Oaks* about his *Farme* as may suffice to feed his *Swine*: To effect this, they have been so careful, that when of late years the *Armies* infested the poor *Country*, both *Imperialists*, and *Protestants*, the only *Bishoprick* of *Munster* was able to pay *eight hundred thousand Crowns per menssem* (which amounts of our money to *25000 li. Starling*) besides the ordinary *entertainment* of their own *Prince* and *private Families*. This being incredible to be practis'd in so extream barren a *Country* I thought fit to mention either to encourage, or reproach us: *General Melander* was wont to say, The good *Husbandry* of their *Ancestors* had left them this stock *pro sacra Anchorâ*; considering how the *People* were afterward reduc'd to live even on their *Trees* when the *Souldiers* had devour'd their *Hogs*; redeeming themselves from great extremities by the *Timber* which they were at last compell'd to cut down, and which, had it continu'd, would have proved the utter desolation of that whole *Countrey*. I have this *Instance* from my most worthy and honourable Friend *Sir William Cursus* (His *Majesties Resident* in *Germany*,) who receiv'd this *particular* from the mouth of *Melander* himself: In like manner the *Princes*, and *Freedoms* of *Hesse*, *Saxony*, *Thuringia*, and divers other places there, make vast incomes of their *Forest-fruit* (besides the *Timber*) for *Swine* only. I say then, whosoever shall duly consider this will finde *planting* of *Wood* to be no contemptible *Addition*; besides the *Pasture* much improv'd, the *cooling* of fat, and heavy *Cattle*, keeping them from injurious motions, disturbance and running as they do

do in *Summer* to finde shelter from the *beat*, and vexation of *Flyes*.

27. But I have done, and it is now time for us to get out of the *Wood*, and to recommend *this*, and all that we have propos'd to His most *Sacred Majesty*, the Honourable *Parliament*, and to the *Principal Officers*, and *Commissioners* of the *Royal Navy*; that where such *Improvements* may be made, it be speedily, and vigorously prosecuted; and where any *defects* appear, they may be duly reformed.

28. And what if for this purpose there were yet some additional *Office* constituted, which should have a more universal *Inspection*, and the charge of all the *Woods* and *Forests* in His *Majesties Dominions*? This might easily be perform'd by *Deputies* in every *County*, Persons judicious, and skilful in *Husbandry*; and who might be repair'd to for advice and direction: And if such there are at present (as indeed our *Laws* seem to provide) that their *Power* be sufficiently amplified where any thing appears deficient; and as their zeal excited by worthy encouragements; so might neglects be encounter'd by a vigilant and industrious *Checque*. It should belong to their *Province* to see that such proportions of *Timber*, &c. were planted, and set out upon every hundred, or more of *Acres*, as the Honourable *Commissioners* have suggested; or, as might be thought convenient, the *quality*, and *nature* of the *places* prudently consider'd: It should be their *Office* also to take notice of the *growth*, and *decay* of *Woods*, and of their *fitness* for publick *uses* and *sale*, and of all these to give *Advertisements*, that all defects in their ill governing may be speedily remedied; and the Superiour *Officer*, or *Surveyor* should be accomptable to the *Lord Treasurer*, and to the *principal Officers* of His *Majesties Navy* for the time being: And why might not such a *Regulation* be worthy the establishing by some *Solemn*, and publick *Act* of *State* becoming our glorious *Prince SOVEREIGN OF THE SEAS*, and his prudent *Senate* this present *Parliament*?

29. We find in *Aristotles Politics* the Constitution of *Extra-urban Magistrates* to be *Sylvarum Custodes*, and such were the *Consulares Sylvæ* which the great *Cæsar* himself (even in a time when *Italy* did abound in *Timber*) instituted; and was one of the very first things which he did at the settling of that vast *Empire* after the *Civil Wars* had exceedingly wasted the *Country*: *Suetonius* relates it in the life of *Julius*; and *Peter Crinitus* in his fifth Book *De honesta disciplina*, c. 3. gives this reason for it, *Ut materies* (saith he) *non deesset, qua videlicet Navigia publica possent à præfecturis Fabrûm confici*: True it is, that this *Office* was sometimes call'd *Provincia minor*; but for the most part annex'd and joyn'd to some of the greatest *Consuls* themselves; that facetious *sarcasme* of the *Comædian* (where *Plautus* names it *Provincia caudicaria*) referring onely to some under-*Officer* subservient to the other: And such a *charge* is at this day extant amongst the noble *Venetians*, and other prudent *States*; not to importune you with the exprels *Laws* which *Ancus Martius* the Nephew of *Numa*,

and

A Discourse of Forest-Trees.

and other Princes long before *Cæsar* did ordain for this very purpose; since indeed the care of so publick and honourable an Enterprize as is this of *Planting*, and *Improving of Woods*, is a right noble and royal undertaking; as that of the *Forest of Dean*, &c. in particular (were it bravely manag'd) an *Imperial design*; and I do pronounce it more worthy of a *Prince* who truly consults his *glory* in the highest *Interest* of his *Subjects*, then that of gaining *Battels*, or subduing a *Province*: And if in saying so, or any thing else in this rustic *Discourse*, I have us'd the freedom of a plain *Forester*; it is the person you command me to put on, and my plea is ready,

Theocriti
See. vide A-
dagium.

Δρυς παρῶν πᾶς ἀπὸρ ζυλευίλας.

Præsente Quercu ligna quivis colligit.

for who could have spoken less upon so ample a Subject? and therefore I hope my zeal for it in these *Papers*, will (besides your *Injunctions*) excuse the prolixity of this *Digression*, and all other the *Imperfections* of my Services.

Si canimus Sylvas, Sylvæ sunt Consule dignæ.

FINIS.

POMONA,

OR AN

APPENDIX

CONCERNING

FRUIT-TREES,

In relation to

CIDER,

The Making and several ways of Ordering it.

VIRG. Eclog. ix.

—Carpent tua Poma nepotes.



LONDON,

Printed by *John Martyn* and *James Allestry*, Printers to the Royal Society, and are to be sold at their Shop at the *Bell* in *S^t Paul's Church-yard*. MDCLXIV.

POMONA.

OR AN

APPENDIX

CONCERNING

FRUIT-TREES,

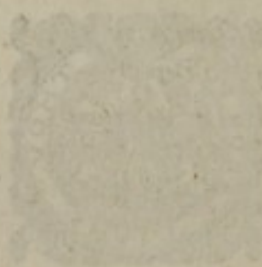
In relation to

CIDER.

The Adding and several ways of Ordering it.

By J. H. ...

...



...

Printed by ...

To the Right Honorable

T H O M A S

Earl of *SOUTHAMPTON*,

Lord HIGH TREASURER
OF

ENGLAND, &c.

My Lord,



If great *Examples* did not support it, the dignity and greatness of your *Person* would soon have given cheque to this presumption: But since *Emperours* and *Kings* have not only gratefully accepted *Works* of this nature, but honor'd them likewise with their own sacred hands, that *Name* of yours (which ought indeed never to appear but in Instruments of *State* and fronts of *Marble*, consecrating your *Wisdom* and *Vertues* to *Eternity*) will be no way lessen'd by giving Patronage to these appendant *Rusticities*. It is from the Protection and Cherishment of such as your *Lordship* is, that these *Endeavours* of ours may hope one day to succeed and be prosperous. The noblest and most useful Structures have laid their Foundations in the *Earth*: if that prove firme *here* (and firme I pronounce it to be, if your *Lordship* favour it) We shall go on and flourish. I speak now in relation to the *Royal Society*, not my self, who am but a *Servant* of it only, and a *Pioner* in the *Works*. But be its *fate* what it will, Your *Lordship*, who is a *Builder*, and a lover of all *Magnificences*, cannot be displeas'd at these agreeable *Accessories*

The Epistle Dedicatory.

fories of *Planting*, and of *Gard'ning*. But, my *Lord*, I pretend by it yet some farther service to the *State* then that of meerly profit, if in contributing to your divertisement I provide for the *Publick health*, which is so precious and necessary to it in your excellent *Person*. Vouchsafe *POMONA* your *Lordships* hand to kiss, and the humble *Presenter* of these *Papers* the honor of being esteem'd,

My *Lord*,

Your most humble, and most

obedient *Servant*

J. EVELYN.

POMONA

P O M O N A,

OR AN APPENDIX Concerning

FRUIT-TREES,

In relation to

C I D E R:

The Making, and several ways of Ordering it.

THE PREFACE.



SAt Quercus was the Proverb; and it is now time to walk ANNE D'AC: in eos, qui re-
out of the Woods into the Fields a little, and to con- lillo vitu sur-
sider what Advancement may be there likewise made by dido, ad ele-
the planting of FRUIT-TREES. For after the gantiozem
Earth is duly cultivated, and pregnant with a Crop of lantiozemq;
Grain; it is onely by the Furniture of such Trees as digrediu-
bear Fruit, that it becomes capable of any farther Im- tur.
provement. If then by discovering how this may best be effected I can but
raise a worthy emulation in our Countrey-men; this addition of noble
Ornament, as well as of Wealth and Pleasure, Food and Wine, may (I
presume) obtain some grateful admittance amongst all promoters of Industry.

But before I proceed, I must, and do ingenuously acknowledge, that I
present my Reader here with very little of my own, save the pains of
collecting and digesting a few dispers'd Notes (but such as are to me ex-
ceedingly precious) which I have receiv'd; some, from worthy, and
most experienc'd * Friends of mine; and others, from the well-fur-
nish'd Registers, and Cimelia of the ROYAL SOCIETY. Especially, those Aphorisms, and Treatises relating to the History of
Cider, which by express commands they have been pleas'd to injoyn I
should publish with my Sylva.

It is little more than an Age, since Hopps (rather a Medical, than
Alimental Vegetable) transmuted our wholesome Ale into Beer; which
doubtless much alter'd our Constitutions: That one Ingredient (by
some not unworthily suspected) preserving Drink indeed, and so by custom
made agreeable; yet repaying the pleasure with tormenting Diseases,
and a shorter life, may deservedly abate our fondness to it; especially, if
with this be consider'd likewise, the casualties in planting it, as sel-
dom succeeding more than once in three years; yet requiring constant
charge and culture; Besides that it is none of the least devourers of
young Timber.

And what if a like care, or indeed one quarter of it, were (for the
future) converted to the propagation of Fruit-trees, in all parts of this
Nation, as it is already in some, for the benefit of Cider? (one Shire
alone

* Especially,
from the
most excel-
lently learn-
ed Mr. Beale,
of Teavill in
Somerset-
shire, a Mem-
ber of the
Royal Soci-
ety.

The PREFACE.

alone within twenty miles compass, making no less, yearly, than Fifty thousand Hogsheds) the commutation would (I persuade my self) rob us of no great Advantage; but present us with one of the most delicious and wholesome Beverages in the World.

It was by the plain Industry of one Harris (a Fruiterer to King Henry the Eighth) that the Fields, and Environs of about thirty Towns, in Kent onely, were planted with Fruit, to the universal benefit, and general Improvement of that County to this day; as by the noble example of my Lord Scudamor, and of some other publick spirited Gentlemen in those parts, all Hereford-shire is become, in a manner, but one intire Orchard: And when his Majesty shall once be pleas'd, to command the Planting but of some Acres, for the best Cider-fruit, at every of his Royal Mansions, amongst other of his most laudable Magnificences; Noblemen, wealthy Purchasers, and Citizens will (doubtless) follow the Example, till the preference of Cider, wholesome, and more natural Drinks, do quite vanquish Hopps, and banish all other Drogues of that nature.

But this Improvement (say some) would be generally obstructed by the Tenant and High-shoon-men, who are all for the present profit; their expectations seldom holding out above a year or two at most.

To this 'tis answer'd; That therefore should the Lord of the Mannour not onely encourage the Work by his own Example, and by the Applause of such Tenants as can be courted to delight in these kindes of Improvements; but should also oblige them by Covenants to plant certain Proportions of them, and to preserve them being planted.

To fortifie this profitable Design, It were farther to be desir'd, that an Act of Parliament might be procur'd for the Setting but of two or three Trees in every Acre of inclos'd Land, under the Forfeiture of Six-pence per Tree, for some publick and charitable Work, to be lev'd on the Defaulters. To what an innumerable multitude would this, in few years, insensibly mount; affording infinite proportions, and variety of Fruit throughout the Nation, which now takes a Potion for a refreshment, and drinks its very Bread-corn!

I have seen a Calculation of twenty Fruit-trees to every Five-pounds of yearly Rent; forty to Ten; sixty to Fifteen; eighty to Twenty; and so according to the proportion. Had all our Commons, and Waste-lands, one Fruit-tree but at every hundred foot distance, planted, and fenc'd at the publick charge, for the benefit of the Poor, (whatever might dy and miscarry) enough would escape able to maintain a Stock, which would afford them a most incredible relief. And the Hedg-rows, and the Champion-grounds, Land-divisions, Mounds, and Head-lands (where the Plough not coming, 'tis ever abandon'd to Weeds and Briars) would add yet considerably to these Advantages, without detriment to any man.

As touching the Species, if much have been said to the preference of the Red-strake before other Cider-Apples, this is to be added; That as the best Vines, of richest liquor, and greatest burden, do not spend much in wood and unprofitable branches; so nor does this Tree: For though other Cider may seem more pleasant (since we decline to give Judgment of what is unknown to us) we yet attain our purpose, if This shall appear best to reward the Planter, of any in present practise; especially, for the generality; because it will fit the most parts which are addicted to these Liquors, but miss of the right kinds, and prove the most secure from external injuries and Invaders.

Not

Not to refine upon the rare effects of Cider, which is above all the most eminent, soberly to exhilarate the Spirits of us Hypochondriacal Islanders, and by a specific quality to chase away that unsociable Spleen, without excess; the very Blossome of the Fruit perfumes, and purifies the Ambient Air, which (as M. Beale well observes in his Hereford-shire Orchards) is conceiv'd conduces so much to the constant Health and Longevity, for which that Country has been always celebrated, fencing their Habitations and sweet Recesses from Winds, and Winter-invasions, the heat of the Sun, and his unsufferable darts: And if (saith he) we may acknowledge grateful trifles, for that they harbour a constant Aviary of sweet Singers, which are here retain'd without the charge of Italian wires: To which I cannot but add his following option, That if at any time we are in danger of being hindred from Trade in Foreign Countries, our English Indignation may scorn to feed at their Tables, to drink of their Liquors, or otherwise to borrow or buy of Them, or of any their Confederates, so long as our Native soyle does supply us with such excellent Necessaries.

Nor is all this produc'd to redeem the Liquor from the superstition, prejudice, and opinions of those Men who do so much magnifie the juice of the Grape above it: If Experiments from undeniable success (in spite of Vintners, and Bauds to mens Palats) were sufficient to convince us, and reclaim the vitiated; or that it were possible to dispute of the pleasantness, riches, and præcedency of Drinks and Diets, and so to provide for fit, competent, and impartial Judges; when by Nature, Nation, or Climate (as well as by Custom and Education) we differ in those Extreams.

Most parts of Africa, and Asia prefer Coffee before our Noblest Liquors; India, the Roots and Plants before our best Cook'd Venison; Almost all the World crude water, before our Country Ale and Beer; and we English being generally more for insipid, luscious, and gross Diet, then for the spicy, poignant, oylie, and highly relish'd, (witness our universal hatred of Oyls, French-wine, or Rhenish without Sugar; our doating on Currans, Figgs, Plum-pottage, Pies, Pudding, and Cake) renders yet the difficulty more arduous. But to make good the Experiment.

About thirty years since one M. Taylor (a person well known in Hereford-shire) challeng'd a London-Vintner (finding him in the Country) That he would produce a Cider which should excel his best Spanish or French-wine: The Wager being deposited, He brings in a good Red-strike to a private House: On that Scene, all the Vintner could call to be Judges pronounce against his Wine; Nor would any man there drink French-wine (without the help of Sugar) nor endure Sack for a full draught; and to Those who were not accustomed to either, the more racy Canaries were no more agreeable then Malaga, too luscious for the repetition. But this Wager being lost, our Vintner renews his Chartel, upon these express terms, of Competent and Indifferent Arbitrators: The Gentleman agrees to the Articles; and thus again after mutual engagements it must be debated who were Competent Judges, and absolutely Indifferent. M. Taylor proposes Three, whereof the odd Number should by Vote determine: They must be of the fittest Ages too, or rather the fittest of all Ages, and such as were inur'd neither to Cider nor any Wine; and so it was agreed. The Judges convene; viz. A Youth of ten years old, a Man of thirty, and a Third of sixty; and by All these also our Vintner

lost the Battel. But this is not enough; 'Tis assay'd again by Nine Judges, the Ternary thrice over; and there 'tis lost also. And here I will conclude; for I think never was fairer Duel; nor can more be reasonably pretended to vindicate this Blessing of God, and our Native Liquor from their contempt, and to engage our Propagators of it.

Tot venificiis placere cogitur, & miramur noxium esse Vinum?
Plin.
As 'tis most ingeniously cited by Dr Charleton, in his excellent Discourse of the Adulterations of Wine, entered into the Register of the Royal Society; and (with those other most useful Pieces subjoyn'd) worthy to be published.

To sum up all: If Health be more precious then Opinion, I wish our Admirers of Wines, to the prejudice of Cider, behold but the Cheat themselves; the Sophistications, Transformations, Transmutations, Adulterations, Bastardizings, Brewings, Trickings, and Compassings of this Sophisticated God they adore; and that they had as true an Inspection into those Arcana Lucifera, which the Priests of his Temples (our Vintners in their Taverns) do practise; and then let them drink freely that will; *Αγετω υδω' υδω' — Give me good Cider.*

It is noted in our Aphorisms how much this Beverage was esteemed by His late Majesty, and Court, and there referr'd to all the Gentry of the invironing Country, (no Strangers to the best Wines) when for several Summers in the City of Hereford (so encompass'd with Store of it, and brought thither without charge, or extraordinary subductions) it was sold for sixpence the Wine-quart, not for the scarcity, but the excellency of it: And for the Red-strake, that it has been seen there hundreds of times (with vehement and engaged competition) compar'd with the Cider of other the most celebrated Fruit, when after a while of vapour, no Man stood for any other Liquor in comparison.

But it is from these Instances (may some say) when the World shall have multiplied Cider-Trees, that it will be time enough to give Instructions for the right Pressing, and Preserving of the Liquor. The Objection is fair: But there are already more Persons better furnish'd with Fruit, then with Directions how to use it as they should; when in plentiful years so much Cider is impair'd by the ignorant handling, and becomes dead and sour, that many even surfeit with the Blessing; it being rarely seen in most Countries, that any remains good, to supply the defects of another year; and the Royal Society would prevent all this hazard by this free Anticipation.

It now remains, that I should make some Apology for my self, to extenuate the tumultuary Method of the ensuing Periods. Indeed it was not intended for a quaint or elaborate piece of Art; nor is it the design of the Royal Society to accumulate Repetitions when they can be avoyded; and therefore in an Argument so much beaten as is that of dressing the Seminary, Planting, and modes of Graffing, it has been with Industry avoyded; such rude, and imperfect draughts being far better in their esteem (and according to my Lord Bacon's) then such as are adorn'd with more pomp, and ostentous circumstances, for a pretence to Perfection. The Time may come when the richness, and fullness of their Collections may worthily invite some more Industrious Person to accomplish that History of Agriculture, of which these Pieces (like the limbs of Hippolytus) are but scattered parts: And it is their greatest ambition for the Publique Good, to provide such Materials, as may serve to Raise, and Beautifie that most desirable Structure.

EVELYN.

POMONA.

CHAP. I.

Of the Seminary.



WE had not the least intention to enlarge upon this *Title*, after we had well reflected on the many and accurate Directions which are already published, as well in our *French-Gardiner*, as in sundry other *Treatises* of that nature, had not a most worthy *Member* of the *Royal Society* (to whom we have infinite Obligations) furnish'd us with some things very particular and remarkable, in order to the *improvement* of our *Seminaries*, *Stocks*, &c. which are indeed the very *Basis* and *Foundation* of *Cider-Orchards*. It is from those precious *papers* of *his*, and of some *others* (whose *Observations* also have richly contributed to this *Enterprize*) that we shall chiefly entertain our *Planter* in most of the following *Periods*.

Mr. Beale of
Yeavil in
Somersetshire.

Mr. Buckland.

Whosoever expects from the *kernel* of a rich or peculiar *Apple* or *Pear* to raise *Fruit* of the *same kind*, is likely to find many obstructions and disappointments: For the *Wilding*, (*Crab* or *Pear*) *Pomus Sylvestris*, being at the best the natural product of the soundest *kernel* in the firmest land, and therefore the gust of the *Fruit* more strongly austere, fierce, and sharp, and also the *Fruit* less and more woody; and the pleasanter or plumper and larger *Apple* being the effect of some inteneration, which inclines to a kind of rebatement of the natural strength of the *Tree*; the best choice of *kernels* for *Stocks* indefinitely, (and on which we may graff what we please) should be from the soundest *Wilding*. For,

A *kernel* taken from any *graffed-Apple*, as *Pepin*, *Pear-main*, &c. does most naturally propend to the wildness of the *stock* on which 'twas inserted, as being the natural mother of the *kernel*, which is the very heart of the *Apple*; and also from a more deep and secret *Reason*, to be hereafter unfolded.

Apples and *Pears* requiring rather a vulgar and ordinary *Field-land*, than a rich *Garden-mould*, (as has been often experienced by frequent *Observations*) it has been found that *kernels* sowed in a very high *compost*, and rank earth, have produced (*large* indeed) but *insipid* *Fruit*, hastily rotting on the *Trees*, before all the parts of it were mature. *Vid. Apor. 33.*

And sometimes when they seem'd in outward *figure* to bear the shape of *graffed Apples*, from whence the *kernels* came, yet the gust did utterly deceive, wanting that vivacity and pungent agreeableness.

B

If

If the *kernels* of natural *Apples* (or of *ungrafted Trees*) should produce the same, or some other variety of *Apples*, (as sometimes it succeeds) yet would this care be seldom *operæ pretium*, and at best but a work of *Chance*, the disappointment falling out so often through the fickleness of the *Soil*: Or admit *that* the most proper and constant, yet would the very *dews* and *rain*, by various and mutable Seasons, and even by the *Air* it self, (which operates beyond vulgar perception, in the very changes as well of the *mould*, as of the *seeds* and *fruit*) create almost infinite alterations: And the choice having been in all places (apparently for some *thousands* of years) by propagating the most delicate of *Fruits* by the *Graffs*, 'tis almost a desperate task to attempt the raising of the *like*, or *better* Fruit from the rudiments of the *Kernel*.

Yet since our design of relieving the want of *Wine*, by a *Succedaneum* of *Cider*, (as lately improv'd) is a kind of *Modern Invention*, We may encourage and commend their patience and diligence who endeavour to raise several kinds of *Wildings* for the tryal of that excellent Liquor; especially since by late experience we have found, that *Wildings* are the more proper *Cider-Fruits*; some of them growing more speedily, bearing sooner, more constantly, and in greater abundance in leaner Land, much fuller of *juice*, and that more masculine, and of a more *Winy* vigour.

Thus the famous *Red-strake* of *Hereford-shire* is a pure *Wilding*, and within the memory of some now living surnamed the *Scudamores Crab*, and then not much known save in the *Neighbourhood*, &c. Yet now it would be difficult to shew that *Red-strake* which grew from a *kernel* in that whole *Tract*, all being since become *grafted Trees*. Thus 'tis also believed, That the *Blomsbery Crab* (which carries the fame in some parts of *Glocester-shire*) and many of the *White Musts*, and *Green Musts*, are originally *Savages*; as now in *Somerset-shire* they have a generous *Cider* made of promiscuous *kernels*, or *ungrafted Trees*, which fills their confidence that no other *Cider* does exceed it; and 'tis indeed strong, and sufficiently heady.

Nor dare we positively deny, but that even the best of our *Table-fruit* came also originally from the *kernel*: For though it be truly noted by my *L. Bacon*, *That the Fruit does generally obey the Graff, and yields very little to the Stock*; yet some little it does.

The famous *Bezy de Hery*, an excellent *Musky Pear*, was brought into the best *Orchards* of *France* from a *Forest* in *Bretainy*, where it grew *wild*, and was but of late taken notice of.

But now to the deep *Reason* we lately threaten'd: We have by an Experiment found some neer affinity between the *Kernel* of the *Apple* and the *heart* or interior of the *Stock*: For I saw (says M^r *Beale*) an old rotten *Kernel-Tree* bearing a delicate *Summer-fruit*, yielding *store* of *smooth Cider*, ('tis call'd the *French-Kernel-Tree*, and is also a *Dwarf*, as is the *Red-strake*;) and examining divers *Kernels*, many years successively, of that hollow and decayed *Tree*, I found them always very small of growth, and empty, meer *skins* of *Kernels*, not unlike to the *emasculated Scrotum* of an *Eunuch*; another

ther younger Tree, issuing from the sounder part of a Root of the same old Tree, had full and entire Kernels.

And from some such Observation might the production of *Berberies*, &c. without *stones*, be happily attempted; an Instrument fitted to take out the *marrow* or *pith* of the *Branches*, (as the same Mr *Beale* perform'd it;) for from the *numerical* Bulb of that *Fruit* he found *some* Branches produce *Berberies* that had no *stones*, others which had; and in searching for the *cause* of the *effect*, perceived, that the *pith* or *heart* was taken from the *radicat*, or main *Branches*, as the other was full of *pith*, and consequently the *fruit* in perfection; of all which (he writes me word) he made several tryals on other *fruit*, but left the place before he could see the event. But he adds;

These many years (almost twenty) I have yearly tri'd Kernels in Bedds of clean Earth, Pots and Pans, and by the very leaves (as they appear'd in first springing for one moneth) I could discern how far my Essays had civiliz'd 'em: The Wilder had shorter, stiffer, brown, or fox-colour'd leaves: The more ingenuous had more tender, more spreading leaves, and approaching the lighter verdure of the Berbery leaf when it first appears. He adds,

Some Apples are call'd Rose-Apples, Rosemary-Apples, Gillyflower-Apples, Orange-Apples, with several other adjuncts, denominating them, from what Reason I know not. But if we intended to try such *infusions* upon the *Kernels* (as should endeavour to alter their *kinds*) we should not approve of the bedabbling them with such *infusions*, (for *over-moisture* would rather enervate then strengthen them) but rather prepare the *Earth* the *year* before, with such *insuccations*, and then hinder it from producing any *Weeds*, till ready for the *Kernels*, and then in dewy times, and more frequently when our *Climate* were surcharg'd with *rain*, cover the *Beds* and *Pots* with the small leaves of *Rosemary*, *Gillyflowers*, or other oderiferous *Blossomes*, and repeat it often, to the end the *dews* may *meteorize*, and draw forth their finer *Spirits*, &c. And thus also we are in this *Age* of ours provided of more vigorous *Ingredients* for *trials* then were known to the *Ancients*. Finally,

From what has been deduc'd from the *Wilding* of several parts, it may manifestly appear, how much more *congenial* some *soil* is then other, to yield the best *Cider-fruit* from the *Kernel*; and the *hazzle* ground, or quicker mould, much better then the more obstinate *clay* or ranker earth.

CHAP. II.

Of Stocks.

THe former thus establish'd, after all *humours* and *varieties* have been sufficiently wearied, we shall find the *Wilding* to be the hardiest and most proper *Stock* for the most delicate *Fruit*:

This confirm'd by *Varro*, lib. 1. cap. 40. *In quacumque arborem inferas, &c.* and 'tis with reason: However they do in *Herefordshire*, both in practice, and opinion, limit this *Rule*; and to preserve the gust of any delicate *Apple* (as of the *Pear-main*, *Quince-Apple*, *Stockin*, &c.) rather graff upon a *Gennet Moyle* or *Cyder Stock*, (as there call'd) then a *Crab-stock*; but then indeed they conclude the *Tree* lasts not so long; and 'tis observ'd, That *Apples* are better tasted from a clean, light land, &c. then from stiffer clay of the more pinguid and luxurious soil.

Thus in like manner our Master *Varro*, loco citato concerning *Pears*; *Si in Pyrum Sylvaticam, &c.* The *Wild-stock* does enliven the dull and phlegmatic *Apple*, and the *Stock* of a *Gennet-Moyle* sweeten and improve the *Pepin*, &c. or may rather seem to abate at least some *Apple* over-tart and severe.

Your *Crab-stock* would be planted about *October*, at thirty two Foot distance, and not graffed till the third *Spring* after, or at least, not before the *second*.

But if your design be for *Orchard* only, and where they are to abide, an *interval* of sixteen Foot shall suffice, provided the ground be yearly turn'd up with the *Spade*, and the distance quadrupled where the *Plough* has priviledge; this being the most expedite for such as have no *Nursery* ground.

Crab-stocks are better then *Sets* of *Apple* *Kernels* to graff on, because they impart a more juicy and tart relish, and so are to be preferred for most sorts of *Apples*.

CHAP. III.

Of Graffs and Infitions.

MAke choice of your *Graffs* from a constant and well-bearing Branch.

And as the *Stock* hath a more verdant rind, and is capable to yield more plenty of *juice*, so let the *Graff* have more *Eyes* or *Budds*: Ordinarily three or four *Eyes* are sufficient to give issue to the *Sap*; but as well in *Apples*, and *Pears*, as in *Vines*, those *Graffs* or *Cions* are prefer'd in which the *budds* are not too far asunder, or distant from the foot thereof: And such a number of *buds* usually determining the length of the *Graff*, there may divers *Cions* be made of one *Branch*, where you cannot procure plenty of them for severals.

As to the success of *grafting*, the main *skill* is, to joyn the inward part of the *Cion* to the *sappy* part of the *Stock*, closely, but not too forceably; that being the best and most infallible way, by which most of the quick and juicy parts are mutually united, especially towards the bottome.

If the *Stock* be so big as to endanger the pinching of your *Graff*, when

when the *wedge* is drawn out of the *cleft*, let the inner side of the *Graff*, which is within the wood of the *Stock*, be left the thicker, that to the *woody* part of the *Cion* may bear the *strels*, and the *sappy* part be preserved from bruising.

Choose the straightest and smoothest part of the *Stock* for the place where you intend to *graft*: If the *Stock* be all knotty (which some esteem no impediment) or crooked, rectifie it with the fittest posture of the *Graff*.

For a *Graff* covet not a *Cion* too slender; for the *Sun* and *Wind* will sooner enforce it to wither: Yet are we to distinguish, that for *Inoculation* we take the *Bud* from a sprig of the last years shoot; and most allow that the *Cions* should also have some of the former with it, that it may be the stronger to *graft*, and abide to be put close into the *Stock*, which is thought to advance it in bearing.

In *Hereford-shire* they do frequently choose a *Graff* of several years growth; and for the *grafting* of such large *Stocks* as are taken out of the *Woods* or *Nurseries*, and fitted into rows for *Orchards*, they choose not the *Graffs* so small as in other *Countries* they require them; which has, it seems, occasion'd some complaint from them that understand not the Reason of the first branch of this Note. Once for all, The stumpy *Graff* will be found much superiour to the slender one, and make a much nobler and larger Shoot. This upon experience.

Graff your *Cions* on that side of the *Stock* where it may receive the least hurt from the *South-west* Wind, it being the most common, and most violent that blows in *Summer*; so as the *wind* may blow it to the *Stock*, not from it: And when the *Zephyres* of the *Spring* are stirring, choose that *Season* before all others for this work.

Some there are who talk of removing the *Stock* about *Christmas*, and then also *graft* it; which there be that glory they can successfully do even by the fire side, and so not be forc'd to expect a two or three years rooting of the *Stock*; But in this *Adventure* 'tis adviseable to plunge the *Graff* three or four inches deep in the *Stock*. Lastly,

Be careful that the *Rain* get not into the *clefts* of your young grafted *Stocks*: Yet it has been noted, That many old Trees (quite decay'd with an inward hollownes) have born as full burdens, and constantly, as the very soundest, and the Fruit found to be more delicate then usually the same kind from a perfect and more entire *Stock*.

Except some former case requires it, leave not your *Graffs* above four, five, or (at most) six inches of length above the *Stock*; for by the length it draws more feebly, and is more expos'd to the shocks of the *Wind*, or hurt by the *Birds*; and you shall frequently perceive the summities and tops of such young *Graffs* to be mortified and die.

Now for encouragement in transporting *Graffs* at great distance, we find that with little care (their tops uncut and unbruised) they will

will hold good, and may support the transportation by *Sea* or *Land* from *October* or *November* to the very end of *March*: See *Sir H. Plat's Offers*, Paragr. 75. To which may be added, That if the *Graff* receives no hurt by lying in the *Stock* expos'd to all rain, dews, and severities of *Winter* frosts from *December* to *Spring*, (as has been experimentally noted); then (by a stronger presumption) in oyled, or rather waxen *Leather*, it may undoubtedly escape. Some prescribe, That the *ends* shall be stuck in a *Turnip*: And many excellent *Graffers* (*Gentlemen* some of very good credit) have assured us, That the *Graffs* which seemed withered, and fit to be cast away, have proved the best when tri'd. Thus in honest *Barnaby Googes* noble *Heresbachius* you will finde it commended to gather your *Cions* in the *wane* of the *Moon*, at least ten days before you *graft* them; and *Constantine* gives this reason for it, That the *Graff* a little withered, and thirsty, may be the better received of the *Stock*: There are also other inducements for this practice, as *Simon Harwood*, pag. 4. has shew'd us; but none beyond our own *experience*, who have known *Graffs* gathered in *December* thrive and do perfectly well.

CHAP. IV.

Of Variety and Improvements.

IF any man would have *variety* of unexpected and unknown *Apples* and *Pears*, for the improvement of *Cider*, or *Palate-fruit*, there is more hope from *Kernels* rais'd in the *Nursery* (as has already been directed) than from such tryals of *graftings* as we have yet seen in present use.

But if we would recover the patience, and the sedulity of the *Antient* (of which some brief account will follow) or listen to some unusual Proposals, then may we undertake for some variety by *Institions*.

To delude none with promises, we do much rather recommend the diligence of inquiring from all *Countries* the best *Graffs* of such *Fruits* as are already found excellent for the purpose we design: As from the *Turgovians* for that *Pear* of which *Mr. Pell* gives so good and weighty informations.

But as some sorts are to be inquired after for the *Palate* and the *Table*, so 'tis now our main business to search after such as are excellent for their *Liquor*, either as more pleasant, more *winy*, or more *lasting*; of which sort the *Bosbury bare-land-Pear* excels. The *Red-strake*, *Bromebury-Crab*, and that other much celebrated *Wilding* call'd the *Oaken-pin*, as the best for *Cider*; though for sufficient reasons none of them comparable to the *Red-strake*.

But to pursue the diligence of the *Antients*, we direct the eye to a general expedient for all kinde of *varieties* imaginable, and which

which we hold far better than to present the World with a *List* of the particulars either known, or experimented: For who indeed but a *Fool* will dare to tell *Wonders* in this severe Age, and upon an *Argument* which is so environ'd with *Imposture* in most *Writers*, old or new? Much less pretend to *Experiments* which may fail to succeed by default of a happy Agent, when the *conclusion* must be, *Penes Authorem sit fides!*

And truly men receive no small discouragement from the ugly affronts of *Clowns*, and less cultivated persons, who laugh and scorn at every thing which is above their understanding: For example; *I knew a man* (writes Mr. Beale to me) *and he a most diligent Planter and Grafter, who for thirty or forty years made innumerable Essays to produce some change of an Apple by grafting: It seems he was ambitious to leave his Name on such a Fruit, if he could have obtain'd it; but always fail'd; for he perpetually made his Trials upon Crab-stocks, or such (at least) as did not greatly differ from the kind; and he ever found that the Graff would prædominate.* And how infinitely such Men having lost their own aims, will despise better *Advice*, we leave to observation.

However, let us add, That where nothing is more facile than to raise new kinds of *Apples* (*in infinitum*) from *Kernels*: Yet in that *Apple-Country* (so much addicted to *Orchards*) we could never encounter more than *two* or *three* persons that did believe it: But in other places we meet with many that, on the other side, repute *Wildings*, or (as they call them) *Kernel-fruit*, at all adventure, and without choice, to be the very best of *Cider-fruit*, and to make the most noble *Liquor*. So much does the common judgment differ in several *Countries*, though at no considerable distance, even in *matters* of visible *Fact*, and *epidemical* experience.

It was our excellent Friend Mr. *Buckland* who sent us word of one in *Somerset-shire*, who by *grafting* any *White Apple* upon an *Elm* changes the *Apple*, and particularly to a *red* colour: He directs us where we may be eye-witnesses of the proof, and also to a *Clergyman* hard by, who lost his labour in the same *Attempt*, by the perishing of the *Graffs*; so as by his *Advice* we are not over-hastily to erect *Hercules's Pillars*; and renders his *Reasons*, encouraging our *Experiments*.

To gratifie yet the *Ingenious*, instruct others, and emancipate us all from these *bastinado-Clowns*, we are furnish'd with many *Arguments* and proofs to assure a good success, at least for *variety* and *change*, if not for infinite *choice*: Two or three antient *References* being duly promis'd; namely, First,

1. That 'tis in vain to expect change of *Apples* from *grafting* upon differing *Stocks* of *Crabs*, or *Apples*.

2. In vain also are we to look for a kind *Tree* from a very much differing *Stock*; as an altered *Pear* to grow kindly on a *Crab* or *Apple-stock*, & contra. There go about indeed some *jugglings*, but we disdain to name them.

It is one thing to finde the kindest *stock* for the Improvement of any *Fruit*; as the *Crab-stock* for the delicate *Apple*, the *Wild* or *Black-*

Black-Cherry-Stock, for the *grafts* of the fairest *Cherries*; the largest *Vine*, (whose root makes best shift for relief) to accept the *Graff* of the more delicate *Vine*, &c. And another thing it is to seek the *Stock* which begets the wonder, variety, and that same transcendent and particular excellency we inquire after: For this must be at more remote distance; and we offer from the *Ancients* to shew, how it may be at any distance whatsoever: But this is salved by Sir *H. Plat's* expedient, *Paragr.* 72. viz. *If two Trees grow together, that be apt to be grafted one into another, then let one branch into another, workmanly joyning Sap to Sap.* This our *Gardiners* call *Grafting by Approach*.

But in this *Rule* he is too narrow for our purpose, and far short of old experience: As also in *Parag.* 63. where he affirms, *We may not graft a contrary Fruit thereon.* Against this we urge; That any contrary *Fruit* may be adventured, and any *Fruit* upon any fruitless *Stock* growing neer in the same *Nursery*: If it be not only affirm'd, but seriously undertaken, and experimentally proved by the sober *Columella*, in several of his *Treatises*; Turn to the eleventh Chapter of his fifth Book, (*Stephens* Edition:) *Sed cum Antiqui negaverint posse omne genus surculorum in omnem Arborem inseri, & illam quasi finitionem, qua nos paulò ante usi sumus, veluti quandam legem sanxerint, eos tantùm surculos posse coalescere, qui sint cortice, ac libro, & fructu consimiles iis arboribus quibus inseruntur, existimavimus errorem hujus opinionis discutiendum, tradendamque posteris rationem, qua possit omne genus surculi omni generi Arboris inseri.* And the example follows in a *Graff* of an *Olive* into a *Fig-stock* by *Approach* (as we call it,) which he also repeats in the twenty seventh Chapter of his Book *De Arboribus*, without altering a syllable. But possibly in this *check* at the *Ancient* he might aim at old *Varro*, whom we finde threatening no less than *Thunderbolts* and *Blasts* to those who should attempt these strange *Marriages*, and did not fort the *Graff* with the *Tree*; consult *lib.* 1. *cap.* 40. But thus you see this *Art* assum'd by *Columella* for his own invention (1500 years since) to be no news to *Varro* 200 years older; where he goes on, *Est altera species ex arbore in arborem inserendi nuper animadversa in arboribus propinquis, &c.* Though here again we may question our *Masters* nuper *animadversa* too; since before he was born *Cato* relates it as usual to *Graff* *Vines* in the manner by them prescribed, *cap.* 41. *Tertia insitio est: Terebra vitem quam inseres, &c.* Which makes us admire how the witty *Walchius* in his *Discourse De vitibus fructuariis*, pag. 265. could recount the *grafting* of *Vines* amongst the wonders of *Modern Inventions*.

But it seems *Varro* and his *Contemporaries* did extend the practice beyond *Cato*; and *Columella* proceeded further then *Varro*, even to all sorts of *Trees*, however differing in nature, quality, barke, or season: And then *Palladius* assumes the result, and gives us the particulars of the success in his *Poem, De Insitionibus*. And to these four as in chief (no phantastical or counterfeit persons) we refer the *Industrious*.

But

But be pleas'd to take this note also : As soon as your *Graff* hath prosper'd a *second*, or at farthest a *third* years growth, take it off the *Stock*, and then graff it upon a *Stock* of a more *natural* kind : For in our own *Trials* we have found a *graff* prosper the second year exceeding well ; yet the third the whole growth at once blasted quite to the very *Stock*, as if *Varro's* Augurs had said the word.

To this add, the making use of such *Stocks* as in this *Experiment* may contribute some special aid to several kinds of humane *Infirmities* : As suppose the *Birch* Tree for the *Stone*, the *Elm* for *Fevers*, &c.

Moreover, To *graff* rather the *Wilding*, or *Crab*, then the *Pepin*, because the *Wilding* is the more natural ; and *Nature* does more delight in *prografs*, then to be *Retrograde* and go backwards.

I should also expect far more advance from a more *pungent sap*, then from *Inspid* ; as generally we see the best and vigorous *juices* to salute our *Palats* with a more agreeable *piquancy* and tartness ; for so we find the relish of the *Stocking-Apple*, *Golden Pepin*, *Pearmain*, *Eliot*, *Harvy*, and all (but *Russetings* and *Greenings*) to be more poignant then of others.

But we must note from *Palladius*, That the *Ancients* had the success which we all, and particularly Sir *H. Plat* does so frequently deny, as in the particular of *graffing* the *Apple* on the *Pear*, & *contra*. Let us hear him *de Pomo*.

*Insita proceris pergit concrefcere ramis,
Et sociam mutat malus amica Pyrum :
Sique feros sylvis hortatur linguere mores,
Et partu gaudet nobiliore frui.*

Pallad. de Infitionib. lib. 14.

And this will shew us, That *Virgil*, and *Columella*, in several of his wonderfull Relations of these kinds of mixture, (which but for the prolixity we might now recite) did not so far affect *Wonders* as to desert the truth.

You may also observe, That as well the *French Gardiner*, and our *Modern Planters*, have found more benefit from the *Stock* of the *Quince* then old *Palladius* did, it seems, discern.

*Cum praestet cunctis se fulva cydonia pomis,
Alterius nullo creditur hospitio.
Roboris externi librum aspernata superbit,
Scit tantum nullo crescere posse decus.
Sed propriis pandens cognata cubilia ramis,
Stat, contenta suum nobilitare bonum.*

Pallad. de Malo Cydonio.

Lastly, We did by unexpected chance find the facility of *graffing* the very youngest *stocks*, even of one years growth, by the *Root* : At a second removal of the *Stocks* (being then of two years growth)

growth) we observed some *Roots* so fast closed together into one, as not to be divorced: Hereupon we concluded, If casualty, or negligence, chance of spade, or oppression of neighbourhood did this, by *Art* it might be done more effectually, and possibly to some desirable purpose; for that then the *Stock* was more apt to receive a mastering *Impression*; and any *Garden Plant* whatsoever might by this *process* interchange and mingle their *Roots*.

And thus we have presented our diligent *Ciderist* with what Observations and Arguments of Encouragement, grounded on frequent *Experience*, we have received from our most ingenious *Correspondents*, especially the Learned and truly Candid *M^r Beale*, in whose *Person* we have so long entertain'd you: And to these we could add sundry others, were it not now time (whiles we discourse of *possibilities*) to conclude with something *certain*, and to speak of what we have.

For the kinds then of *Cider-Apples* in being; *Glocester-shire* affects the *Bromsbury Crab*; It affords a smart, winy *Liquor*, and is peculiarly hardy, but not so proper for a cold and late-bearing *Climate*, it being not ripe in *hot Land* till the end of *Autumn*, nor fit to be ground for *Cider* till *Christmas*, lying so long in heaps and preparation.

It is in the same *Shire* that they likewise much esteem of the *white* and *red Must-Apple*, the sweetest as well as sowrest *Pepin*, and the *Harvy-Apple*, which (being boyl'd) some prefer to the very best of all *Ciders*.

But about *London*, and the more Southern *Tracts*, the *Pepin*, and especially the *Golden*, is esteemed for the making of the most delicious of that *Liquor*, most wholesom, and most restorative; and indeed it may (in my poor judgment) challenge those *perfections* with very good reason.

By others the *Pearmain* alone is thought to come in competition with the best; but the *Cider* is for the most part found of the weakest, unless encourag'd with some agreeable *Pepin* to inspirit it. Some commend the *Fox-Whelp*; and the *Gennet-Moyle* was once prefer'd to the very *Red-strake*, and before the *Bromsbury-Crab*; but upon more mature consideration, the very *Criticks* themselves now *Recant*, as being too effeminate and soft for a *judicious* Palate.

The *Redstrake* then amongst these accurate *Tasters* hath obtained the absolute præminence of all other *Cider-fruit*, especially in *Hereford-shire*, as being the richest and most *vinous* *Liquor*, and now with the more earnestness commended to our practice, for its celerity in becoming an *Orchard*, being ordinarily as full of *Fruit* at *ten* years growth as other *Trees* are at *twenty*; the *Pepin* or *Pearmain* at *thirty*: And lastly, from that no contemptible quality, That 'tis so wicked a *Fruit* upon the *Tree* as needs no *Præcipus* for protector, since (as beautiful as 'tis to the *eye*) it has so curst a taste in the *Mouth* till it be converted into *Cider*.

In sum, The *Red-strake* will at three years *grafting* give you fair hopes, and last almost an hundred years: And the *Gennet-Moyles*
hasten

hasten to an Orchard for Cider without trouble of Art or Graffing: But note, That this Tree is very apt to contract a bur-knot near its Trunk, where it begins to divide; and being cut off under that boss, commonly grows (if so set) and becomes speedily a Tree, except it encounter an extraordinary dry Summer the first year to give it check. And though the knack of graffing be so obvious, yet this more appearing facility does so please the lazy Clowns, that in some places they neither have nor desire any other Orchards; and how this humour prevails you may perceive by the hasty progress of our Kentish Codlin in most parts of England.

See C. Taylor's Discourse of Cider.

But to advance again our Red-strake, even above the Pepin, and the rest (besides the celerity of the improvement and constant burthen) consider we the most incredible product, since we may expect from each Apple more then double the quantity; so as in the same Orchard, under the same culture, thirty Red-strake Trees shall at ten years graffing yield more Cider then a hundred of those Pepins, and surmount them in proportion during their period at least sixty or seventy years: So that granting the Cider of the Golden-Pepin should excel, (which with some is precarious) yet 'tis in no wise proper for a Cider-Orchard, according to our general design, not by half so soon bearing, nor so constantly, nor in that quantity, nor fulness or security.

Concerning Perry, the Horse-Pear and Bare-land-Pear are reputed of the best, as bearing almost their weight of spriteful and vinous Liquor. The Experienced prefer the tawny or ruddy sort, as the colour of all other most proper for Perry: They will grow in common-fields, gravelly, wild, and stony ground, to that largeness, as one only Tree has been usually known to make three or four Hogsheads: That of Bosbury, and some others, are so tart and harsh that there is nothing more safe from plunder, when even a Swine will not take them in his mouth. But thus likewise would the abundance preserve these Fruits, as we see it does in Normandy.

Aph. 43.
Aph. 34.

CHAP. V.

Of the Place and Order.

WE do seriously prefer a very wild Orchard, as mainly intended for the publick utility, and to our purpose of obliging the People, as with a speedy Plantation yielding store for Cider: Upon this it is that we do so frequently inculcate, how well they thrive upon Arable, while the continuing it so accelerates the growth in almost half the time: And if the Arable can be so levelled, (as commonly we see it for Barly-land) then without detriment it may assume the Ornament of Cyrrus, and flourish in the Quincunx.

If it be shallow Land, or must be rais'd with high Ridges, then

'tis necessary to have more regard of planting on the *tops* of those eminencies, and to excuse the unavoydable breach of the *decussis*, as my Lord *Verulam* excuseth the defect of our humane *phantasies* in the *Constellations*, which obey the *Omnipotent* order rather then ours: Add to this the rigour of the *Royal Society*, which approves more of *plainness* and *usefulness*, then of *niceness* and *curiosity*; whiles many putting themselves to the vast chagre of levelling their grounds, oftentimes make them but the worse; since where the places are full of gaffly inequalities, there may be planted some sorts of *Cider-Fruit*, which is apt by the great burden to be press'd down to the ground, and there (whiles it hides *Irregularities*) to bear much better, and abundantly beyond belief; for so have been seen many such recumbent *Pear-trees* bear each of them *two, three, yea, even to six* or more *Hogsheds* yearly.

And for this *Cider*, whiles we prefer some sorts of *Wildings* which do not tempt the *palate* of a *Thief*, by the caution we shall not provoke any man to repent his charge from the necessity of richer and more reserv'd *Enclosures*; Though we have frequently seen divers *Orchards* succesfully planted on very poor *Arable*, and even in stony *Gleab, gravel, and clay*, and that pretty high, on the sides and declivities of *Hills*, where it only bears very short grass, like to the most ordinary *Common*, not worth the charge of *Tillage*: And yet even there the *Tenants* and *Confiners* sometimes enclose it for the *Fruit*, and find their reward, though not equally to such *Orchards* as are planted on better ground, and in the *Vallies*. Hence we suggest, That if there be no *Statute* for it, 'twere to be wished there were a *Law* which should allow *endeavours* of this nature out of the *Common-field*, to enclose for these *Encouragements*, since both the *Publick* and the *Poor* (whatever the clamour is) are advantaged by such *Enclosures*, as *Tusser* in his old Rhimes, and all indifferent observers apprehend with good reason.

True indeed it is, That all Land is not fit for *Orcharding*, so as even where to form just *Inclosures*, being either too *shallow* and *dry*, or too *wet* and *sterving*: But this (saith the judicious M^r *Buckland*) we may aver, That there are few *Parishes* or *Hamlets* in *England* where there are not some fat and deep *Headlands* capable of *Rows* of *Trees*; and that (as hath been said) the raised *Banks* of all *Inclosures* generally by the advantage of the *depth, fatness, and health* of their *Mould*, yield ready opportunitie for planting; (yea, and in many *Countries* multitudes of *Crab-stocks* fit to be grafted;) in which latter (saith he) I have frequently observed very goodly *Fruit-bearing Trees*, when in the same soil *Trees* in *Orchards* have been poor and worth nothing. To conclude,

If the soil be very bad and unkind, any other *Fruit* (which it may more freely yield without requiring much depth, and less *Sun*) may be planted in stead of *Apples*.

CHAP. VI.

Of Transplanting, and Distance.

THe most proper season for *Transplanting* is before the hard frosts of *Winter* surprize you, and that is a competent while before *Christmas*: And the main point is, to see that the *Roots* be larger then the *Head*; and the more ways that extends the better and firmer.

If the *Stock* seems able to stand on its own three or four legs (as we may call 'em), and then after settlement some stones be heaped or laid about it, as it were gently wedging it fast, and safe from winds, (which *stones* may after the second or third year be removed) it will salve from the main danger: For if the *Roots* be much shaken the first *Spring*, it will hardly recover it.

You may transplant a *Fruit-Tree* almost at any tolerable season of the *Year*, especially if you apprehend it may be spent before you have finish'd your work, having many to remove: Thus, let your *Trees* be taken up about *Allhallontide*, (or as soon as the *leaf* begins to fall); then having trimm'd and quickned the *Roots*, set them in a *Pit*, fourty, fifty, or a hundred together, yet so as they may be cover'd with mould, and kept very fresh: By the *Spring* they will be found well cured of their *wounds*, and so ready to strike root and put forth, that being *Transplanted* where they are to stand, they will take suddenly, and seldom fail; whereas being thus cut at *Spring*, they recover with greater hazard.

The very *Roots* of *Trees* planted in the ground, and buried within a quarter of an Inch, or little more, of the level of the *Bed*, will sprout, and grow to be very good *Stocks*. This and the other being Experiments of our own, we thought convenient to mention.

By the oft removal of a *Wild-stock*, cutting the ends of the *Roots*, and dis-branching somewhat of the *Head* at every change of place, it will greatly abate of its natural *wildness*, and in time bring forth more *civil* and *ingenuous* Fruit: Thus *Gillyflowers* do (by oft removals, and at *full-Moon* especially) increafe and multiply the leaves.

Plant not too deep; for the *over-turf* is always richer then the next Mould. How material it is to keep the *coast* or side of the *Stock*, as well in *Fruit-trees* as in *Forest*, we have sufficiently discuss'd; nor is the Negative to be prov'd.

For the *distance* in *Fields*, they may be set from *thirtytwo* to *sixty* See Aph. 35. Foot, so as not to hinder the *Plough*, nor the benefit of manure and soil; but in *hedg-rows* as much nearer as you please, Sun and Air considered.

CHAP. VII.

CHAP. VII.

Of the Fencing.

Seeing a *Cider-Orchard* is but a wild Plantation, best in *Arable* well enclos'd from *Beasts*, and yet better on the *Tops, Ridges*, and natural *Inequalities*, (though with some loss of *Order*, as we shew'd,) one of the greatest discouragements is the *preserving* of our *Trees* being planted, the raising of them so familiar.

We have in our *Sylva* treated in particular of this, as of one of the most material *obstacles*; wherein yet we did purposely omit one *Expedient*, which came then to our hands from the very *Industrious Mr. Buckland* to the *Learned Mr. Beal*: You shall have it in his own words.

This of Fencing single Trees useth to be done by Rails at great charges; or by Hedges and Bushes, which every other year must be renew'd, and the materials not to be had in all places neither. I therefore prefer and commend to you the ensuing form of Planting and Fencing, which is more cheap and easie, and which hath other Advantages in it, and not commonly known. I never saw it but once, and that imperfectly perform'd; but have practis'd it my self with success: Take it thus.

Set your Tree on the Green-swarth, or five or six inches under it if the soil be very healthy; if moist or weeping, half a foot above it; then cut a Trench round that Tree, two foot or more in the cleare from it: Lay a rank of the Turfs, with the grass outward, upon the inner side of the Trench towards your Plant, and then a second rank upon the former, and so a third, and fourth, all orderly plac'd, (as in a Fortification) and leaning towards the Tree, after the form of a Pyramide, or larger Hop-hill: Always as you place a row of Turfs in compass, you must fill up the inner part of the Circle with the loose Earth of the second spit which you dig out of your Trench, and which is to be two foot and half wide, or more, as you desire to mount the hillock, which by this means you will have rais'd about your Plant near three foot in height. At the point it needs not be above two foot or eighteen inches diametre, where you may leave the Earth in form of a Dish, to convey the Rain towards the body of the Tree; and upon the top of this hillock prick up five or six small Briars or Thorns, binding them lightly to the body of the Plant, and you have finish'd the work.

The commodities of this kind of Planting are,

First, Neither Swine, nor Sheep, nor any other sort of Cattel can annoy your Trees.

Secondly, You may adventure to set the smaller Plants, being thus rais'd, and secur'd from the reach of Cattel.

Thirdly, Your Trees fasten in the Hillock against violence of Winds, without Stakes to fret and canker them.

Fourthly,

Fourthly, *If the soil be wet it is hereby made healthy.*

Fifthly, *If very dry, the hillock defends from the outward heat.*

Sixthly, *It prevents the Couch-grass, which for the first years insensibly robs most plants in sandy grounds apt to graze. And,*

Lastly, *The grazing bank will recompence the nigardly Farmer for the waste of his Ditch, which otherwise he will sorely bethink.*

In the second or third year (by what time your Roots spread) the Trench, if the Ground be moist, or Seasons wet, will be neer fill'd up again by the treading of Cattel; for it need not be cleans'd; but then you must renew your Thorns: Yet if the Planter be curious, I should advise a casting of some small quantity of rich Mould into the bottome of the Trench the second year, which may improve the growth, and invite the Roots to spread.

In this manner of Planting, where the soil is not rich, the exact Planter should add a little quantity to each Root of Earth from a frequented High-way, or Yard where Cattel are kept; One Load will suffice for six or seven Trees; this being much more proper then rotted soil or loose Earth; the fat Mould best agreeing with the Apple Tree.

The broader and deeper your Ditch is, the higher will be your Bank, and the securer your Fence; but then you must add some good Earth in the second year, as before.

I must subjoyne, That only Trees of an upright growth be thus planted in open grounds; because spreading of low growing Trees will be still within reach of Cattel as they encrease: Nor have I met with any inconvenience in this kind of Transplanting, (which is applicable to all sorts of Trees) but that the Mole and the Ant may find ready entertainment the first year, and sometime impairs a weak rooted Plant; otherwise it rarely miscarries. In sum,

This manner of Fencing is soon executed by an indifferent Workman, who will easily set and guard six Trees in a Winter day. Thus far Mr Buckland: To which we shall only add, That those which are planted in the Hedg-rows need none of these defences; for (I am told) in Hereford-shire in the Plantations of their Quick-sets, or any other, all men did so superstitiously place a Crab-stock at every twenty foot distance, as if they had been under some rigorous Statute requiring it.

СМЪЛОНЧА CHAP. VIII.

Of Pruning, and Use of the Fruit-Trees.

THe Branches are to be lopp'd in proportion to the bruises of the Roots, whose fibres else should only be quickned, not altogether cut off nor intangled: For the Top, let a little of each arm be lopp'd in Cider-fruit only; but for the Pears, cut two or three buds deep at the summities of their aspiring Branches, just above

above the eye slanting; this will keep them from over-hasty mounting, reduce them into *shape*, and accelerate their bearing.

To this we add again out of Mr *Beals Hereford-shire Orchards*, pag. 23. *In a grafted plant every Bough should be lopped at the very tops, in Apples and Pears, not in Cherries and Plums.*

In a natural Plant the Boughs should not at all be lopped, but some taken off close to the Trunk, that the Root at first Transplantation be not engag'd to maintain too many Suckers. And this must be done with such discretion, that the Top-branches be not too close together; for the natural Plant is apt to grow spiry, and thereby fails of fruitfulness. Therefore let the reserved Branches be divided at a convenient roundness.

The Branches that are cut off may be set, and will grow, though slowly.

If the Top prove spiry, or the fruit unkind, then the due remedy must be in re-graffing. See Chap. xxviii. in Sylva.

Besides the Perrys, dri'd and preserv'd Fruit, useful is the Pear-Tree (and best the most barren) for its excellent colour'd Timber, (seldom or never worm-eaten) especially for Stools, Tables, Chairs, Cabinets, and very many works of the Joyner and Sculptor: And so is likewise both the Black-cherry and the Plum-Tree.

ANIMADVERSION.

IF *some of the following Discourses seem less constant, or (upon occasion) repugnant to one another, they are to be consider'd as relating to the several gusts, and guizes of persons and Countries, and not to be looked upon as recommended Secrets, much less impos'd, farther then upon Tryal they may prove grateful to the Publick, and the different inclinations of those who affect these Drinks: nor in reason ought any to decry what is propos'd for the universal Benefit; since it costs them nothing but their civility to so many obliging Persons. If the Title of Aphorisms (which indeed was intended but for the first Sheets of M^r Beale, though, by a mistake of the Printers, continu'd over the rest of the Discourses) seem to point at something more dogmatical, or arrogant; let the equal Reader please to know, that there is nothing less intended by the R. Society, then so to pronounce concerning any their most accurate Experiments; These being but occasional Papers enter'd into their Register, and thrown into this form as Repositories more apt and at hand; and because (as I said) they do not pretend to fine, and elaborate Methods, but to the Things as they may be of use, and are in their kind considerable.*


J. E.

APHORISMS

CONCERNING

CIDER:

By M^r B E A L E.

1.  HE that would treat exactly of *Cider* and *Perry* must lay his foundation so deep as to begin with the *soyl*: For as no Culture or Graffs will exalt the *French Wines* to compare with the *Wines of Greece, Canaries, and Montefiasco*; so neither will the *Cider of Bromyard and Ledbury* equal that of *Allenfmore, Ham-lacy, and Kings-Capell*, in the same small County of *Hereford*.

2. Yet the choice of the *Graff* or *Fruit* hath so much of prevalency, that the *Red-strake-Cider* will every where excel common *Cider*, as the *Grape of Frontignac, Canary, or Baccharach*, excels the common *French Grape*; at least, till by time and traduction it degenerateth.

3. I cannot divine what *Soil* or what *Fruit* would yield the best *Cider*; or, how excellent *Cider* or *Perry* might be if all *soils* in common and all *Fruit* were tried; but for *thirty years* I have tried all sorts of *Cider* in *Hereford-shire*, and for three years I have tried the best *Cider* in *Somerset-shire*; and for some years I have had the best *Cider* of *Kent* and *Essex* at my call; yet hitherto I have always found the *Cider* of *Hereford-shire* the best, and so adjudged by all good *Palates*.

4. I cannot undertake to particularize all kind of *Soil*, no more than to compute how many *syllables* may be drawn from the *Alphabet*; the number of *Alphabetical Elements* being better known than the *Ingredients* and *Particles* of *Soil*, as *Chalk, Clay, Gravel, Sand, Marle*, (the tenacioufness, colour, and innumerable other qualities, shewing endless diversities,) and the *Fruit* of *Crabs, Apples, and Pears*, being as various as of *Grapes, Figs, and Plums*.

5. Yet in gross, this I note; That as *Eacchi amant colles*, and a light ground, so our best *Cider* comes from the hot *Rie-lands*: In fat *Wheat-land* it is more sluggish; and in white, stiff *Clay-land* (as in *Woollhope* in *Hereford-shire*) the common *Cider* retains a thick whey-colour, and not good: Only such as emergeth there

D

(by

(by the diligence of some *Art* of the *Inhabitants*) is bright and clear, and so lively, that they are apt to challenge the best.

6. Some *Cider* mixeth kindly with *Water* in the *Cider-mill*, and will hold out a good small *Wine*, and less inflaming, all the following *Summer*. Some *Cider* (as of *Longhope*, a kind of four *Woodland* Country of *Herefordshire*) will not bear any mixture of *Water*, but soon decay, and turn more harsh and sour: And thus we noted in *France*, some coarse *Wines* stuck like paint on the *Glass*, unwilling to incorporate with the *Water*: *Vin d' Aye*, and other delicate *Wines*, did spread themselves more freely, as *gold* is more *ductile* than baser *metals*.

7. Some would, for a fit, extol the *Cider* of *Pearmains*, some of *Pepins*; (and of *Pepins* I have found a congenial *Liquor*, less afflicting *splenetic* persons, as in mine own experience I conceived:) And *S^r Henry Lingen* once extolled the *Cider* of *Eleots* (as richly bedewing the *Glass* like best *Canaries*;) and full *Hogsheads* of the *Stocking-Apple* have been tried amongst us, but disappointing our expectation, though perhaps by evil ordering: Yet *M^r Gritten* highly boasted a Mixture of *Stocking-Apples* and *May-Pears*, tried (as I take it) by himself: After many years trial of those and many other kinds, the *Redstrake* carried the common fame, and from most of those reduced admirers. The *Gennet-Moyl Cider* was indeed more acceptable to unskilful and tender *Palats*; and it will require *Custom* and *Judgment* to understand the preferency of the *Red-strake*, whose mordicant sweetness most agreeably gives the farewell, endearing the relish to all understanding *Palats*; which both obliges, whets, and sharpens the *stomach* with its masculine and *winy* vigour; and many thousands extol it for exceeding the ordinary *French-Wine*: But grant it should not be so strong as *Wine*; let me ask how many sober persons abroad addict themselves to meer *Wine*? Then compare *this* with diluted *Wine*, as usually for temperate men, and then let the trial be made, whether the *Pepin-Cider* or *Red-strake* will retain the *winy* vigour in greater proportion of *Water*. Add to this, That they commonly mingle *Water* in the *Press* with *Apples* (a good quantity) whiles they grinde the *Apple*; and the *Water* thus mixed, at that time, does so pleasingly incorporate in the grinding, fermentation, and maturity of *Vesselling*, that 'tis quite another and far more pleasant thing than if so much or half so much *Water* were mingled in the *Cup* at the drinking time; as *Salt* on the *Trencher* will not give *Beef*, *Porke*, or *Neats-tongue*, half that same relish which duly *powder'd* and timely season'd.

8. I did once prefer the *Gennet-moyl Cider*, but had only the *Ladies* on my side, as gentler for their sugary *palats*, and for one or two sober draughts; but I saw cause to recant, and to confess the *Red-strake* to warm and whet the *Stomach*, either for *meat* or more *drink*.

9. The right *Cider-fruit* is far more *succulent*, and the *Liquor* more easily divides from the *pulpe* of the *Apple*, than in best *Table-fruit*, in which juice and the pulp seem friendly to dissolve together on the tongues end.

10. The Liquor of best *Cider-fruit* in the *Apple*, in best season of ripeness, is more brisk and smart than that which proves duller *Cider*: And generally the fiercest *Pears*, and a kind of tamer *Crabs*, (and such was the *Red-strake* called in my memory) makes the more winy *Cider*.

11. *Palladius* denieth *Perry* to bear the heat of *Summer*; but there is a *Pear* in *Bosbury*, or thereabouts, which yields the *Liquor* richer the *second* year than the *first*, and so by my experience very much amended the *third* year: They talk much higher; but that's beyond my account.

12. As *Cider* is for some time a sluggard, so by like care it may be retained to keep the *Memorials* of many *Consuls*; and these smoaky bottles are the *nappy Wine*. My Lord *Scudamore* seldome fails of three or four years; and he is nobly liberal to offer the *Trial*.

13. As *red Apples*, so *red Pears* (and amongst them the *red Horse-pear* next to the *Bosbury*) have held out best for the stomach and durance: But *Pears* do less gratifie the stomach than *Apples*.

14. The season of grinding these *harsh Pears* is after a full maturity, not till they have dropt from the *Tree*, and there lain under the *Tree*, or in heaps, a *week*, or thereabouts.

15. And so of *Cider-Apples*, as of *Grapes*, they require full maturity, which is best known by their natural *fragrancy*; and then also, as ripe *Grapes* require a few mellowing days, so do all *Apples*, as about a week or little more, so they be not bruised, which soon turns to rottenness; and better sound from the *Tree* than rotten from the heap.

16. That due maturity, and some rest on the heap, does make the *liquor* taste rather of *Apples* than *winy*, hath no more truth, (if the *Cider* be kept to fit age) than that very *old cheese* doth taste of a *Posset*.

17. The harsher the *wild-fruit* is, the longer it must lye on heaps; for of the same fruit, suddainly ground, I have tasted good *Ver-juice*; being on heaps till neer *Christmas*, all good fellows called it *Rhenish-wine*.

18. The *Grinding* is somewhat considerable, rather too much than too little; here I saw a *Mill* in *Somersetshire* which grinds half a *Hoghead* at a *grist*, and so much the better ground for the frequent rolling.

19. Soon after *grinding* it should be *prest*, and immediately be put into the *Vessel*, that it may ferment before the *spirits* be dissipated; and then also in fermenting time the *Vent-hole* should not be so wide as to allow a prodigal waste of the *spirits*; and as soon as the ferment begins to allay, the *Vessels* should be filled of the same, and well stopped.

20. Of late 'tis much commended, that before it be *prest* the *Liquor* and *Must* should for four and twenty hours ferment together in a *Vat* for that purpose, covered, as *Ale* or *Beer* in the *Test-vat*, and then tunned up. This is said to enrich the liquor, and to give it somewhat of the *tincture* of some *red Apples*, as I have seen, and very well approved.

21. As *Sulphur* hath some use in *Wines*, so some do lay *Brimstone* on a ragge, and by a *wire* let it down into the *Cider-vessel* and there fire it; and when the *Vessel* is full of the *smoak* the liquor speedily poured in ferments the better. I cannot condemn this, for *Sulphur* is more kind to the *Lungs* than *Cider*, and the impurity will be discharged in the ferment.

22. *Apples* over-long hoarded before grinding will for a long time hold the liquor *thick*; and this liquor will be both pleasant, and as I think, wholesome; and we see some rich *Wines* of the later *Vintage*, and from *Greece*, retain a like crassitude, and they are both *meat* and *drink*.

23. I have seen thick harsh *Cider* the second *Summer* become clear and very richly pleasant; but I never saw clear *acid Cider* recover.

24. *Wheat* or *Leven* is good and kind in *Cider*, as in *Beer*; *Juniper-berries* agree well and friendly for *Coughs*, weak *Lungs*, and the aged, but not at first for every *Palate*: The most infallible and undiscerned improver, is *Mustard* a *Pint* to each *Hogshead*, bruised, as for sauce, with a mixture of the same *Cider*, and applied as soon as the *Vessel* is to be closed after fermenting.

25. *Bottling* is the next improver, and proper for *Cider*; some put two or three *Raisins* into every *Bottle*, which is to seek aid from the *Vine*. Here in *Somersetshire* I have seen as much as a *Wal-nut* of *Sugar*, not without cause, used for this *Country Cider*.

26. *Crabs* do not hasten the decay of *Perry*, but preserve it, as *Salt* preserves *flesh*. But *Pears* and *Crabs* being of a thousand kinds require more *Aphorismes*.

27. Neither *Wheat*, *Leven*, *Sulphur*, nor *Mustard*, are used but by very few; and therefore are not necessary to make *Cider* last well, for two, three or four years.

28. The time of drawing *Cider* into *Bottles* is best in *March*, it being then clarified by the *Winter*, and free from the heat of the *Sun*.

29. In drawing, the best is neerest the *heart* or middle of the *Vessel*, as the *Telk* in the *Egge*.

30. *Red-straks* are of divers kinds, but the name is in *Herefordshire* appropriated to one kind, which is fair and large, of a high purple colour, the smell *Aromatical*, the *Tree* a very *shrub*, some bearing a full burthen, and seldom or never failing till it decays, which is much sooner then other *Apple-trees*. 'Tis lately spread all over *Herefordshire*; and he that computes speedy return, and true *Wine*, will think of no other *Cider-apple*, till a better be found.

31. I said the *Red-strake* is a small *shrub*, 'tis of small growth where the *Cider* proves richest, for ought we have yet seen in *Herefordshire*, viz. in light quick land; and if the *Land* be very dry, jejune and shallow, that and other *Cider-fruit* (especially the *Gennet-moyle*) will suspend the store of fruit alternatively every other year; except some *Blasts* or surprising *Frosts* in the *Spring* alter that *Method*; for two bad years seldom come together, very hardly three.

32. In

32. In good soil, I mean of *common field* (for fat land is not best for *Cider* fruit, but common arable) I have seen the Trees of good growth, almost equalling other *Cider-trees*, the *Apple* larger and seldom failing of a good *burthen*: thus in the *Vales* of *Wheat-lands*, in strong *Glebe* or *Clay*, where the *Cider* is not so much extolled: but still *Sack* is *Sack*, and *Canary* differs from *Claret*; so does the *Red-strake-Cider* of the *Vale* excell any other *Cider* of the forcible soil.

33. Yet this distinction of *Soil* requires much *experience*, and great heed, if we insist upon accurate directions; for as *Laurenburg* saith, *in pingui solo non seruntur omnia recte, neque in macro nihil*. And for *Gardens*, *Flowers* and *Orchards*, I would chuse many times such lands as do not please the *Husbandman*, either for *Wheat* or sweet *Pasture*, which are his chief aims; and thus *Laurenburg*, *In Arida & tenui terra feliciter proveniunt Ruta, Allium, Petroselinum, Crocus, Hyssopus, Capparis, Lupini, Satureia, Thymus; Arborea quoque tenne & macilentum solum amant; itemque frutices plerique Hinduarbores, sunt Pomi, Pyri, Cerasus, Prunus, Persica, Cotonea, Mori, Juglans, Coryli, Staphylo dendrum, Mespilus, Ornus, Castanea, &c. Frutices, scil. Vitis, Berberis, Genista, Juniperus, Oxyacantha, Periclymenum, Rosa, Ribesum, Uva, Spina, Vaccinia, &c.*

34. But here also we must distinguish, that *Pears* will bear in a very *stony, hungry, gravelly-land*, such as *Apples* will not bear in; and I have seen *Pears* bear in a tough binding hungry *Clay*, when *Apples* could not so well bear it (as the smooth rinds of the *Pear-trees*, and the *Mossie* and *cankered rinds* of the *Apple-trees* did prove) the *root* of a *Pear-tree* being it seems more able to pierce a *stony* and *stiff ground*. And *Cherries*, *Mulberries* and *Plums*, can rejoice in a richer soil, though by the smallness of the *Roots*, the shallower soil will suffice them. And *Quinces* require a deeper ground, and will bear with some degrees of hungry land, if they be supplied with a due measure of *succulency*, and neighbouring moisture; and the other *shrubs*, according to the smallness of their *roots*, do generally bear a thinner land. I have seen a *soil* so much too rank for *Apples* and *Plums*, that all their fruits from year to year were always *worm-eaten*, till their lives were forfeited to the fire.

35. To take up from these *Curiosities*, the most useful result to our purpose; we have always found these *Orchards* to grow best, last longest, and bear most, which are frequently tilled for *Barley*, *Wheat* or other *Corn*, and kept (by *Culture* and seasonable rest) in due strength to bear a full *crop*. And therefore, whereas the *Red-strake* might otherwise without much injury be planted at *fifteen* or *twenty* foot distance, and the best distance for other *Cider-fruit* hath heretofore been reputed *thirty* or *two* and *thirty* foot; very good husbands do now allow in their largest *Incllosures* (as of 20 40 or 100 *Acres*) *fifty* or *sixty* foot distance, that the *Trees* may not much hinder the *Plow*, and yet receive the benefit of *Compost*; and a *Horse-teem* well governed will (without any damage or danger) plow close to the *Trees*.

36. In

36. In such soil as is here required, namely of good *Tillage*, an Orchard of grafted *Red-strakes* will be of good growth, and good burthen, within *ten or twelve years*, and branch out with good store to begin an encouragement at three years *grafting*; and (except the land be very unkind) will not yield to any decay within *sixty or eighty years*, which is a mans age.

37. In some sheets I rendered many Reasons against Mr. *Austin* of *Oxford*, why we should prefer a peculiar *Cider-fruit*, which in *Herefordshire* are generally called *Musts*; (both the *Apple* and the *Liquor*, and the *Pulpe* together in the confusion) as from the Latine *Mustum*. *White-musts* of divers kinds, *Red-cheek'd* and *Red-strak'd Musts* of several kinds, *Green-musts* called also *Green-fillet*, and *Blew-spotted*: Why, I say, we should prefer them for *Cider*, before *Table-fruit*, as *Pepins*, *Pearmains*, &c. and I do still insist on them: 1. The *Liquor* of these *Cider-fruits* and of many kinds of austere fruit, which are no better than a sort of full succulent *Crabs*, is more sprightly brisk and *winy*. For *Essay*, I sent up many bottles to *London*, that did me no discredit. Secondly, One bushel of the *Cider-fruit* yields twice or thrice as much liquor. Thirdly, The *Tree* grows more in three or four years than the other in ten years, as I oft times remarked. Fourthly, The *Tree* bears far greater store, and doth more generally escape *Blasts* and *Frosts* of the *Spring*: I might add, that some of these, and especially such *Pears* as yield the best *Perry*, will best escape the hand of the *Thief*, and may be trusted in the open field.

38. By the *first*, *second* and *fourth* of these Reasons, I must exclude the *Gennet-Moyle* from a *right Cider-fruit*, it being dry and very apt to take *frosty blasts*; yet it is no *Table-fruit*, but properly a baking fruit, as the ruddy colour from the *Oven* shews.

39. I said that the *right Cider-fruit*, generally called *Musts*, and deserving the Latine name *Mustum*, is of divers kinds; and I have need to note more expressly that there is a *Red-strak'd Must* (as I have often seen) but not generally known, that is quite differing from the famous *Red-strake*, being much less, somewhat oblong and like some of the white *Musts* in shape, and full of a very good *winy liquor*. I could willingly name the persons and place where the distinct kinds are best known: it was first shewed me by *John Nash* of *Ashperton* in *Herefordshire*; and for some years they did in some places distinguish a *Red-strake*, as yielding a richer *Red-strak'd-cider* of a more *fulvous* or *ruddy* colour; but this difference, as far as I could find, is but a choice of a better *insolated* or *ruddy* fruit of the best kind, as taken from the *south-part* of the *Tree*, or from a *soil* that renders them richer. But my Lord *Scudamore's* is safely of the best sort; and M. *Whingate* of the *Grange* in *Dimoc*, and some of *King's-capel*, do best know these and other differences, *Straked*, *Must*, *right Red-strake*, *Red-red-strake*, &c.

40. The *greenish Must*, (formerly called in the *Language* of the *Country*, the *Green-fillet*) when the *Liquor* is of a kindly ripeness, retains a *greeness* equal to the *Rhenish-glass*; which I note for them that conceive no *Cider* to be fit for use till it be of the colour of *old Sack*.

41. To

41. To direct a little more *caution*, for inquiry of the right *Red-strake*, I should give notice that some *Moneths* ago, M. *Philips* of *Mountague* in *Somerſetſhire*, ſhewed me a very fair large *Red-strake Apple*, that by ſmell and ſight ſeemed to me and to another of *Herefordſhire* then with me to be the beſt *Red-strake*; but when we did cut it and taſte it, we both denied it to be *right* (the other with much more confidence than my ſelf) but M. *Philips* making *Cider* of it, this week invited me to it, aſſuring that already it excels all *High-country-wines*. It had not ſuch plenty of juice as our *Red-strakes* with us, and it had more of the pleaſantneſs of *Table-fruit*, which might be occaſioned, for ought I know, by the richer ſoil.

42. I may now ask why we ſhould talk of other *Cider-fruit* or *Perry*, if the beſt *Red-strake* have all the aforeſaid pre-eminences of richer and more *winy liquor*, by half ſooner an *Orchard*, more conſtantly bearing, &c. An *Orchard* of *Red-strakes* is commonly as full of fruit at *ten years*, as other *Cider-fruit* at *twenty years*, or as the *Pepin* and *Pearmain* at *thirty* or thereabout.

43. But all *ſoils* bear not *Apples*; therefore for *Perry*, which is the goodlier Tree for a *Grove*, to ſhelter a houſe and walks from *Summers heat* and *Winters cold winds*, and far more *laſting*; the pleaſanteſt *Cider-pear* of a known name amongſt them, is the *Horſe-pear*. And it is much argued, whether the *White-horſe-pear*, or the *Red-horſe-pear* be the better; where *both* are beſt, within two *Miles* they differ in judgement. The *Pear* bears almoſt its *weight* of ſprightly *winy liquor*; and I always preferred the *tawny* or *ruddy Horſe-pear*, and generally *that colour* in all *Pears* that are proper for *Perry*.

44. I rejected *Palladius* againſt the durableneſs of *Perry*; his words are, *Hyeme durat, ſed prima aceſcit eſtate, Tit. 25. Febr.* poſſibly ſo of common *Pears*, and in hotter Countries; but from good *Cellars* I have taſted a very brisk lively and *winy liquor* of theſe *Horſe-pears* during the end of *Summer*; And a *Bosbury-pear* I have named and often tried, which without *bottleing*, in common *Hogſheads* of vulgar and indifferent *Cellars*, proves as well pleaſanter as richer the *ſecond year*, and yet alſo better the *third year*. A very honeſt worthy and witty *Gentleman* of that neighbourhood would engage to me that in good *Cellars*, and in careful cuſtody, it paſſeth any account of decay, and may be *heightened* to a kind of *Aqua-vitæ*. I take the information worthy the *ſtile* of our modern *improvements*.

The *Pear-tree* grows in *common fields* and wild *ſtony ground*, to the largeneſs of bearing one, two, three or four *Hogſheads* each year.

45. This *Bosbury-tree*, and ſuch generally that bear the moſt laſting *Liquor* and *winy*, is of ſuch *unſufferable taſte*, that hungry *Swine* will not *ſmell* to it; or if *hunger* tempt them to taſte, at firſt cruſh they ſhake it out of their *month*s; (I ſay not this of the *Horſe-pear*) and the *Clowns* call other *Pears*, of beſt *Liquor*, *Choak-pears*, and will offer money to ſuch as dare adventure to taſte them

them, for their *sport*; and their *months* will be more *stupified* then at the root of *Wake-robin*.

46. A row of *Crab-trees* will give an improvement to any kind of *Perry*; and since *Pears* and *Crabs* may be of as many *kinds* as there are *kernels*, or different kinds or mixtures of *soils*; in a general *Character* I would prefer the largest and fullest of all austere juices.

47. M. Lill of *Marole* (aged about 90 years) ever observed this Rule, to graff no *wild Pear-tree* till he saw the *fruit*; if it proved *large, juicy* and *brisk*, it failed not of good *Liquor*. But I see cause to say, that to graff a young tree with a riper graff, and known excellency, is a sure gain and hastens the return.

48. M. Speke (last high *Sheriff* of *Somersetshire*) shewed me in his *Park* some store of *Crab-trees*, of such huge *Bulk*, that in this fertile year he offered a *wager*, that they would yield one or two *Hogsheds* of *Liquor* each of them; yet were they small dry *Crabs*.

49. I have seen several forts of *Crabs* (which are the natural *Apple*, or at worst but the *Wild-apple*) which are as large as many forts of *Apples*, and the *Liquor* *winy*.

50. I have disclaimed the *Gust* of *Juniper-berries* in *Cider*; I tried it only *once* for *my self*, and drank it before *Christmas*: possibly in more time the rellish had been subdued or improved, as of *Hops* in *stale Beer*, and of *Rennet* in good *Parmafan*. Neither was the *Gust* to me otherwise unpleasant then as *Annise-seeds* in *Bread*, rather *strange* then *odious*; and by custom made grateful, and it did hasten the *clarification*, and increase the briskness to an endless *sparkling*: thus it indulgeth the *Lungs*, and nothing more *cheap*; where *Juniper* grows a *Girl* may speedily fill her lap with the *Berries*.

If *Barbados* *Ginger* be good, cheaper, and a more pleasant preserver of *Beer*, it must probably be most kind for *Cider*: For first, of all the improvers that I could name, bruised *Mustard* was the best; and this *Ginger* hath the same quick, mordicant vigor, in a more noble and more *Aromatique* fragrancy. Secondly, *Cider* (as I oft complain) is of a sluggish and somewhat windy nature; and for some *Moneths* the best of it is chain'd up with a cold *ligature*, as we phancie the *fire* to be lock'd up in a cold *Flint*. This will relieve the *prisoner*. And thirdly, will assist the *winy* vigor for them that would use it in stead of a sparkling *Wine*. Fourthly, 'Tis a good sign of much kindness, and great friendship: it will both enliven the *ferment* for speedier maturity, and also hold it out for more duration, both which offices it performs in *Beer*.

51. *Cider* being *windy* before maturity, some that must not wait the leisure of best *Season* do put sprigs of *Rose-mary* and *Bays* in the *Vessel*; the *first* good for the *head*, and not unpleasant; the *second*, an *Antidote* against *Infections*; but less pleasant till time hath incorporated the *Tastes*.

52. And why may we not make mention of all these *Mixtures*, as well as the *Ancients* of their *Vinum Marrubii*, *Vinum Abrotonites*,
Absynthites,

Abſynthites, Hyſſopites, Marathites, Thymites, Cydonites, Myrtites, Scillites, Violaceum, Sorbi, &c.

53. And, for mixtures, I think we may challenge the *Ancients*, in naming the *Red-raſſy*; of which there is in this County a *Lady* that makes a *Bonella*, the beſt of *Summer drinks*. And more yet if we name the *Clove-july-flower*, or other *July-flowers*, a moſt gratefull *Cordial*, as it is infuſed by a *Lady* in *Staffordſhire*, of the Family of the *Devereux's*, and by ſome *Ladies* of this County.

54. I could alſo give ſome account of *Cherry-wine*, and *Wine of Plums*; their vaſt ſtore in ſome places, under a *peny* the *pound*, and their expedite growth makes it cheap enough, and as in the other, ſo in theſe, the large *Engliſh* or *Dutch* ſharp *Cherry*, and the full black, tawny *Plum*, as big as a *Walnut* (not the kind of *Heart-cherries*, nor the *Plum* which divides from the *ſtone*) make the *Wine*. Their cheapneſs ſhould recommend them to more general uſe at *Tables*, when *dryed* (an eaſie art) and then wholeſomer.

55. To return for *Red-ſtrake*; 'tis a good drink as ſoon as well fermented, or within a *moneth*, better after ſome *Froſts*, and when clarified; rich *Wine*, when it takes the colour of *old Sack*. In a good *Cellar* it improves in *Hogsheads* the ſecond year; in *Bottles* and *sandy Cellars* keeps the *Records* of late revolutions and old *Majoralties*. *Quere* the manner of laying them up in *sand-houſes*.

56. I tried ſome *Bottles* all a *Summer* in the bottom of a *Fountain*; and I prefer that way where it may be had. And 'tis ſomewhat ſtrange if the Land be neither *dry* for a *sand-houſe*, nor *fountainous* for this better expedient. When *Cider* is ſetl'd, and al-together, or almoſt *clarifi'd*, then to make it *ſpriteful* and *winy*, it ſhould be drawn into well *cork'd* and well bound *bottles*, and kept ſome time in *sand* or *water*; the longer the better, if the kind be good. And *Cider* being preſerv'd to due age, *bottl'd* (and kept in cool places, *conſervatories*, and *refrigerating* ſprings) it does almoſt by time turn to *Aqua-vitæ*; the *Bottles* ſmoak at the opening, and it catches *ſtream* ſpeedily, and will burn like *ſpirit* of *Wine*, with a fiery taſte; and it is a laudable way of trying the vigour of *Cider* by its promptneſs to *burn*, and take *fire*, and from the quantity of *Aqua-vitæ* which it yields.

57. I muſt not preſcribe to other *Palates*, by aſſerting how good *Cider* may be made, or to compare it with *Wines*: But when the late *King* (of bleſſed memory) came to *Hereford* in his diſtreſs, and ſuch of the *Gentry* of *Worceſterſhire* as were brought thither as *Prifoners*; both *King*, *Nobility* and *Gentry*, did prefer it before the beſt *Wines* thoſe parts afforded; and to my knowledge that *Cider* had no kind of *Mixture*. Generally all the *Gentry* of *Herefordſhire* do abhor all mixtures.

Yet if any man have a deſire to try *concluſions*, and by an harmleſs *Art* to convert *Cider* into rich *Canary-wine*; let the *Cider* be of the former year, *Maſculine* and in full body, yet pleaſant, and well taſted of the *Apple*: into ſuch *Cider* put a *ſpoonful*, or ſo, of the *ſpirit* of *Clary*, it will make the *Liquor* ſo perfectly to reſemble the very beſt *Canary*, that few good and exercis'd *Palates* will be able to diſtinguiſh it.

Sir P A U L N E I L's
 DISCOURSE
 O F
 CIDER.

My Lord,



N obedience to the *Commands* of this *Honourable Society*, I have at length endeavoured to give this brief *Account* of that little which I know concerning the *Ordering* of *Cider*; and in that I shall propound to my self *six* things.

First, To shew that *Cider* made of the best *Eating-apples* must needs be *once* the best; (that is to say) the pleasantest *Cider*.

Secondly, That hitherto the general opinion hath been otherwise, and that the reason of that mistake was the not apprehending the true cause why the *Pepin-cider*, &c. did not retain its sweetness, when the *Hard-apple-cider* did.

Thirdly, What is the true cause that *Pepin-cider*, used in the ordinary method, will not retain its sweetness.

Fourthly, How to cure that *evil* in *Pepin-cider*.

Fifthly, A probable conjecture, how in some degree by the same *Method* to amend the *Hard-apple-cider*, and *French-wine*.

Sixthly, That what is here propounded cannot chuse but be *wholsome*, and may be done to what degree every mans *Palate* shall wish.

Having now told your *Lordship*, what I will endeavour to do before I enter upon it, I must declare what I will not in the least pretend to do.

I. I do not pretend to any thing concerning the *planting* and *grafting* of *Trees*, &c.

Nor what *Trees* will soonest *bear* or *last* longest.

Nor what *sorts* of *Trees* are the best *bearers*, and may with least danger grow in *Common fields*.

Nor what *sort* of *fruit* will yield the greatest store of *Cider*.

Nor what *Cider* will *keep* the longest, and be the strongest, and wholesomest to *drink* constantly with *meat*.

The

The only thing I shall endeavour, being to prescribe a way to make a sort of *Cider* pleasant and quick of taste, and yet wholesome to *drink*, sometimes, and in a moderate proportion: For, if this be an *Herese*, I must confess my self guilty; that I prefer *Canary-wine*, *Verdea*, the pleasantest *Wines* of *Greece*, and the *High-country-wines* before the *harsh Sherries*, *Vin de Hermitage*, and the *Italian* and *Portugal* rough *Wines*, or the best *Graves-wines*; not at all regarding that I am told, and do believe, that these *harsh Wines* are more comfortable to the *stomack*, and a *Surfeit* of them less *noxious*, when taken; nor to be taken but with drinking greater quantities than can with safety be taken of those other pleasant *Wines*: I satisfying my self with this, that I like the *pleasant Wines* best; which yet are so wholesome that a man may drink a moderate quantity of them without prejudice.

Nor shall I at all concern my self, whether this sort of *Cider* I pretend to is so *vinous* a liquor; and consequently will yield so much *spirit* upon *Distillation*, or so soon make the *Country-man* think himself a *Lord*, as the *Hard-apple-cider* will do: nor whether it will last so long; for it is no part of my *design* to persuade the *World* to lay by the making of *Hard-apple-cider*; but rather in a degree to shew how to improve that in point of pleasantness, and that by the making and rightly ordering of *Cider* of the best *Eating-apples*; as *Golden-pepins*, *Kentish-pepins*, *Pear-mains*, &c. there may be made a more pleasant liquor for the time it will last, then can be produced from those *Apples* which I call *Hard-apples*, that is to say, *Red-strakes*, *Gennet-moyles*, the *Broomsbury-crab*, &c. which are so *harsh* that a *Hog* will hardly eat them.

Nor shall I at all meddle with the making of *Perry*, or of any mixed drink of the juyce of *Apples* and *Pears*; though possibly what I shall say for *Cider* may be aptly applied to *Perry* also.

For the *first* particular, I asserted that the best *Apples* would make the pleasantest, which in my sence is the best *Cider*; (and I account those the best *Apples*, whose juyce is the pleasantest at the time when first pressed, before fermentation) I shall need (besides the experience of the last *ten* years) only to say, that it is an undeniable thing in all *Wines*, that the pleasantest *Grapes* make the richest and pleasantest *Wines*; and that *Cider* is really but the *Wine* of *Apples*, and not only made by the same way of *Compression*; but left to it self hath the same way of *Fermentation*; and therefore must be liable to the same measures in the choice of the materials.

To my second *Assertion*, that this truth was not formerly owned by reason that in *Herefordshire*, and those Countries where they abound both with *Pepins* and *hard-apples* of all sorts, they made *Cider* of both sorts, and used them alike; that is, that as soon as they ground and pressed the *Apples* and strained the *Liquor*, they put it into their *Vessels* and there let it lye till it had wrought, and afterwards was settled again and *fined*; as not thinking it wholesome to drink till it had thus (as they call it) *purg'd* it self,

and this was the frequent use of most men in the more *Southern* and *Western* parts of *England* also. Now when *Cider* is thus used, it is no wonder that when they came to broach it, they for the most part found their *Pepin-cider* not so pleasant as their *Moyle* or *Red-strake-cider*; but to them it seemed a wonder, because they did not know the *reason* of it (which shall be my next work to make out) for till they knew the *reason* of this effect, they had no cause but to think it was the nature of the several *Apples* that produced it; and consequently to prefer the *Hard-apple-cider*, and to use the other *Apples* (which were good to eat *raw*) for the *Table*: which was an use not less necessary, and for which the *hard-apples* were totally improper.

To my *third* Assertion, which is, that in *Herefordshire* they knew not what was the true cause why their *Pepin-Cider* (for by that name I shall generally call all sorts of *Cider* that is made of *Apples* good to eat raw) was not, as they used it, so good as the *Cider* made of *hard-apples* (for by that name, for brevities sake, I shall call the *Cider* of *Moyle*, *Red-strake*, and all other sorts of *harsh Apples*, not fit to eat raw.) First, I say, for all *liquors* that are *Vinous*, the cause that makes them sometimes harder or less pleasant to the taste, then they were at the first pressing, is the too much *fermenting*: If *Wine* or *Cider* by any *accidental* cause do *ferment* twice it will be harder then if it had *fermented* but once; and if it *ferment* thrice, it is harder and worse then if it had *fermented* but twice: and so onward, the oftner it *ferments* and the longer it *ferments*, it still grows the harder. This being laid as a *foundation*, before we proceed further we must first consider what is the cause of *fermentation* in *Wine*, *Cider*, and all other *Vinous Liquors*. Which (in my poor opinion) is the gross part of the *Liquor*, which scapes in the straining of the *Cider* (for in making of *Wine*, I do not find that they use the curiosity of straining) and which is generally known by the name of the *Lee* of that (*Wine* or) *Cider*. And this *Lee* I shall, according to its thickness of parts, distinguish into the *gross Lee*, and the *flying Lee*.

Now, according to the old method of making and putting up of *Cider*, they took little care of putting up *only* the clear part of the *Cider* into their *Vessels* or *Cask*; but put them up thick and thin together, not at all regarding this *separation*; for experimentally they found that how thick soever they put it up, yet after it had thoroughly wrought or *fermented* and was settled again, it would still be clear; and perchance that which was put up the soonest after it was pressed and the thickest, would, when the *fermentation* was over, be the clearest, the briskest, and keep the longest. This made them confidently believe that it was not only not inconvenient to put it up quickly after the *pressing*, but in some degree necessary also to put it up soon after the *pressing*, so that it might have so much of the *Lee* mixed with it, that it might certainly, soon, and strongly put it into a *fermentation*, as the only means to make it *wholsome*, *clean* and *brisk*; and when it either

ther did not (or that they had reason to doubt) that it would not work or ferment strongly enough, they have used to put in *Mustard* or some other thing of like nature to increase the fermentation.

Now that which in *Cider* of *Pepins* hath been a cause of greater fermentation than in *Cider* of *hard-apples*, being both used after the former method, is this, that the *Pepins* being a softer fruit are in the *Mill* bruised into smaller particles than the harder sorts of *Apples*; and consequently more of those small parts pass the strainer in the *Pepin-cider* than in the *Cider* of *hard-apples*, which causeth a stronger fermentation, and (according to my former principle) a greater loss of the native sweetness than in that of *Hard-apple-cider*; and not only so, but the *Lee* of the *Hard-apple-cider* being compounded of greater particles than the *Lee* of the *Pepin-cider*, every individual particle is in it self of a greater weight than the particles of the *Lee* of the *Pepin-cider*; and consequently less apt to rise upon small motions, which produceth this effect; that when the fermentation of the *Hard-apple-cider* is once over, unless the Vessel be stirred, it seldom falls to a second fermentation; but in *Pepin-cider* it is otherwise: For if the gross *Lee* be still remaining with the *Cider*, it needs not the motion of the Vessel to cause a new fermentation, but every motion of the *Air* by a change of weather from dry to moist will cause a new fermentation, and consequently make it work till it hath destroyed it self by losing it's native sweetness. And this alone hath been the cause, why commonly when they broach their *Pepin-cider* they find it so unpleasent, that generally the *Hard-apple-cider* is preferred before it, although at first it was not so pleasent as the *Pepin-cider*. Yet after this mischief hath prevailed over the *Pepin-cider*, it is no wonder to find the *Hard-apple-cider* remaining not onely the stronger, but even the more pleasent tasted. This to me seems satisfactory for the discovery of the cause, why in *Heresfordshire* the *Hard-apple-cider* is preferred before the *Pepin-cider*. But perhaps it may by some be objected, that they have before the ten years, in which you pretend you found this to be the cause of spoiling the *Pepin-cider*, been in *Heresfordshire*, and tasted the best *Cider* that *Country* did afford; and yet it was not like the *Pepin-cider* they had before then tasted in other parts. To this I do answer, at present, briefly, that by some mistake, or chance, the maker of this *Pepin-cider*, which proved good, had done that, or somewhat like that, which under the next Assertion I shall set down, as a *Method* to cure the inconveniences which happen to *Pepin-cider*, by the suffering it to ferment too often, or too strongly; but till that be explained it would be improper to shew more fully what these particular accidents might possibly be, which (without the intention of those persons which made the *Cider*) caused it to prove much better than their expectation, or indeed better than any could afterwards make: they possibly assigning the goodness of that *Cider* to somewht that was not really the cause of that effect.

To justify my fourth *Affertion*, and shew a *Method* how to cure the inconveniency which happens to *Pepin-cider* by the over working, I must first take notice of some things which I have been often told concerning *Wine*, and which indeed gave me the light to know what was the *cause* which had made *Pepin-cider* that had wrought long, *hard* when it came to be *clear* again. The thing I mean, is, that in divers parts, and even in *France* they make three sorts of *Wine* out of one and the same *Grapes*; that is, they first take the *juice* of the *Grapes* without any more pressing then what comes from their own weight in the *Vat*, and the bruising they have in putting into *Vessel*, which causeth the ripest of those *Grapes* to break, and the *juice* without any pressing at all makes the pleasantest and most delicate *Wine*: And if the *Grapes* were red, then is this first *Wine* very pale. The second sort they press a little, which makes a redder *Wine*, but neither so pleasant as the first, nor so harsh as the last, which is made by the utmost pressing of the very *skins* of the *Grapes*, and is by much more harsh, and of deeper colour then either of the other two. Now I presume the *cause* of this (at least in part) to be, that in the first sort of *Wine*, which hath little of the substance, beside the very *juice* of the *Grape*, there is little *Lee*, and consequently little *fermentation*; and because it doth not work long, it loseth but little of the original sweetness it had: The second sort being a little more pressed hath somewhat more of the substance of the *Grape* added to the *juice*; and therefore having more of that part which causeth *fermentation* put with it, *ferments* more strongly, and is therefore, when it hath done working less pleasant then the first sort, which wrought less. And for the same reason the *third sort* being most of all pressed, hath most of the substance of the *Grape* mingled with the *Liquor*, and worketh the longest: but at the end of the working when it settles and is clear, it is much more harsh then either of the two first sorts. The thought of this made me first apprehend that the *substance* of the *Apple* mingled with the *juice*, was the cause of *fermentation*, which is really nothing else but an endeavour of the *Liquor* to free it self from those *Heterogeneous* parts which are mingled with it: And where there is the greatest proportion of those *dissimilar* parts mingled with the *Liquor*, the endeavour of *Nature* must be the stronger, and take up more time to perfect the *separation*: which when finished leaveth all the *Liquor* clear, and the gross parts settled to the bottom of the *Vessel*; which we call the *Lee*. Nor did this apprehension deceive me; for when I began (according to the *Method* which I shall hereafter set down) to separate a considerable part of the *Lee* from the *Cider* before it had *fermented*, I found it to retain a very great part of its original sweetness, more then it would have done if the *Lee* had not been taken away before the *fermentation*; and this not once, but constantly for *seven years*.

Now the *Method* which I used, was this: When the *Cider* was first strained, I put it into a great *Vat*, and there let it stand *twenty four hours* at least (sometimes more, if the *Apples* were more ripe then

then ordinary) and then at a *tap* before prepared in the *Vessel* three or four *inches* from the bottom I drew it into *pails*, and from thence filled the *Hogshead* (or lesser *Vessel*) and left the greatest part of the *Lee* behind; and during this time that the *Cider* stood in the *Vat*, I kept it as close covered with *bair-clothes* or *sacks* as I could; that so too much of the *spirits* might not Evaporate.

Now possibly I might be asked why I did not, since I kept it so close in the *Vat*, put it at first into the *Vessel*? To which I answer, that had I put it at first into the *Vessel*, it would possibly (especially if the *weather* had chanced to prove wet and warm) have begun to ferment before that time had been expired; and then there would have been no possibility to have separated any part of the *gross Lee*, before the *fermentation* had been wholly finished; which keeping it only covered with these clothes was not in danger: For, though I kept it warm in some degree, yet some of the *spirits* had still liberty to evaporate; which had it been in the *Hogshead* with the *Bung* only open, they would not so freely have done; but in the first 24 *hours* it would have begun to ferment, and so my design had been fully lost: For those *spirits* if they had been too strongly reverberated into the *Liquor*, would have caused a *fermentation* before I could have taken away any part of the *gross Lee*. For the great *mystery* of the whole thing lyes in this, to let so many of the *spirits* evaporate, that the *liquor* shall not ferment before the *gross Lee* be taken away; and yet to keep *spirits* enough to cause a *fermentation* when you would have it. For if you put it up as soon as it is strained, and do not let some of the *spirits* evaporate, and the *gross Lee* by its weight only to be separated without *fermentation*, it will ferment too much and lose its sweetness; and if none be left, it will not ferment at all; and then the *Cider* will be dead, flat and sowe.

Then after it is put into the *Vessel*, and the *Vessel* fill'd all but a little (that is, about a *Gallon* or thereabout) I let it stand (the *Bung-hole* being left only covered with a *paper*, to keep out any dust or filth that might fall in) for 24 *hours* more; in which time the *gross* part of the *Lee* being formerly left in the *Vat*, it will not ferment, but you may draw it off by a *Tap* some two or three inches from the bottom of the *Vessel*, and in that second *Vessel* you may stop it up, and let it stand safely till it be fit to *Bottle*; and possibly that will be within a day or more: but of this time there is no certain measure to be given; there being so many things that will make it longer, or less while before it be fit to *bottle*. As for *Example*, If the *Apples* were *over-ripe* when you stamped them, or ground them in the *Mill*, it will be the longer before it will be clear enough to *Bottle*; or if the *weather* prove to be warmer or moister than ordinary: or that your *Apples* were of such kinds, as with the same force in the stamping or grinding they are broken into smaller *particles* than other *Apples* that were of harder kinds.

Now, for knowing when it is fit to *Bottle*, I know no certain *Rule* that can be given, but to broach the *Vessel* with a small *Piercer*, and in that *hole* fit a *peg*, and now and then (two, or ^{three} times in a day)

day) draw a little, and see what fineness it is of; for when it is *bottled* it must not be perfectly *fine*; for if it be so, it will not *fret* in the *bottle*, which gives it a fine quickness, and will make it *mantle* and sparkle in the *glass* when you pour it out: And if it be too thick when it is *bottled*, then, when it hath stood some time in the *bottles* it will *ferment* so much that it may possibly either drive out the *corks*, or break the *bottles*, or at least be of that sort (which some call *Potgun-drink*) that when you open the *bottles* it will fly about the house, and be so *windy* and *cutting* that it will be inconvenient to drink: For the right *temper* of *Bottle-Cider* is, that it *mantle* a little and *sparkle* when it is put out into the *glass*; but if it *froth* and *fly* it was *bottled* too soon: Now the *temper* of the *Cider* is so nice, that it is very hard when you *bottle* it to foretell which of these two conditions it will have: but it is very easie within a few days after (that is to say, about a *week*, or so) to find its *temper* as to this point. For first, if it be *bottled* too soon; by this time it will begin to *ferment* in the *Bottles*, and in that case you must open the *Bottles*, and let them stand open two or three *minutes*, that that abundance of *spirits* may have *Vent*, which otherwise kept in would in a short time make it of that sort I called before *Pot-gun-drink*; but being let out, that danger will be avoided, and the *Cider* (without danger of breaking the *bottles*) will *keep* and *ferment*, but not too much. Now this is so easie a *remedy*, that I would advise all men rather to erre on the hand of *bottling* it too soon, then let it be too *fine* when they *bottle* it; for if so, it will not *fret* in the *bottle* at all; and, consequently, want that *briskness* which is desireable.

Yet even in this case there is a *Remedy*, but such a one as I am always very careful to avoid, that so I may have nothing (how little soever) in the *Cider* but the *juice* of the *Apple*: But the *remedy* is, in case you be put to a necessity to use it, that you open every *bottle* after it hath been *bottled* about a week or so, and put into each *bottle* a little piece of *white Sugar*, about the bigness of a *Nutmeg*, and this will set it into a little *fermentation*, and give it that *briskness* which otherwise it would have wanted. But the other way being full as easie, and then nothing to be added but the *juice* of the *Apple* to be simply the substance of your *Cider*, I chuse to prefer the error of being in danger to *bottle* the *Cider* too soon, rather than too late: Nay sometimes in the *bottling* of one and the same *Hogshead* (or other *Vessel*) of *Cider*, there may the first part of it be too *fine*; the second part *well*; and the last not *fine* enough: and this happens when it is *broached* first *above* the *middle*, and then *below*; and then when it begins to run low, *tilted* or raised at the further end, and so all drawn out. But to avoid this inconvenience, I commonly set the *bottles* in the order they were filled, and so we need not open all to see the condition of the *Cider*; but trying one at each end, and one in the middle, will serve the turn: And to prevent the inconvenience, *broach* not at all above the *middle*, nor too *low*; and when you have drawn all that will run at the *Tap*, you may be
secure

secure it is so far of the same *temper* with the first *bottle*. And then *tilt* the *Vessel*; but draw no more in three or four hours at the least after, and set them by themselves, that so, if you please, you may three or four days after pour them off into other *bottles*, and leave the *gross* behind: And by this means though you have a less number of *bottles* of *Cider* than you had, yet this will continue good, and neither be apt to *fly*, nor have a *sediment* in the *bottle*, which after the first *glass* is filled will render all the rest of the *bottle* thick and muddy.

By all this which I have said, I think it may be made out that those persons which I mentioned in the end of the last *Parragraph*, that sometimes had *Pepin-cider* better than ordinary, and indeed then they could make again, were beholding to *chance* for it; either that their *Apples* were not so full ripe at that as at other times, and so not bruised into so small parts; but the *fermentation* was ended in the *Vessel*, and the *Lee* being then *gross* settled before the *Cider* had *fermented* so long as to be hard.

Or else, by some *Accident* they had not put it so soon into the *Vessel*, but that in part it was settled before they put it up, and the grossest part of the *Lee* left out of the *Vessel*.

Or else, the *Bung* being left *open* some part of the *spirits* evaporated; and that made the *fermentation* the weaker, and to last the less time.

Or else, they put it up in such a *season* that the *weather* continued *cold* and *frosty* till the *fermentation* was quite over; and then it having wrought the less time, and with the less violence, it remained more pleasant and rich than otherwise it would have done.

Now for the *time* of making *Pepin-cider*, I chuse to do it in the *beginning* of *November*, after the *Apples* had been gathered and laid about three weeks or more in the *loft*, that so the *Apples* might have had a little time to *sweat* in the house before the *Cider* was made, but not too much; for if they be not full ripe before they be gathered, and not suffered to lye a while in the *heap*, the *Cider* will not be so pleasant; and if they be too ripe when they are gathered, or lye too long in the *heap*, it will be very difficult to separate the *Cider* from the *gross Lee* before the *fermentation* begins: and in that case it will work so long that when it *fines* the *Cider* will be *hard*; for when the *Apples* are too *mellow*, they break into so small *particles*, that it will be long before the *Lee* settles by its *weight* only: and then the *fermentation* may begin before it be *separated*, and so destroy your intention of taking away the *gross Lee*. And if the *Apples* be not *mellow* enough, the *Cider* will not be so pleasant as it ought to be.

This being said for the *time* of making the *Pepin-cider*, may (*mutatis mutandis*) serve for all other sorts of *Summer-fruit*; as the *Kentish-codling*, *Marigolds*, *Gilly-flowers*, *Summer-pear-mains*, *Summer-pepins*, *Holland-pepins*, *Golden-pepins*, and even *Winter-pear-mains*. For though they must not be made at the same *time* of the *year*, yet they must be made at the *time* when each re-

spective fruit is in the same condition that I before directed that the *Winter-pepin* should be. Nay, even in the making of that *Cider*, you are not tied to that time of the year to make your *Cider*; but as the condition of that particular year hath been, you may make your *Cider* one, two, three or four weeks later; but it will be very seldom that you shall need to begin to make *Kentish-pepin-cider* before the beginning of *November*, even in the most *Southern* parts of *England*.

The next thing I shall mention, is, the ordering of your bottles after they are filled; for in that consists no small part of causing your *Cider* to be in a just condition to drink: For, if it does ferment too much in the bottle, it will not be so convenient to drink, neither for the taste, nor wholesomeness; and if it ferments not at all, it will want that little fret which makes it grateful to most Palates. In order to this, you must observe, first, whether the *Cider* were bottled too early, or too late, or in the just time: If too early, and that it hath too much of the flying Lee in it, then you must keep it as cool as you can, that it may not work too much, and if so little that you doubt it will not work at all, or too little; you must by keeping it from the inconvenience of the external air, endeavour to hasten and increase the fermentation. And this I do, by setting it in sand to cool, and by covering the bottles very well with straw, when I would hasten or increase the fermentation.

And if I find the *Cider* to have been bottled in its just time, then I use neither, in ordinary weather; but content my self that it stands in a close and coole Cellar, either upon the ground, or upon shelves; saving in the time that I apprehend frost, I cover it with straw, which I take off as soon as the weather changeth; and consequently about the time that the cold East winds cease; which usually, with us, is in the beginning of *April*; I set my bottles into sand up to the necks. And by this means I have kept *Pepin-cider* without change till *September*, and might have kept it longer, if my store had been greater: For by that time the heats were totally over, and consequently, the cause of the turn of *Cider*.

Having now declared what is (according to my opinion) to be done to preserve *Cider*, if not in it's original sweetness, yet to let it lose as little as is possible; I shall now fall upon my fifth Assertion, which is, that it is probable that somewhat like the former Method may in some degree mend *Hard-apple-cider*, *Perry*, or a drink made of the mixtures of *Apples* and *Pears*; and not impossible that somewhat of the same nature may do good to *French-wines* also.

First, for *French-wines*, I think what I have in the beginning of this discourse declared, as the hint which first put me upon the conceit, that the over-fermenting of *Cider* was the cause that it lost of its original sweetness (*viz.* the making of three sorts of Wine, of one sort of Grapes) is a testimony that the first sort of Wine hath but little of the gross Lee, and consequently, ferments but little, nor loseth but little of the original sweetness; which makes

makes it evident that the same thing will hold in *Wine* which doth in *Cider*; but the great difficulty is (if I be rightly informed) that they use to let the *Wine* begin to ferment in the *Vat* before they put it into the *Hogsheads* or other *Vessels*; and thus they do, that the *Husks* and other *Filth* (which in the way they use, must necessarily be mingled with the *Wine*) may rise in a *skum* at the top, and so be taken off: Now if they please, as soon as it is pressed, to pass the *Wine* through a *strainer*, without expecting any such *purgation*, and then use the same *Method* formerly prescribed for *Cider*, I do not doubt but the gross part of the *Lee* of *Wines*, being thus taken away, there will yet be enough left to give it a *fermentation* in the *bottles*, or second *vessel*, where it shall be left to stand, in case you have not *bottles* enough to put up all the *Wine* from which you have thus taken away the gross *Lee*.

This *Wine* I know not whether it will last so long as the other used in the ordinary way, or not; but this I confidently believe, it will not be so harsh as the same would have been if it had been used in the ordinary way; and the pleasantness of *Taste*, which is not unwholesome, is the chief thing which I prefer both in *Wine* and *Cider*.

Now for the *Hard-apple-cider*, that it will receive an improvement by this way of ordering, hath been long my opinion; but this year an accident happened, which made it evident that I was not mistaken in this conjecture. For there was a *Gentleman* of *Herefordshire*, this last *Autumn*, that by accident had not provided *Cask* enough for the *Cider* he had made; and having six or seven *Hogsheads* of *Cider* for which he had no *Cask*, he sent to *Worcester*, *Glocester*, and even to *Bristol*, to buy some, but all in vain; and when his *servants* returned the *Cider* that wanted *Cask* had been some five days in the *Vat* uncovered; and the *Gentleman* being then dispatching a *Barque* for *London* with *Cider*, and having neer hand a conveniency of getting *Glass-bottles*, resolved to put some of it into *bottles*; did so, and filled seven or eight *Hampers* with the clearest of this *Cider* in the *Vat*, which had then never wrought, nor been put into any other *Vessel* but the *Vat*; the *Barque* in which his *Cider* came had a tedious passage; that is, it was at least seven weeks before it came to *London*, and in that time most of his *Cider* in *Cask* had wrought so much that it was much harder then it would have been if it had according to the ordinary way lain still in the *Country*, in the place where it was first made and put up, and consequently, wrought but once.

But the other, which was in *Bottles*, and escaped the breaking, that is, by accident, had less of the *Lee* in it then other *bottles* had, or was not so hard stopped, but either before there was force enough from the *fermentation* to break the *bottle*, or that the *Cork* gave way a little, and so the *air* got out; or that the *bottles* were not originally well corked, was excellent good, beyond any *Cider* that I had tasted out of *Herefordshire*; so that from this *Experience* I dare confidently say, that the using *Hard-apple-cider* after the former *Method*, prescribed for *Pepin-cider*, will make it re-

tain a considerable part of sweetness more then it can do after the *Method* used hitherto in *Herefordshire*. Nor do I doubt but my *Method* will in a degree have the same effect in *Perry*, and the drink (as yet without a name that I do know of) which is made of the juice of *Wardens*, *Pears* and *Apples*, by several persons, in several proportions; for the *Reason* being the same, I have no cause to doubt, but the effect will follow, as well in those *Drinks*, as in *Cider* and *Wines*:

I am now come to my last *Affertion*; that *Cider* thus used cannot be *unwholsome*, but may be done to what degree any mans *Palate* desires.

First, it cannot be *unwholsome*, upon the same measure that *stummed Wine* is so; for that unwholsomeness is by leaving the cause of *fermentation* in the *Wine*, and not suffering it to produce its effect before the *Wine* be drank, and it *ferments* in mans body: and not only so, but sets other *humours* in the body into *fermentation*; and this prejudiceth their *health* that drink such *Wines*.

Now though *Cider* used in my *method* should not *ferment* at all, till it come into the *bottle*, and then but a little; yet the cause of *fermentation* being in a great degree taken away, the rest can do no considerable harm to those which drink it, being in it self but little, and having wrought in the *bottle* before men drink it; nor indeed do I think, nor ever find, that it did any inconvenience to my self, or any person that drank it when it was thus used.

Secondly, because the difference of mens *palates* and *constitutions* is very great; and that accordingly men like or dislike drink that hath more or less of the *fret* in it; and that the consequences in point of health are very different, in the *method* by me formerly prescribed: it is in your *power* to give the *Cider* just as much *fret* as you please, and no more; and that by severall ways: for either you may *bottle* it sooner or later, as you please: or you may *bottle* it from two *Taps* in your *Vessel*, and that from the *higher* *Tap* will have less *fret*, and the *lower* more: or you may *bottle* your *Cider* all from one *Tap*, and open some of the *bottles* about a week after for a few *minutes*, and then stop them up again; and that which was thus stop'd will have the less *fret*: or, if your *Cider* be *bottled* all from one *Tap*, if you will (even without opening the *bottles*) you may make some difference, though not so considerable as either of the former ways, by keeping part of the *bottles* warmer, for the first two *moneths*, then the rest; for that which is kept warmest will have the most *fret*.

Sir PAUL NEILE'S second Paper.

My Lord,

THe Paper which by the Command of the *Royal Society* I delivered in the last year, concerning the ordering of *Cider*, I have by this years experience found defective in one particular, of which I think fit by this to give you notice, which is thus: Whereas in the former *Paper* I mention, that after the *Pepin-cider* hath stood 24 hours in the *Vat*, it might be drawn off into pailles, and so put into the *Vessel*; and that having stood a second 24 hours in that *Vessel*, it might be drawn into another *Vessel*, in which it might stand till it were fit to *Bottle*; for the particulars of all which proceeding I refer to the former *Paper*; and shall now only mention, That this last year we were fain to draw it off into several *Vessels*, not only as is there directed, *twice*, but most of our *Cider* five, and some *six* times; and not only so, but we were after all this fain to *precipitate* the *Lee* by some of those ways mentioned by *D^r Willis* in the 7th *Chap.* of his *Treatise De fermentatione*. Now though this be more of trouble then the Method by me formerly mentioned; yet it doth not in the least destroy that *Hypothesis* which in the former *Discourse* I laid down, (*viz.*) That it was the leaving too much of the *Lee* with the *Cider*, which upon the change of air, set it into a new *fermentation*, and consequently made it lose the sweetness; for this change by the indisposition of the *Lee* to settle this year more then others, hath not hindred the goodness of the *Cider*; but that when it was at last mastered, and the *Cider* bottled in a fit temper, it was never more pleasant and quick then this year: but I find that this year our *Cider* of *Summer-Apples* is already turned sowre, although it be now but the first of *January*; and the last year it kept very well till the beginning of *March*; which makes me fear that our *Pepin-cider* will not keep till this time twelve moneth, as our *Pepin-cider* of the last year doth till this day, and still retains its original pleasantness without the least turn towards sowreness.

And I am very confident, the difference of time and trouble, which this year we found in getting the *Cider* to *fine* and be in a condition to *Bottle*, was only the effect of a very bad and wet *Summer*, which made the *Fruit* not ripen kindly; and to make it yet worse, we had just at the time when we made our *Cider*, this year, extream wet and windy weather, which (added to the unkindliness of the *Fruit*) was the whole cause of this alteration: And however my *Hypothesis* as yet remains firm, for if by taking any part of the *Lee* from the *Cider* you can preserve it in its original sweetness, it is not at all material whether it be always to be done by twice drawing off from the *Lee*, or that it must sometimes

times be done with more trouble, and by oftener repeating the same Work, so that finally it be done, and by the same means, that is, by taking away part of the *Lee*, which otherwise would have caused too much *fermentation*; and consequently have made the *Cider* lose part of its original sweetness.

My Lord, I should not have presumed to have given you and the *Society* the trouble of perusing this Paper, but that, if possible, I would have you see, that what I think an error in any opinion that I have held, I am willing to own; and yet I desire not that you should think my mistake greater then in Reality it is.

OBSERVATIONS
 Concerning the
 Making and Preserving
 OF
 CIDER:

BY

JOHN NEWBURGH Esq;



LF the *Apples* are made up immediately from the *Tree*, they are observed to yield more, but not so good *Cider*, as if hoarded the space of a month or six weeks; and if they contract any unpleasing taste (as sometimes 'tis confes'd they do) it may be imputed to the Room they lye in, which, if it hath any thing in it either of too sweet or unfavoury smell, the *Apples* (as things most susceptible of impression) will be easily tainted thereby.

First, therefore, 'Tis observed by prudent *Fruiterers* to lay their *Apples* upon clean mere made *Reeds*, till they grind them for *Cider*, or otherwise make use of them: And if, notwithstanding this caution, they contract any rottenness before they come to the *Cider-press*, the damage will not be great, if care be had ere the *Apples* be grownd to pick out the finowed and the black-rotten; the rest, though somewhat of putrefaction hath put them into a perishing condition, will not render the *Cider* ill conditioned, either in respect of taste or duration.

Secondly, If the *Apples* be abortive, having been (as it usually happens) shaken down before the time by a violent wind, it is observed to be so indispensably necessary that they lye together in *board*, at least till the usual time of their maturity, that the *Cider* otherwise is seldome or never found worth the drinking.

Thirdly, It matters not much whether the *Cider* be forc'd to purge it self by working downward in the Barrel, or upwards at the usual vent, so there be matter sufficient left, on the top for a
 thick

thick *skin* or *film*, which will sometimes be drawn over it, as well when it works after the vulgar manner, as when 'tis presently stop'd up, with space left for fermentation, to be performed altogether within the Vessel.

Fourthly, No Liquor is observed to be more easily affected with the favour of the Vessel than *Cider*; therefore singular care is taken by discreet *Cider-Masters*, that the Vessel be not only tasteless, but also well prepared for the *Liquor* they intend to fill it with. If it be a new *Cask*, they prepare it by scalding it with *Water*, wherein a good quantity of *Apple-pomice* hath been boyled: If a tainted *Cask*, they have divers ways of cleansing it: Some boyl an ounce of *Pepper* in so much *Water* as will fill an *Hogshead*, which they let stand in a Vessel of that capacity two or three days; then wash it with a convenient quantity of *fresh water*, scalding hot, which (they say) is an undoubted cure for the most dangerously infected Vessel.

Fifthly, Others have a more easie, and perhaps less effectual remedy. They take two or three stones of *quick lime*, which with six or seven Gallons of *Water* they set on work in the *Hogsheads*, being close stop'd, and tumbling it up and down till the commotion cease, it doth the feat. Of Vessels that have been formerly used, next to that which hath been already acquainted with *Cider*, a *White-wine* or *Vinegar Cask* is esteemed the best; *Claret* or *Sack* not so good. A Barrel to which small Beer hath been tenant suits better with *Cider* than a strong Beer Vessel.

Half a peck of un-ground *Wheat* put to *Cider* that is harsh and eager will renew its fermentation, and render it more mild and gentle: Sometimes it happens, without the use of any such means, to change with the *Season*, and becomes of sharp and sour, unexpectedly benign and pleasant.

Sixthly, Two or three *eggs* put into an *Hogshead* of *Cider* that is become sharp, and near of kin to *Vinegar*, sometimes rarely lenifies and gentlizes it.

One pound of *broad figs* slit is sufficient to dulcifie an *Hogshead* of such *Cider*. A little quantity of *Mustard* will clear an *Hogshead* of muddy *Cider*. The same virtue is ascribed to two or three rotten *Apples* put into it.

The latter running of the *Cider*, bottled immediately from the wring, is by some esteemed for a pure, clear, small, well-relish'd *Liquor*; but so much undervalued by them who desire strong drinks more than wholesom, that they will not suffer it to incorporate with the first running.

Seventhly, *Cider* is found to ferment much better in mild and moist than in cold and dry weather; every ones experience hath taught him so much in the late frosty season; if it had not wrought before, it was in vain to expect its working or clearing then, unless by some of the artificial means præ-mentioned, which also could not be made use of in a more unseasonable time.

The best *Cider-fruit* with us in this part of *Dorset-shire* (lying neer to *Bridport*) next to *Pepin* and *Pearmain*, is a *bitter-sweet*, or,

as we vulgarly call them *bitter'scale*, of which for the first years *Cider* very good is made unboyld, for two years keeping; being boyld about an *Hogshead* to half, it's exceedingly strong, but not so pleafant.

Eighthly, We have few *Apples*, besides this, that yield good *Cider* alone; the next to it is a *Deans Apple*; and the *Pleasantine* I think may be mentioned in the third place; neither of which need the addition of other *Apples* to fet off the rellish, as do the rest of our choicest fruits; *Pepins*, *Pearmains* and *Gilly-flowers* commixt are said to make the best *Cider* in the world. In *Jersey* 'tis a general observation, that the more of red any *Apple* hath in his *rind*, the more appropriate to this use; pale-fac'd *Apples* they exclude as much may be from their *Cider Vat*. With us 'tis an observation, that no sweet *Apple* that hath a tough *rind* is bad for *Ciders*.

Mustard made with *sack* preserves boiled *Cider*, and spirits it egregiously: If you boil *Cider* especial care must be had to put it into the furnace immediately from the wring; otherwise, if it be let stand in *Vats*, or vessels, two or three days after the pressure, the best and most *spirituous* part will ascend and fly away in the *vapours* when fire is put under it; and the longer your boiling continues, the less of goodnes, or vertue, will be left remaining in the *Cider*.

1. One of mine *Acquaintance*, when a *Child*, hoarding *Apples* in a box where *Rosé-cakes*, and other sweet wares were, their *Companions* found them of so unflavory taste, and of so rank a rellish derived from that perfumed gear which lay too neer, that even a childish *palate* (that seldom dislikes any thing that looks like an *Apple*) could not dispense with it.

2. A *Friend* of mine having made provision of *Apples* for *Cider*, whereof so great a part of them were found rotten when the time of grinding them came, that they did as 'twere wash the room with their juice, through which they were carried to the wring, had *Cider* from them not only passable, but exceeding good; but not without previous use of the prementioned caution; I am also assured by a *Neighbour* of mine, that a *Brother* of his, who is a great *Cider Merchant* in *Devonshire*, is by frequent experience so well satisfied with the harmlesnes of rotten *Apples*, that he makes no scruple of exchanging with any one that comes to his *Cider-press*, a Bushel of *sound-apples* for the same measure of the other. Herein I suppose (if in other respects they are not prejudicial) he may be a gainer by the neer *compression* of the tainted *Fruit*; which, as we speak in our Country Phrase, will go neerer together than the other: His advantage may be the greater, if the conceit which goes currant with them, be not a bottomless fancy; that a convenient quantity of rotten *Apples* mixt with the sound is greatly assitant to the work of *fermentation*, and notably helps to clarify the *Cider*.

3. A *Neighbour* told me, that making a quantity of *Cider* with *wind-falls*, which he let ripen in the *board*, neer a moneth interceding the time of their decussion, and that which nature intended

ded for their maturity; his *Cider* proved very good, when all his *Neighbours* (who made up their untimely fruit) as soon as it fell, had a crude, austere undigested *liquor*, not worth the name of *Cider*.

4. The thick skin, or leathern-coat, the *Cider* oftentimes contracts as well after it hath purged it self after the usual manner, as otherwise, is the surest preservative of its spirits, and the best security against other inconveniences incident to this and other like vinous liquors, of which the *Devonshire Cider Merchants* are so sensible, that besides the care they take, that matters be not wanting for the *Contexture* of this upper garment by stopping up the vessel as soon as they have filled it (with the allowance of a Gallon or two upon the score of fermentation) they cast in *Wheaten-bran*, or dust, to thicken the coat, and render it more certainly air proof. And I think you will believe their care herein not impertinent, If you can believe a story which I have to tell you of its wondrous efficacy: A neer *Neighbour* of mine assures me, that his *Wife* having this year filled a barrel with *Mead*, which being somewhat strong wrought somewhat boisterously in the vessel, that the good-woman casting her eye that way accidentally, found it leaking at every chink, which ascribing to the strength of the *liquor*, she thought immediately by giving it vent to save both the *liquor* and the vessel; but in vain, both the stopples being pulled out the leakage still continued, and the vessel not at all relieved: till casually, at length putting in her finger at the top, she brake the prementioned film; which done, a good part of the *Mead* immediately flying out, left the residue in peace, and the leakage ceased. It may seem incredible that so thin a *skin* should be more coercive to a mucinous *liquor* than a *Barrel* with *Oaken* ribs, and stubborn *hoops*. But I am so well assured of the veritableness of my *Neighbours* relation, that I dare not question it. The reason of it let wise men determine.

5. A *Friend*, and *Neighbour* of mine, herewith cured a vessel of so extream ill favour as it was thought it would little less then *poysen* any *liquor* that was put into it.

6. A *Neighbour* of my acquaintance assured me, upon his credit, that coming into a *Parsonage* house in *Devonshire*, where he found eleven *Hogsheads* of *Cider*, being unwilling to sell what he ne'er bought, he was three years in spending that store which the former *Incumbent* had laid in for him: and it greatly amazed him (as well it might, if he remembered the old Proverb, *He mends as sowre Ale in Summer*) to find the same *Cider* which in *Winter* was almost as sharpe as *Vinegar*, in the *Summer* become *potable*, and good natured *liquor*.

7. In *Devonshire*, where their wrings are so hugely great that an *Hogshead* or two runs out commonly before the *Apples* suffer any considerable pressure, they value this much what before the other, after the rate which we set upon *life-honey* (that which after the same manner drops sweetly out of the *Comb*;) above that which renders not it self without *compression*. In *Jersey* they value

value it at a *crown* upon an *Hoghead* dearer then the other. (This I take from the relation of one of my *Neighbours* which sometimes lived in that *Island*, which (for *Apples*, and *Cider*) is one of the most famous of all belonging to his *Majesties* Dominions) yet even upon this, and their choicest *Ciders*, they commonly bestow a pail of *water* to every *Hoghead*, being so far (it seems) of *Pindars* mind, that they fear not any prejudice to their most excellent *liquors* by a dash of that most excellent *Element*. Infomuch that it goes for a common saying among them, that if any *Cider* can be found in their *Island* which can be prov'd to have no mixture of *water*, 'tis clearly forfeited. It seems they are strongly conceited that this addition of the most useful *Element* doth greatly meliorate their *Cider*, both in respect of *colour*, *taste*, and *clarity*.

8. About seven years since I gave my self the experience of bitter *scale-cider*, both crude, and boiled; I call'd them both to an account at *twelve moneths* end: I then found the crude *Cider* seemingly as good, if not better then the boiled: But having stop'd up the *boiled*, I took it to task again about *ten moneths* after; at which time I found it so excessively strong, that five persons would scarcely venture upon an ordinary glassfull of it. My *Friends* would hardly believe but I had *heightened* it with some of my *spirits*: the truth is, I do not remember that I ever drunk any *liquor*, on this side *spirits*, so highly strong and spirituous: But wanting pleasantness answerable to its strength, I was not very fond of my *experiment*.

9. A *Neighbour* having a good provent of *Purelings* (an *Apple* of choice account with us) making up a good part of them to *Cider*, expected rare *liquor*; but it proved very mean and pitiful *Cider*, as generally we find that to be which is made without mixture.

10. My *Distillations* sufficiently instruct me, that the same *liquor* which (after *fermentation* hath past upon it) yields a plentiful quantity of *spirit*, drawn off unfermented yields nothing at all of *spirit*. And upon the same, it is undoubtedly certain, that *Cider* boiled immediately from the wring hath his *spirits* compressed, and drawn into a narrow compass, which are for the most part wasted and evaporated by late unseasonable boiling.

CONCERNING
C I D E R,

By Doctor S M I T H.

THE best time to *grind* the *Apples* is immediately from the *Tree*, so soon as they are thoroughly ripe: for, so they will yield the greater quantity of *Liquor*, the *Cider* will drink the better, and last longer than if the *Apples* were hoarded: For *Cider* made of hoarded *Apples* will always retain an unpleasing taste of the *Apples*, especially if they contract any rottenness.

The *Cider* that is ground in a *Stone-case* is generally accused to taste unpleasantly of the *Rinds*, *Stems* and *Kernels* of the *Apples*; which it will not if ground in a *Case* of *Wood*, which doth not bruise them so much.

So soon as the *Cider* is made, put it into the *Vessel* (leaving it about the space of one *Gallon* empty) and presently stop it up very close: This way is observed to keep it longer, and to preserve its *Spirits* better than the usual way of filling the *Vessel* quite full, and keeping it open till it hath done *fermenting*.

Cider put into a new *Vessel* will often taste of the *Wood*, if it be pierced early; but the same stopped up again, and reserved till the latter end of the year, will free it self of that taste.

If the *Cider* be sharp and thick it will recover it self again: But if sharp and clear, it will not.

About *March* (or when the *Cider* begins to sparkle in the glass) before it be too fine, is the best time to bottle it.

Cider will be much longer in clearing in a mild and moist, than in a cold and dry *Winter*.

To every *Hoghead* of *Cider*, designed for two years keeping, it is requisite to add (about *March*, the first year) a quart of *Wheat* unground.

The best *Fruit* (with us in *Glocestershire*) for the first years *Cider*, are the *Red-strake*; the *White* and *Red Must-apple*, the sweet and soure *Pepin*, and the *Harvey-apple*.

Pearmains alone make but a small liquor, and hardly clearing of it self; but, mixed either with sweet or soure *Pepins*, it becomes very brisk and clear.

Must-apple-cider (though the first made) is always the last ripe; by reason that most of the *pulp* of the *Apple* passeth the *strainer* in pressing, and makes it exceeding thick.

The *Cider* of the *Bromsbury-Crab*, and *Fox-whelp*, is not fit for drinking, till the *second year*, but then very good.

The *Cider* of the *Bromsbury-crab* yields a far greater proportion of *Spirits*, in the distillation, than any of the others.

Crabs and *Pears* mixed make a very pleasing Liquor, and much sooner ripe than *Pears* alone. O F

O F

CIDER.

By Capt. TAYLOR.



*H*erefordshire affords several sorts of *Cider-apples*, as the two sorts of *Red-strakes*, the *Gennet-moyle*, the *Summer-violet* or *Fillet*, and the *Winter-fillet*; with many other sorts which are used only to make *Cider*. Of which some use each sort *simply*; and others *mix* many sorts together. This *County* is very well stored with other sorts of *Apples*; as *Pepins*, *Pear-mains*, &c. of which there is much *Cider* made, but not to be compared to the *Cider* drawn from the *Cider-apples*; among which the *Red-strakes* bear the Bell; a *Fruit* in it self scarce *edible*; yet the *juice* being pressed out is immediately pleasant in taste, without any thing of that *restringency* which it had when incorporated with the *meat*, or *flesh* of the *Apple*. It is many times *three moneths* before it comes to its *clearness*, and *six moneths* before it comes to a ripeness fit for *drinking*; yet I have tasted of it *three years old*, very pleasant, though dangerously strong. The *colour* of it, when *fine*, is of a sparkling *yellow*, like *Canary*, of a good full body, and *oily*: The *taste*, like the *Flavour* or *perfume* of excellent *Peaches*, very grateful to the *Palate* and *Stomach*.

Gennet-moyles make a *Cider* of a smaller body then the former, yet very pleasant, and will last a *year*. It is a good eating pleasant sharp fruit, when ripe, and the best *Tart-apple* (as the *Red-strake* also) before its ripeness. The *Tree* grows with certain knotty *extuberancies* upon the *branches* and *boughs*; below which *knot* we cut off boughs the thickness of a mans *wrist*, and place the knot in the ground, which makes the *root*; and this is done to raise this *fruit*; but very rarely by *grafting*.

Of *Fillets* of both sorts (*viz.* *Summer* and *Winter*) I have made *Cider* of that proportionate taste and strength, that I have deceived several experienced *Palates*, with whom (*simply*) it hath passed for *White-wine*; and *dashing* it with *Red-wine*, it hath passed for *Claret*; and mingled with the *syrup* of *Rasp'yes* it makes an excellent *womans wine*: The fruit is not so good as the *Gennet-moyle* to eat: The *Winter-fillet* makes a *lasting Cider*, and the

Summer-fillet an early Cider, but both very strong; and the *Apples* mixt together make a good Cider.

These *Apples* yield a liquor more grateful to my *Palate* (and so esteemed of in *Herefordshire* by the greater *Ciderists*) than any made of *Pepins* and *Pearmains*, of which sorts we have very good in that *Country*; and those also both *Summer* and *Winter* of both sorts, and of which I have drank the Cider; but prefer the other.

Grounds separated only with a *Hedge* and *Ditch*, by reason of the difference of *Soils* have given a great alteration to the Cider, notwithstanding the *Trees* have been grafted with equal care, the same *Grass*s, and lastly, the same care taken in the making of the Cider. This as to the *Red-strake*; I have not observed the same niceness in any other fruit; for *Gennet-moyles* and *Fillets* thrive very well over all *Herefordshire*. The *Red-strake* delights most in a fat soil: *Hamlacy* is a rich intermixt soil of *Red-fat-clay* and *Sand*; and *Kings-capel* a low hot sandy ground, both well defended from noxious *Winds*, and both very famous for the *Red-strake-cider*.

There is a *Pear* in *Hereford* and *Worcestershires*, which is called *Bareland-pear*, which makes a very good Cider. I call it Cider (and not *Perry*) because it hath all the *properties* of Cider. I have drank of it from half a year old to two years old. It keeps it self without *Roping* (to which *Perry* is generally inclined) and from its taste: *M. Beal*, in his little *Treatise* called the *Herefordshire-Orchard*, calls it deservedly a *Masculine Drink*; because in taste not like the sweet *luscious* feminine juice of *Pears*. This *Tree* thrives very well in barren ground, and is a fruit (with the *Red-strake*) of which *Swine* will not eat; therefore fittest to be planted in *Hedge-rows*.

Red-strakes and other *Cider-apples* when ripe (which you may know partly by the blackness of the *Kernels*, and partly by the colour and smell of the fruit) ought to be gathered in *Baskets* or *Bags*, preserved from bruising, and laid up in heaps in the *Orchard* to sweat; covered every night from the dew: Or else, in a *Barn-floor* (or the like) with some *Wheat* or *Rye-straw* under them, being kept so long till you find, by their *mellowing*, they are fit for the *Mill*.

They that grind, or bruise their *Apples* presently upon their gathering, receive so much liquor from them, that between twenty or twenty two *Bushels* will make a *Hogshead* of Cider: but this Cider will neither keep so well, nor drink with such a fragrancy as is desired and endeavoured.

They that keep them a *moneth* or *six weeks* hoarded, allow about thirty *bushels* to the making of a *Hogshead*; but this hath also an inconvenience; in that the Cider becomes not *sine*, or fit for drinking, so conveniently as a *mean* betwixt these two will afford.

Keep them then about a *fort-night* in a *board*, and order them to be of such a cast by this *Mellowing*, that about *twen-*

ty five Bushels may make a Hoghead, after which mellowing proceed thus.

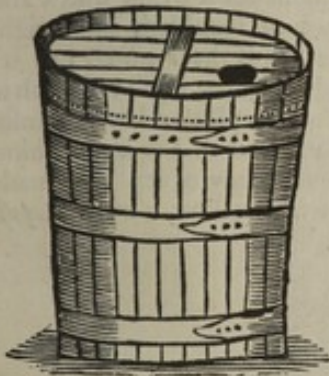
1. Pick and clear your Apples from their stalks, leaves, moaziness, or any thing that tends toward rottenness or decay.

2. Lay them before the Stone in the Cider-mill, or else beat them small with Beaters (such as Paviers use to fix their pitching) in deep troughs of Wood or Stone, till they are fit for the Press.

3. Having laid clean wheat-straw in the bottome of your Press, lay a heap of bruised Apples upon it, and so with small handfuls or wisps of straw, which by twisting takes along with it the ends of the straw laid first in the bottome, proceed with the bruised Apples, and follow the heaps with your twisted straw, till it comes to the height of two foot, or two foot and a half; and so with some straw drawn in by twisting, and turned over the top of it (so that the bruised Apples are set as it were into a deep Cheef-vat of straw, from which the Country people call it their Cider-cheese) let the board fall upon it even and flat, and so engage the force of your skrew or Press so long as any Liquor will run from it. Instead of this Cheese others use bags of Hair-cloth.

4. Take this Liquor thus forced by the Press, and strain it thow a strainer of hair into a Vat, from whence straight (or that day) in pails carry it to the Cellar, tuning it up presently in such Vessels as you intend to preserve it in; for I cannot approve of a long evaporation of spirits, and then a disturbance after it settles.

5. Let your Vessels be very tight and clean wherein you put your Cider to settle: The best form is the Stund or Stand, which is set



upon the lesser end, from the top tapering downwards; as suppose the head to be thirty inches diameter, let then the bottome be but eighteen or twenty inches in diameter; let the Tun-hole or Bung-hole be on the one side outwards, toward the top. The reason of the goodness of this form of Vessel is, because Cider (as all strong Liquors) after fermentation and working, contracts a cream or skin on the top of them, which in this form of Vessel is as it sinks

contracted, and fortified by that contraction, and will draw fresh to the last drop; whereas in our ordinary Vessels, when drawn out about the half or middle, this skin dilates and breaks, and without a quick draught decays and dies.

6. Reserve a Pottle or Gallon of the Liquor to fill up the Vessel to the brim of the Bung-hole, as oft as the fermentation and working lessens the Liquor, till it hath done its work.

7. When it hath compleated its work, and that the Vessel is filled up to the bung-hole, stop it up close with well mix'd clay, and well tempered, with a handful of Bay-salt laid upon the top of the clay,

clay, to keep it moist, and renewed as oft as need shall require; for if the *clay* grows dry it gives vent to the *spirits* of the *Liquor*, by which it suffers decay.

I am against either the *boyling* of *Cider*, or the hanging of a bag of *spices* in it, or the use of *Ginger* in drinking it; by which things people labour to correct that *windiness* which they fancy to be in it: I think *Cider* not *windy*; those that use to drink it are most free from *windiness*; perhaps the *virtue* of it is such, as that once ripened and mellowed, the drinking of it in such strength combats with that *wind* which lies insensibly latent in the body. The *Cider* made and sold here in *London* in *Bottles* may have that *windiness* with it as *Bottle-beer* hath, because they were never suffered to *ferment*: But those that have remarked the strength and vigour of its *fermentation*, what weighty things it will cast up from the bottome to the top, and with how many bubbles and bladders of *wind* it doth *work*, will believe that it clears it self by that operation of all such injurious *qualities*.

To preserve *Cider* in *Bottles* I recommend unto you my own *Experience*, which is, Not to *bottle* it up before *fermentation*; for that incorporates the *windy quality*, which otherwise would be ejected by that operation: This violent suppression of *fermentation* makes it *windy* in drinking, (though I confess *brisk* to the *taste*, and *sprightly* cutting to the *Palate*;) But after *fermentation*, the *Cider* resting two, three, or four Months, draw it, and *bottle* it up, and so lay it in a *Repository* of cool *springing water*, two or three foot, or more, deep; this keeps the *spirits*, and the best of the *spirits* of it together: This makes it drink quick and lively; it comes into the *glass* not *pale* or troubled, but bright *yellow*, with a speedy vanishing *nittiness*, (as the *Vintners* call it) which *evaporates* with a *sparkling* and *whizzing* noise; And than this I never tasted either *Wine* or *Cider* that pleased better: Inso-much that a *Noble-man* tasting of a *Bottle* out of the *water* (himself a great *Ciderist*) protested the excellency of it, and made with much greater charges, at his own dwelling, a *water Repository* for his *Cider*, with good success.

Kalendarium Hortense:

OR, THE

Gard'ners Almanac;

Directing what He is to do

MONETHLY,

THROUGHOUT THE

YEAR.

Columella de cult. Hort. lib. 10.

*Invigilate viri, tacito nam tempora gressu
Diffugiunt, nulloque sono convertitur annus.*



LONDON,

Printed by *J. Macock*, for *John Martin*, and *James Allestry*, and
are to be sold at their Shop, at the sign of the Bell in *S^t Paul's*
Church-yard. MDCLXIV.

Kalendarium Hortense;

OF THE

GARDENS AND MANAGE

Directing what is to be

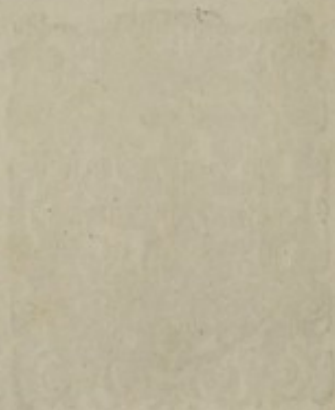
M O N E T H L Y.

THROUGHOUT THE

Y E A R.

By JOHN HAYWARD,

Author of the *Art and Mystery of Gardening*, &c.



LONDON,

Printed by J. Smith, for John Murray, and
sold by all the Booksellers in Great Britain.
Church-yard, M.DCC.LXXV.

INTRODUCTION

TO THE

KALENDAR.

As Paradise (though of Gods own Planting) had not been Paradise longer then the Man was put into it, to Gen. 2. 15 Dress it and to keep it; so, nor will our Gardens (as near as we can contrive them to the resemblance of that blessed Abode) remain long in their perfection, unless they are also continually cultivated. For when we have so much celebrated the life and felicity of an excellent Gard'ner; it is not because of the leisure which he enjoys above other men; ease and opportunity which ministers to volupty, and insignificant delights; such as Fools derive from sensual objects: We dare hardly pronounce it: there is not amongst Men a more laborious life then is that of a good Gard'ners; but a labour full of tranquillity, and satisfaction; Natural and Instructive, and such as (if any) contributes to Piety and Contemplation; Experience, Health and Longevity. In sum, a condition it is, furnish'd with the most innocent, laudable and purest of earthly felicities, and such as does certainly make the nearest approaches to that Blessed state, where only they enjoy all things without pains; as those who were lead only by the light of Nature, because they could phansie none more glorious, thought it worthy of entertaining the Souls of their departed Heroes, and most deserving of Mortals.

But to return to the Labour; because there is nothing excellent which is to be attain'd without it: A Gard'ners work is never at an end: It begins with the Year, and continues to the next: He prepares the Ground, and then he Sows it; after that he Plants, and then he gathers the Fruits; but in all the intermedial spaces he is careful to dress it; so as Columella, speaking of this continual assiduity, tells us, a Gard'ner is not only to consider prætermittas duodecim De R. R. horas, sed annum perire, nisi sua quaque quod instat effecerit: li. ix. Quare, necessaria est (says he) Menstrui cujusque officii monitio ea, quæ pendet ex ratione syderum cæli: for so with the Poet,

— tam sunt Arcturi Sydera nobis,
Hædorûmque dies fervandi, & lucidus anguis;
Quam quibus in patriam ventosa per æquora vectis
Pontus, & Ostriferi fauces tentantur Abydi.

Geor. 1.

All which duly weigh'd, how precious the time is, how præcipitous
the occasion, how many things to be done in their just Season,

and how intolerable a confusion will succeed a small neglect, after once a Ground is in order, we thought we should not attempt an unacceptable Work, if here we endeavour to present our Gard'ners with a compleat Cycle of what is requisite to be done throughout every Moneth of the Year: We say, each Moneth; because by dividing it into Parts so distinct, the Order in which they shall find each particular dispos'd, may not only render the work more facile and delightful; but redeem it from that extream confusion, which for want of a constant, and uniform Method, we find does so universally distract our ordinary sort of Gard'ners. They know not (for the most part) the Seasons when things are to be done; and when at any time they come to know, there often falls out so many things to be done on the sudden, that some of them must of necessity be neglected for that whole Year, which is the greatest detriment to this Mystery, and frequently irrecoverable. Well therefore did the experienc'd Columella put his Gard'ner in mind of the fugaciousness of the Seasons, and the necessity of being Industrious, where he thus speaks the men of our Profession.

Invigilate viri, tacito nam tempora gressu
Diffugiunt, nulloque sono convertitur annus.

Colum. de cult. Hort. lib. 10.

Be watchful Sirs, the Seasons haste them out,
And without noise the Year is whirl'd about.

We are yet far from imposing (by any thing we have alledg'd concerning these Menstrual Periods) those nice and hypercritical Punctillos which some Astrologers, and such as pursue their Rules, seem to oblige our Gard'ners to; as if, forsooth, all were lost, and our pains to no purpose, unless the Sowing and the Planting, the Cutting and the Pruning, were perform'd in such and such an exact minute of the Moon: In hac autem Ruris disciplina non desideratur ejusmodi scrupulositas. There are indeed some certain Seasons, and suspecta tempora, which the prudent Gard'ner ought carefully (as much as in him lies) to prevent: But as to the rest, it shall be sufficient that he diligently follow the Observations which (by great Industry) we have collected together, and here present him, as so many Synoptical Tables calculated for his Monethly use, to the end he may pretermitt nothing which is under his Inspection, and is necessary; or distract his Thoughts and Employment before the Seasons require it.

And now, however This may seem but a Trifle to some who esteem Books by the bulk, and not the benefit; let them not yet despise these few ensuing Pages: For never was any thing of this pretence so fully and ingenuously imparted, I shall not say to the regret of all our Mercenary Gard'ners, because I have much obligation to some above that Epithete; Mr Rose, Gard'ner at Essex-House to Her Grace the Duchess of Somerset, and Mr Turner, formerly of Wimbleton in Surrey; who being certainly amongst the most expert of their Profession in England, are no less to be celebrated for their free communications

munications to the Publick, by divers Notes of theirs, which have furnish'd to this Design. And it is from the Result of very much Experience, and an extraordinary inclination to cherish so innocent and laudable a diversion, and to incite an Affection in the Nobles of this Nation towards it, that I begin to open to them so many of the Secrets, and most precious Rules of this Mysterious Art, without Imposture, or invidious Reserve. The very Catalogue of Fruits, and Flowers, for the Orchard and the Parterre, will gratifie the most innocent of the Senses, and whoever else shall be to seek a rare and universal choice for his Plantation: But this is enough.

Touching the Method, it is so obvious that there needs no farther direction; and the Consequent will prove so certain, that a Work of the busiest pains is by this little Instrument rendred the most facile and agreeable, as by which you shall continually preserve your Garden in that perfection of beauty and lustre, without confusion or prejudice: Nor indeed could we think of a more comprehensive Expedient, whereby to assist the frail and torpent Memory through so multifarious and numerous an Employment (the daily subject of a Gard'ners care) then by the Oeconomy and Discipline into which we have here resolv'd it, and which our Industrious Gard'ner may himself be continually Improving from his own Observations and Experience.

This Kalendar might be considerably augmented, and recommend it self to a more Universal use, by taking in the Monethly Employments of all the parts of Agriculture, as they have been begun to us in Columella, Palladius, de Serres, Augustino Gallo, our Mark-
 ham, and others; especially if well and judiciously applied to our
 Climate and several Countries: but it were here besides our Insti-
 tution, nor would the Pages contain them; what is yet found
 vacant has been purposely left, that our Gard'ner may supply as he
 finds cause; for which reason likewise we have rang'd both the Fruits
 and Flowers in Prime after somewhat a promiscuous Order, and not
 after the letters of the Alphabet, that the Method might be pur-
 su'd with the least disorder. Lastly,

The Fruits and Flowers in Prime are to be as well considered in relation to their lasting and continuance, as to their maturity and beauty.

J. E.

Kalendarium Hortense.

Note that for
the Rising
and Setting
of the Sun,
and Length
of the Days,
I compute
from the first
of every
Moneth,
London Ele-
vation.

Sun { rises -08^h-00^m }
{ sets -04 -00 }

JANUARY

{ Hath Days } long-8^h-00^m
{ xxxi. }

To be done

In the Orchard, and Olitory-Garden.

Trench the Ground, and make it ready for the *Spring*: pre-
pare also *Soil*, and use it where you have occasion: Dig
Borders, &c. uncover as yet *Roots* of *Trees*, where *Ablaqueation* is
requisite.

Plant *Quick-sets*, and Transplant *Fruit-trees*, if not finish'd:
Set *Vines*; and begin to *prune* the old: *Prune* the branches of *Or-
chard-fruit-trees*; *Nail*, and trim your *Wall-fruit*, and *Espaliers*.

Cleanse *Trees* of *Moss*, &c. the *Weather* moist.

Gather *Cyons* for *Grass*s before the *buds* sprout; and about the
later end, *Grass* them in the *Stock*: Set *Beans*, *Pease*, &c.

Sow also (if you please) for early *Colly-flowers*.

Sow *Chervil*, *Lettuce*, *Radish*, and other (more delicate) *Sal-
letings*; if you will raise in the *Hot-bed*.

In over wet, or hard weather, *cleansē*, *mend*, *sharpen* and pre-
pare *Garden-tools*.

Turn up your *Bee-hives*, and sprinkle them with a little warm
and sweet *Wort*; do it dextrously.

Fruits in Prime, and yet lasting.

Apples.

Kentish-pepin, *Russet-pepin*, *Golden-pepin*, *French-pepin*, *Kirton-
pepin*, *Holland-pepin*, *John-apple*, *Winter-Queening*, *Mari-
gold*, *Harvey-apple*, *Pome-water*, *Pome-roy*, *Golden-Doucet*, *Reinet-
ing*, *Lones-pearmain*, *Winter-Pearmain*, &c.

Pears.

Winter-Musk (bakes well) *Winter-Norwich* (excellently bak-
ed) *Winter-Bergamot*, *Winter-Bon-crestien*, both *Mural*: the great
Surrein, &c.

Sun { rises-08^h-00^m }
 { sets -04 -00 }

JANUARY

{ Hath Days } long-8^h-00^m
 { xxxi. }

To be done

In the *Parterre*, and *Flower-Garden*.

SET up your *Traps* for *Vermin*; especially in your *Nurseries* of *Kernels* and *Stones*, and amongst your *Bulbous-roots*: About the middle of this *Moneth*, plant your *Anemony-roots*, which you will be secure of, without *covering*, or farther trouble: Preserve from too great, and continuing *Rains* (if they happen) *Snow*, and *Frost*, your choicest *Anemonies*, and *Ranunculus's* sow'd in *September* or *October* for earlier *Flowers*: Also your *Carnations*, and such *Seeds* as are in peril of being wash'd out, or over *chill'd* and *frozen*; covering them with *Mats* and *shelter*, and striking off the *Snow* where it lies too weighty; for it certainly rots, and bursts your early-set *Anemonies* and *Ranunculus's*, &c. unless planted *now* in the *Hot-bed*; for now is the *Season*, and they will *flower* even in *London*. Towards the *end*, earth-up, with fresh and light mould, the *Roots* of those *Auriculas* which the *frosts* may have uncover'd; filling up the *chinks* about the sides of the *Pots* where your choicest are set: but they need not be *hous'd*; it is a hardy Plant.

Flowers in Prime, or yet lasting.

WINTER-*Aconite*, some *Anemonies*, Winter-*Cyclamen*, Black-*Hellebor*, *Brumal-Hyacinth*, *Oriental-Jacynth*, *Levantine-Narcissus*, *Hepatica*, *Prim-roses*, *Laurus-tinus*, *Mezereon*, *Præcocè Tulips*, &c. especially, if rais'd in the (*Hot-bed.*) Note,

That both these *Fruits*, and *Flowers*, are more *early*, or *tardy*, both as to their prime *Seasons* of *eating*, and perfection of *blowing*, according as the *Soil*, and *Situation* are qualified by *Nature*, or *Accident*. Note also,

That in this *Recension* of *Monethly Flowers*, it is to be understood for the *whole* period that any *flower* continues, from its first *appearing*, to its final *withering*.

✕

Sun { rise-07^h-17^m } Hath Days { long-09^h-24^m }
 { sets -04--43 } { xxviii. }

FEBRUARY

To be done

In the Orchard, and Olitory-Garden.

PRune *Fruit-trees*, and *Vines*, as yet. Remove *Graffs* of former years *Graffing*. Cut and lay *Quick-sets*. Yet you may *Prune* some *Wall-fruit* (not finish'd before) the most tender and delicate: But be exceeding careful of the now turgid *buds* and *bearers*; and *trim* up your *Palisade Hedges*, and *Espaliers*. Plant *Vines* as yet, other *Shrubs*, *Hops*, &c.

Set all sorts of *Kernels* and *stony Seeds*. Also sow *Beans*, *Pease*, *Radish*, *Parfneps*, *Carrots*, *Onions*, *Garlick*, &c. and plant *Potatoes* in your worst ground.

Now is your Season for *Circumposition* by *Tubs* or *Baskets* of *Earth*, and for laying of *Branches* to take root. You may plant forth your *Cabbage-plants*.

Rub *Moss* off your *Trees* after a soaking *Rain*, and scrape and cleanse them of *Cankers*, &c. draining away the *wet* (if need require) from the too much moistned *Roots*, and earth up those *Roots* of your *Fruit-trees*, if any were uncover'd. Cut off the *Webbs* of *Caterpillars*, &c. (from the *Tops* of *Twigs* and *Trees*) to burn. Gather *Worms* in the *Evenings* after *Rain*.

Kitchen-Garden herbs may now be planted, as *Parsly*, *Spinage*, and other hardy *Pot-herbs*. Towards the *middle* or *latter end* of this *Moneth*, till the *Sap* rises briskly, *Graff* in the *Cleft*, and so continue till the last of *March*; they will hold *Apples*, *Pears*, *Cherries*, *Plums*, &c. Now also plant out your *Colly-flowers* to have early; and begin to make your *Hot-bed* for the first *Melons* and *Cucumbers*; but trust not altogether to them. Sow *Asparagus*. Lastly,

Half open your *passages* for the *Bees*, or a little before (if *weather* invite;) but continue to feed weak *Stocks*, &c.

Fruits in Prime, or yet lasting.

Apples.

Kentish, Kirton, Ruffet, Holland Pepins; Deux-ans, Winter Queening, Harvey, Pome-water, Pome-roy, Golden Doucet, Reineting, Lones Pearmain, Winter Pearmain, &c.

Pears.

Eon-Chrestien of Winter, Winter Poppering, Little Dagobert, &c.

Sun { rises-07^h-13^m }
 { sets-04--43 }

✕
FEBRUARY

{ Hath Days } long-09^h-24^m
 { xxviii. }

To be done

In the *Parterre*, and *Flower-Garden*.

Continue *Vermine Trapps*, &c.

Sow *Alaternus* seeds in *Cases*, or *open beds*; cover them with *thorns*, that the *Poultry* scratch them not out.

Now and then *air* your *Carnations*, in *warm* days especially, and mild *showers*.

Furnish (now towards the end) your *Aviarys* with *Birds* before they couple, &c.

Flowers in Prime, or yet *lasting*.

Winter *Aconite*, single *Anemonies*, and some double, *Tulips præcoce*, *Vernal Crocus*, *Black Hellebore*, single *Hepatica*, *Persian Iris*, *Leucojum*, *Dens Caninus* three leav'd, *Vernal Cyclamen* white and red, *Yellow Violets* with large leaves, early *Daffodils*, &c.

Sun } rises-06^h-19^m }
 } sets--05 -41 }

MARCH

Hath Days } long-11^h-22^m }
 } xxxi. }

To be done

In the Orchard, and Olitory-Garden.

YEt *Stercoration* is seasonable, and you may plant what *Trees* are left, though it be something of the latest, unless in very backward or moist places.

Now is your chiefest and best time for raising on the Hot-bed *Melons*, *Cucumbers*, *Gourds*, &c. which about the *sixth*, *eighth* or *tenth* day will be ready for the Seeds; and eight days after *prick* them forth at distances, according to the *Method*, &c.

If you will have them *later*, begin again in ten or twelve days after the first; and so a third time, to make *Experiments*.

Grass all this *Moneth*, unless the *Spring* prove extraordinary forwards.

You may as yet cut *Quick-sets*, and cover such *Tree-roots* as you laid bare in *Autumn*.

Slip and set *Sage*, *Rosemary*, *Lavender*, *Thyme*, &c.

Sow in the beginning *Endive*, *Succory*, *Leeks*, *Radish*, *Beets*, *Chard-Beet*, *Scorzoneria*, *Parsnips*, *Skirrets*, *Parsley*, *Sorrel*, *Bugloss*, *Barrage*, *Chervil*, *Sellery*, *Smallage*, *Alisanders*, &c. Several of which continue many years without renewing, and are most of them to be *blanch'd* by laying them under *litter* and earthing up.

Sow also *Lettuce*, *Onions*, *Garlick*, *Orach*, *Purslan*, *Turneps* (to have early), *monethly Pease*, &c. these *annually*.

Transplant the *Beet-chard* which you sow'd in *August*, to have most ample *Chards*.

Sow also *Carrots*, *Cabbages*, *Cresses*, *Fennel*, *Majoran*, *Basil*, *Tobacco*, &c. And transplant any sort of *Medicinal Herbs*.

Mid-March dress up and string your *Strawberry-beds*, and uncover your *Asparagus*, spreading and loosning the Mould about them, for their more easie penetrating: Also may you now transplant *Asparagus* roots to make new *Beds*.

By this time your *Bees* fit; keep them close *Night* and *Morning*, if the weather prove ill.

Turn your *Fruit* in the Room where it lies, but open not yet the *windows*.

Fruits in Prime, or yet lasting.

Apples.

Golden *Ducket*, [*Doncet*] *Pepins*, *Reineting*, *Lones Pearmain*, *Winter Pearmain*, *John Apple*, &c.

Pears.

Later *Eon-Chrestein*: *Double Blossom Pear*, &c.

Sun { rises-06^h-19^m }
 { sets-05--41 }

MARCH

{ Hath Days }
 { xxxi. } long-11^h-22^m

To be done

In the Parterre, and Flower-Garden.

S Take, and binde up your weakest Plants and Flowers against the Windes, before they come too fiercely, and in a moment prostrate a whole years labour.

Plant Box, &c. in Parterres. Sow Pink, Sweet-Williams, and Carnations, from the middle to the end of this Month. Sow Pine-kernels, Firr-seeds, Bays, Alaternus, Philyrea, and most perennial Greens, &c. Or you may stay till somewhat later in the Month. Sow Auricula-seeds in pots or cases, in fine willow earth, a little loamy, and place what you sow'd in October now in the shade, and water it.

Plant some Anemomy roots to bear late, and successively; especially in, and about London, where the Smoak is any thing tolerable; and if the Season be very dry, water them well once in two or three days. Fibrous roots may be transplanted about the middle of this Month; such as Hepatica's, Primroses, Auricula's, C. mmonile, Hyacinth Tuberosa, Matricaria, Hellebor and other Summer Flowers; and towards the end Convolvulus's, Spanish or ordinary Jaspine.

Towards the middle, or latter end of March sow on the Hot-bed such Plants as are late bearing Flowers or Fruit in our Climate; as Balsamine, and Balsamum mas, Pomum Amoris, Datura, Æthiopic Apples, some choice Amaranthus, Daçyls, Geranium's, Hedyjarum Clipeatum, Humble, and Sensitive Plants, Lentiscus, Myrtle-berries (steep'd a while), Capsicum Indicum, Gamma Indica; Flos Africanus, Mirabile Perijian: Nasturtium Ind: Indian Pbaseoli, Volubilis, Myrrh, Carrots, Maracoc, five Flos Passionis, and the like rare and exotic Plants which are brought us from hot Countries. Note, That the Nasturtium Ind. African Mary golds, Volubilis and some others, will come (though not altogether so forwards) in the Cold-bed without Art: But the rest require much, and constant heat, and therefore several Hot-beds, 'till the common earth be very warm by the advance of the Sun, to bring them to a due stature, and perfect their Seeds.

About the expiration of this Month carry into the shade such Auriculas, Seedlings, or Plants as are for their choicests reserv'd in Pots.

Transplant also Carnation seedlings, giving your Layers fresh earth, and setting them in the shade for a week, then likewise cut off all the sick and infected leaves.

Now do the farewell-frosts, and Easterly-winds prejudice your choicest Tulips, and spot them; therefore cover such with Mats or Camos to prevent freckles, and sometimes destruction. The same care have of your most precious Anemonies, Auricula's, Chamae-iris, Brumal Jacynthos, early Cyclamen, &c. Wrap your thorn Cypress tops with Straw wisps, if the Eastern blasts prove very tedious. About the end uncover some Plants, but with Caution; for the tail of the Frosts yet continuing, and sharp winds, with the sudden darting heat of the Sun, scorch and destroy them in a moment; and in such weather neither sow, nor transplant.

Sow Stock-gilly-flower-seeds in the Fall to produce double flowers.

Now may you set your Oranges, Lemmons, Myrtils, Oleanders, Lentises, Dates, Aloes, Amomums, and like tender Trees and Plants in the Portico, or with the windows, and doors of the Green-houses and Conservatories open for eight or ten days before April. or earlier, if the Season invite, to acquaint them gradually with the Air; but trust not the Nights, unless the weather be thoroughly settled. Lastly,

Bring in materials for the Birds in the Aviary to build their Nests withall.

Flowers in Prime, or yet lasting.

A Nemonies, Spring Cyclamen, Winter Aconite, Crocus, Bellis, white and black Hellebor, single, and double Hepatica, Lencoon, Chamae-iris of all colours, Dens Caninus, Violets, Fritillaria, Chelidonium small with double Flower, Hermodactyls, Tuberosus Iris, Hyacinth Zeboin, Brumal, Oriental, &c. Junquils, great Chalic'd. Dutch Mezereon, Persian Iris, Auricula's, Narcissus with large tufts, common, double and single. Primroses, Præcoc Tulips, Spanish Trumpets or Junquilles; Violets, yellow Dutch Violets, Crown Imperial, Grape Flower, Almonds and Peach-blossoms, Rubus odoratus, Arbor Judæ, &c.

San { rises-05^h-18^m }
 { sets--05--42 }

APRIL

Hath Days }
 xxxi. } long-13^h-23^m

To be done

In the Orchard, and Olitory-Garden.

Sow sweet *Majoran*, *Hyssop*, *Basile*, *Thyme*, *Winter-savory*, *Scurvey-grass*, and all fine and tender *Seeds* that require the *Hot-bed*.

Sow also *Lettuce*, *Purslan*, *Caully-flower*, *Radish*, &c.

Plant *Artichock-slips*, &c.

Set *French-beans*, &c.

You may yet slip *Lavander*, *Thyme*, *Rose-mary*, &c.

Towards the *middle* of this *moneth* begin to plant forth your *Melons*, and *Cucumbers*, and so to the *later end*; your *Ridges* well prepar'd.

Gather up *Worms*, and *Snails*, after evening *showers*, continue this also after all Summer-rains.

Open now your *Bee-hives*, for now they *hatch*; look carefully to them, and prepare your *Hives*, &c.

Fruits in Prime, and yet lasting.

Apples.

Pepins, *Deuxans*, *West-berry-apple*, *Ruffeting*, *Gilly-flowers*, *flat Reinnet*, &c.

Pears.

Later *Bon-crestien*, *Oak-pear*, &c. double *Blossom*, &c.

Sun { rises-05^h-18^m }
 { sets -05 -42 }

☽
 APRIL

{ Hath Days }
 { xxxi. } long-13^h-23^m.

To be done

In the Parterre, and Flower-Garden.

Sow divers *Annals* to have *Flowers* all *Summer*; as double *Mari-golds*, *Cyanus* of all sorts, *Candy-tuffs*, *Garden Pansy*, *Muscipula*, *Scabious*, &c.

Continue new, and fresh *Hot-beds* to entertain such *exotic* plants as arrive not to their perfection without them, till the *Air* and *common-earth* be qualified with sufficient *warmth* to preserve them abroad: A *Catalogue* of these you have in the former *Month*.

Transplant such *Fibrous-roots* as you had not finish'd in *March*; as *Violets*, *Hepatica*, *Prim-roses*, *Hellebor*, *Matricaria*, &c.

Sow *Pinky*, *Carnations*, *Sweet-Williams*, &c. to flower next year: this after rain.

Set *Lupines*, &c.

Sow also yet *Pine-kernels*, *Ferr-seeds*, *Philyrea*, *Alaternus*, and most *perennial Greens*.

Now take out your *Indian Tuberoses*, parting the *Off-sets* (but with care, lest you break their *fangs*) then pot them in *natural* (not forc'd) *Earth*; a layer of *rich mould* beneath, and about this *natural earth* to nourish the *fibers*, but not so as to touch the *Bulbs*: Then plunge your pots in a *Hot-bed* temperately warm, and give them no *water* till they *spring*, and then set them under a *South-wall*: In dry weather *water* them freely, and expect an *incomparable flower* in *August*: Thus likewise treat the *Narcissus* of *Japan*, or *Garnsey-Lilly* for a later *flower*, and make much of this *precious* Direction.

Water Anemonies, *Ranunculus's*, and *Plants* in *Pots* and *Cases* once in two or three days, if *drouth* require it. But carefully protect from violent *storms* of *Rain*, *Hail*, and the too parching *darts* of the *Sun*, your *Pennach'd Tulips*, *Ranunculus's*, *Anemonies*, *Auricula's*; covering them with *Mattresses* supported on *cradles* of *boops*, which have now in *readiness*. Now is the *Season* for you to bring the *choice* and *tender shrubs*, &c. out of the *Conservatory*; such as you durst not adventure forth in *March*: let it be in a *fair day*; only your *Orange-trees* may remain in the *house* till *May*, to prevent all danger.

Now, towards the *end* of *April*, you may *Transplant*, and *Remove* your *tender shrubs*, &c. as *Spanish Jasmines*, *Myrtles*, *Oleanders*, young *Oranges*, *Cyclamen*, *Pomegranats* &c. but first let them begin to *sprout*; placing them a *fort-night* in the *shade*: but about *London* it may be better to defer this work till *mid-August*, *Vide* also *May*: Prune now your *Spanish Jasmine* within an *inch* or two of the *stock*; but first see it begin to *shoot*. Mow *Carpet-walks*, and ply *Weeding*, &c.

Towards the *end* (if the cold *winds* are past) and especially after *showers*, Clip *Philyrea*, *Alaternus*, *Cypress*, *Box*, *Myrtles*, *Barba Jovis*, and other *tonfile shrubs*, &c.

Flowers in Prime, or yet lasting.

A *Nemonies*, *Ranunculus's*, *Auricula Urvi*, *Chama-Iris*, *Crown Imperial*, *Caprifolium*, *Cyclamen*, *Dens Caninus*, *Fritillaria*, double *Hepatic's*, *Jacymb stary*, double *Daisies*, *Florence-Iris*, tufted *Narcissus*, white, double and common, *English double*: *Prime-rose*, *Cow-slips*, *Pulsatilla*, *Ladies-smock*, *Tulips medias*, *Ranunculus's* of *Tripoly*, white *Violets*, *Musk-Grape-flower*, *Parietaria Lutea*, *Lencoium*, *Lillies*, *Paeonies*, double *Jonquils*, *Muscaria revers'd*, *Cochlearia*, *Periclymenum*, *Acanthus*, *Lilac*, *Rose-mary*, *Cherries*, *Wall-pears*, *Almonds*, *Abricots*, *Peaches*, *White-thorn*, *Arbor Juda* blossoming, &c.

II

Sun { rises-04^h-25^m }
{ sets -07--35 }

MAY

{ Hath Days } long-15^h-09^m
{ xxxij }

To be done

In the Orchard, and Olitory-Garden.

Sow Sweet-Majoran, Basil, Thyme, hot and Aromatic Herbs and Plants which are the most tender.

Sow Purslan, to have young: Lettice, large-sided Cabbage, painted Beans, &c.

Look carefully to your Mellons; and towards the end of this Moneth, forbear to cover them any longer on the Ridges either with Straw, or Mat-tresses, &c.

Ply the Laboratory, and distill Plants for Waters, Spirits, &c.

Continue Weeding before they run to Seeds.

Now set your Bees at full Liberty, look out often, and expect Swarms, &c.

Fruits in Prime, or yet lasting.

Apples.

Pepins, Deuxans or John-apples, West-berry-apples, Russeting, Gilly-flower-apples, the Maligar, &c. Codling.

Pears.

Great Kairville, Winter-Bon-Cretienne, Double-Blossom-pear, &c.

Cherries, &c.

The May-Cherry. Straw-berries, &c.

II

Sun } rises-04^h-25^m }
 { sets -07 -35 }

MAY

Hath Days }
 { xxxi. } long-15^h-09^m

To be done

In the Parterre, and Flower-Garden.

NOW bring your *Oranges, &c.* boldly out of the *Conservatory*; 'tis your-only *Season* to *Transplant*, and *Remove* them: let the *Cases* be fill'd with *natural-earth* (such as is taken the first half *spring*, from just under the *Turf* of the best *Pasture* ground) mixing it with one part of rotten *Cow-dung*, or very mellow *Soil* screen'd and prepar'd some time before; if this be too *stiff*, sift a little *Lime* discreetly with it: Then *cutting* the *Roots* a little, especially at bottom, set your *Plant*; but not too *deep*; rather let some of the *Roots* appear: Lastly, *settle* it with temperate *water* (not too much) having put some *rubbish* of *Brick-bats*, *Lime-stones*, *shells*, or the like at the bottom of the *Cases*, to make the *moisture* passage, and keep the *earth* loose: Then set them in the *shade* for a *fort-night*, and afterwards expose them to the *Sun*.

Give now also all your *bow'd-plants* fresh *earth* at the *surface*, in place of some of the old *earth* (a hand-depth or so) and loosning the rest with a *fork* without wounding the *Roots*: let this be of excellent rich *soil*, such as is throughly consum'd and will *sift*, that it may *wash* in the *verme*, and comfort the *Plant*: *Brush*, and *cleanse* them likewise from the *dust* contracted during their *Enclosure*: These two last directions have till now been kept as considerable *Secrets* amongst our *Gard'ners*: vide *August* and *September*.

Shade your *Carnations* and *Gilly-flowers* after *mid-day* about this *Season*: Plant also your *Stock-gilly-flowers* in beds, full *Moon*.

Gather what *Anemony-seed* you find ripe, and that is worth saving, preserving it very dry.

Cut likewise the *Stalks* of such *Bulbous-flowers* as you find dry.

Towards the *end*, take up those *Tulips* which are dri'd in the *stalk*; covering what you find to lie bare from the *Sun* and *showers*.

Flowers in Prime, or yet lasting.

Late set *Anemonies* and *Ranunculus omnigen.* *Anapodophylon*, *Chamae-iris Angustifol.* *Cyanus*, *Columbines*, *Caltha palustris*, double *Cotyledon*, *Digitatis*, *Fraxinella*, *Gladiolus*, *Geranium*, *Horminum Creticum*, yellow *Hemerocallis*, strip'd *Jacymb*, early *Bulbous Iris*, *Aphodel*, yellow *Lilies*, *Lychnis*, *Jacea*, *Bellis* double, white and red, *Millefolium luteum*, *Lilium Convallium*, *Span.pinkes*, *Depeford-pinkes*, *Rosa* common, *Cinnamon*, *Guilder* and *Cemifol.* &c. *Syringa's*, *Sedum's*, *Tulips Serotin*, &c. *Valerian*, *Veronica* double and single, *Musk Violets*, *Ladies Slipper*, *Stock-gilly-flowers*, *Spanish Nut*, *Star-flower*, *Chalcedons*, ordinary *Crow-foot*, red *Martagon*, *Bee-flowers*, *Campanula's* white and blew, *Persian Lilly*, *Hony-suckles*, *Buglosses*, *Homers Moly*, and the white of *Dioscorides*, *Pansy*, *Prunella*, purple *Tbalictrum*, *Sisymbrium* double and simple, *Leucoium bulbosum serotinum*, *Rose-mary*, *Stachas*, *Barba Jovis*, *Laurus*, *Satyrian*, *Oxyacanthus*, *Tamariscus*, *Apple-blossoms*, &c.

Sun { rises-03^h-51^m }
 { sets -08--09 }

☽
JUNE

{ Hath Days } long.^h16-17^m
 { xxx. }

To be done

In the *Orchard*, and *Olitory-Garden*.

Sow *Lettuce*, *Chervil*, *Radish*, &c. to have young, and tender *Salleting*.
 About the *midst* of *June* you may Inoculate *Peaches*, *Abricots*, *Cherries*,
Plums, *Apples*, *Pears*, &c.

You may now also (or before) cleanse *Vines* of exuberant *branches* and
tendrels, cropping (not cutting) and stopping the *joynt* immediately before
the *Blossome*, and some of the under branches which bear no *fruit*; especial-
ly in young *Vineyards* when they first begin to *bear*, and thence forwards.

Gather *Herbs* in the *Full*, to keep *dry*; they keep and retain their *virtue*,
and *sweet smell*, better *dry'd* in the *Sun*, then *shade*, whatever some pretend.

Now is your *Season* to distill *Aromatic Plants*, &c.

Water lately planted *Trees*, and put moist, and half rotten *Fearn*, &c.
about the foot of their *Stems*.

Look to your *Bees* for *Swarms*, and *Casts*; and begin to destroy *Insects* with
Hoofes, *Canes*, and tempting *baits*, &c. Gather *Snails* after *Rain*, &c.

Fruits in Prime, or yet *lasting*.

Apples.

Juniting (first ripe) *Pepins*, *John-apples*, *Robillard*, *Red-Fennouil*, &c.
 French

The *Maudlin* (first ripe) *Madera*, *Green-Royal*, *St. Laurence-pear*, &c.

Cherries, &c.

{ Black.

Duke, *Flanders*, *Heart* { Red.

{ White.

Luke-ward; early *Flanders*, the *Common-cherry*, *Spanish-black*, *Naples*
Cherries, &c.

Rasberries, *Corinths*, *Straw-berries*, *Melons*, &c.

Sun { rises-03^h-57^m }
 { sets -08 -09 }

☽
JUNE

{ Hath Days } long-16^h-17^m
 { xxx. }

To be done

In the *Parterre*, and *Flower-Garden*.

TRansplant *Autumnal Cyclamens* now if you would change their place, otherwise let them stand.

Gather the ripe seeds of *Flowers* worth the saving, as of choicest *Oriental Jacynth*, *Narcissus* (the two lesser, pale spurious *Daffodels* of a whitish green, often produce varieties) *Auriculas*, *Ranunculus's*, &c. and preserve them dry: Shade your *Carnations* from the afternoons Sun.

Take up your rarest *Anemonies*, and *Ranunculus's* after rain (if it come seasonable) the stalk wither'd, and dry the roots well: This about the end of the month: In mid June Inoculate *Jasmine*, *Roses*, and some other rare shrubs. Sow now also some *Anemony* seeds. Take up your *Tulip-bulbs*, burying such immediately as you find naked upon your beds; or else plant them in some cooler place; and refresh over parched beds with water. Plant your *Narcissus* of *Japan* (that rare flower) in *Pots*, &c. Also may you now take up all such *Plants* and *Flower-roots* as endure not well out of the ground, and replant them again immediately: such as the early *Cyclamen*, *Jacynth Oriental*, and other bulbous *Jacynths*, *Iris*, *Fritillaria*, *Crown-Imperial*, *Martagon*, *Muscari's*, *Dens Caninus*, &c. The slips of *Myrtil* set in some cool and moist place do now frequently take root: Also *Cytisus lunatus* will be multiplied by slips, such as are an handful long of that *Spring*. Look now to your *Aviary*; for now the *Birds* grow sick of their *Feathers*; therefore assist them with *Emulsions* of the cooler seeds bruis'd in their water, as *Melons*, *Cucumbers*, &c. Also give them *Succory*, *Beets*, *Groundsell*, *Chick-weed*, &c.

Flowers in Prime, or yet lasting.

A *Maranthus*, *Antirrhinum*, *Campanula*, *Clematis Pannonica*, *Cyanus*, *Digitalis*, *Geranium*, *Horminum Creticum*, *Hieracium*, bulbous *Iris*, and divers others, *Lychnis var. generum*, *Martagon* white and red, *Millefolium* white and yellow, *Nasturtium Indicum*, *Carnations*, *Pinks*, *Ornithogalum*, *Pansy*, *Phalangium Virginianum*, *Larks-beel* early, *Pilosella*, *Roses*, *Thlaspi Creticum*, &c. *Veronica*, *Viola pentaphyl.* *Campions* or *Sultans*, *Mountain Lilies* white, red: double *Poppies*, *Stock-gilly-flowers*, *Jasmines*, *Corn-flag*, *Hollyhoc*, *Muscaria*, *Serpyllum Citratum*, *Phalangium Allobrogicum*, *Oranges*, *Rose-mary*, *Lentiscus*, *Pome-Granade*, the *Lime-tree*, &c.

Sun { rise-04^h-00^m }
 { sets-08--00 }

☉

JULY

{ Hath Days } long-15^h-59^m
 { xxxi. }

To be done

In the Orchard, and Olitory-Garden.

Sow Lettuce, Radish, &c. to have tender salleting.

Sow later Pease to be ripe six weeks after Michaelmas.

Water young planted Trees, and Layers, &c. and prune now Abricots, and Peaches, saving as many of the young likeliest shoots as are well placed; for the now Bearers commonly perish, the new ones succeeding: Cut close and even.

Let such Olitory-herbs run to seed as you would save.

Towards the latter end, visit your Vineyards again, &c. and stop the exuberant shoots at the second joynt above the fruit; but not so as to expose it to the Sun.

Now begin to streighten the entrance of your Bees a little; and help them to kill their Drones if you observe too many; setting Glasses of Beer mingled with Hony to entice the Wasps, Flies, &c. which waste your store: Also hang Bottles of the same Mixture neer your Red-Roman-Necharines, and other tempting fruits, for their destruction; else they many times invade your best Fruit.

Look now also diligently under the leaves of Mural-Trees for the Snails; they stick commonly somewhat above the fruit: pull not off what is bitten; for then they will certainly begin a fresh.

Fruits in Prime, or yet lasting.

Apples.

Deux-ans, Pepins, Winter Russeting, Andrew-apples, Cinnamon-apple, red and white Juniting, the Margaret-apple, &c.

Pears.

The Primat, Russet-pears, Summer-pears, green Chesil-pears, Pearl-pear, &c.

Cherries.

Carnations, Morella, Great-bearer, Morocco-cherry, the Egriot, Bigarreaux, &c.

Peaches.

Nutmeg, Isabella, Persian, Newington, Violet-muscato, Rambouillet.

Plums, &c.

Primordial, Myrobalan, the red, blew, and amber Violet, Damasc. Denny Damasc. Pear-plum, Damasc. Violet, or Cheson-plum, Abricot-plum, Cinnamon-plum, the Kings-plum, Spanish, Morocco-plum, Lady Eliz. Plum, Tawny, Damascene, &c.

Rasberries, Goose-berries, Corinths, Straw-berries, Melons, &c.

Sun { rises-04^h-00^m }
 { sets--08--00 }

JULY

{ Hath Days } long-15^h-59^m
 { xxxi. }

To be done

In the Parterre, and Flower-Garden.

Slip *Stocks*, and other *lignous Plants* and *Flowers*: From henceforth to *Michaelmas* you may also lay *Gilly-flowers* and *Carnations* for *Increase*, leaving not above *two*, or three *spindles* for *flowers*, with *supports*, *cradles* and *hoopes*, to establish them against *winds*, and destroy *Earwigs*.

The *Layers* will (in a *month* or *six weeks*) strike *root*, being *planted* in a *light loamy earth* mix'd with excellent *rotten soil* and *steeped*: plant *six* or *eight* in a *pot* to save room in *Winter*: keep them well from too much *Rains*: But *shade* those which *blow* from the *afternoon's Sun*, as in the former *Months*.

Yet also you may lay *Myrtles*, and other curious *Greens*.

Water young planted *Shrubs* and *Layers*, &c. as *Orange-trees*, *Myrtles*, *Granads*, *Amomum*, &c. *clip Box*, &c. in *Parterres*, *Knats*, and *Compartiments*, if need be, and that it grow out of *order*; do it after *Rain*.

Graft by *Approach*, *Inarch* or *Inoculate* *Jasmines*, *Oranges*, and other your choicest *shrubs*.

Take up your early autumnal *Cyclamen*, *Tulips* and *Bulbs* (if you will *Remove* them, &c.) before mention'd; *Transplanting* them *immediately*, or a *Month* after if you please, and then cutting off, and trimming the *fibres*, spread them to *Air* in some *dry* place.

Gather now also your early *Cyclamen-seeds*, and *sow* it presently in *Pots*.

Likewise you may take up some *Anemonies*, *Ranunculus's*, *Crocus*, *Crown Imperial*, *Persian Iris*, *Fritillaria*, and *Colchicum's*, but plant the three last as soon as you have taken them up, as you did the *Cyclamen's*.

Remove now *Dens Caninus*, &c.

Latter end of *July* sift your *Beds* for *Off-sets* of *Tulips*, and all *Bulbous-roots*, also for *Anemonies*, *Ranunculus's*, &c. which will prepare it for *re-planting* with such things as you have ready in *pots* to plunge, or set in *naked earth* till the next *season*; as *Amarantus*, *Canna Ind.* *Mirabile Peruv.* *Capsicum Ind.* *Nasturt. Ind.* &c. that they may not lie empty, and dis-furnish'd.

Continue to cut off the wither'd stalks of your lower *flowers*, &c. and all others, covering with *earth* the *bared* roots, &c.

Now (in the driest season) with *Brine*, *Pot-ashes* and *water*, or a *decoction* of *Tobacco refuse*, water your *Gravel-walks*, &c. to destroy both *Worms* and *Weeds*, of which it will cure them for some *years*.

Flowers in Prime, or yet lasting.

A *Maranthus*, *Campanula*, *Clematis*, *Sultana*, *Veronica* purple and odoriferous, *Digitalis*, *Eryngium Planum*, *Ind. Phaseolus*, *Geranium triste*, and *Creticum*, *Lychnis Chalcædon.* *Jacea* white and double, *Nasturt. Ind.* *Millefolium*, *Musk-rose*, *Flos Africanus*, *Thiast. Creticum*, *Veronica mag. & parva*, *Volubilis*, *Balsam-apple*, *Holy-hock*, *Snapevagon*, *Corn-fl.* *Alkekengi*, *Lupines*, *Scorpion-grass*, *Caryophyllata* com. gen. *Stock-gilly-fl.* *Indian Tuberos Jacynth*, *Limonium*, *Linaria Cretica*, *Pansies*, *Prunella*, *Delphinium*, *Pbalangium*, *Periploca Virgin.* *Flos Passionis*, *Flos Cardinalis*, *Oranges*, *Amomum Plinii*, *Oleanders* red and white, *Agnus Castus*, *Arbutus*, *Tucca*, *Olive*, *Lignustrum*, *Tilia*, &c.

Sun } rises-04^h-43^m }
 { sets -07 -17 }

☾
AUGUST

{ Hath Days } long-14^h-33^m
 { xxxi. }

To be done

In the Orchard, and Olitory-Garden.

Incultate now early, if before you began not.

Prune off yet also superfluous Branches, and shoots of this second spring; but be careful not to expose the fruit, without leaves sufficient to skreen it from the Sun; furnishing, and nailing up what you will spare to cover the defects of your Walls. Pull up the Suckers.

Sow Raddish, tender Cabages, Cauly-flowers for Winter Plants, Corn-sallet, Marygolds, Lettuce, Carrots, Parsneps, Turneps, Spinage, Onions; also curl'd Endive, Angelica, Scurvy-grass, &c. Likewise now pull up ripe Onions and Garlic, &c.

Towards the end sow Purslan, Chard-Beet, Chervile, &c.

Transplant such Lettuce as you will have abide all Winter.

Gather your Olitory Seeds, and clip and cut all such Herbs and plants within one handfull of the ground before the fall. Lastly,

Unbind and release the Buds you inoculated if taken, &c.

Now vindemiate and take your Bees towards the expiration of this Month; unless you see cause (by reason of the Weather and Season) to defer it till mid-September: But if your Stocks be very light and weak, begin the earlier.

Make your Summer Perry and Cider.

Fruits in Prime, or yet lasting.

Apples.

The Ladies Longing, the Kirkham Apple, John Apple; the Seaming Apple, Cushion Apple, Spicing, May-flower, Sheeps-snout.

Pears.

Windsor, Sovereign, Orange, Bergamot, Slipper Pear, Red Catherine, King Catherine, Denny Pear, Prussia Pear, Summer Poppering, Sugar Pear, Lording Pear, &c.

Peaches.

Roman Peach, Man Peach, Quince Peach, Rambouillet, Musk Peach, Grand Carnation, Portugal Peach, Crown Peach, Bourdeaux Peach, Lavar Peach, the Peach De-pot, Savoy Malacotton, which lasts till Michaelmas, &c.

Nectarines.

The Muroy Nectarine, Tawny, Red-Roman, little Green Nectarine, Cluster Nectarine, Yellow Nectarine.

Plums.

Imperial, Blew, White Dates, Yellow Pear-plum, Black Pear-plum, White Nutmeg, late Pear-plum, Great Anthony, Turkey Plum, the Jane Plum.

Other Fruit.

Cluster-grape, Muscadine, Corinths, Cornelians, Mulberies, Figs, Filberts, Melons, &c.

Sun { rises-04^b-43^m }
 { sets-07--17 }

AUGUST

{ Hath Days } long-14^b-33^m
 { xxxi }

To be done

In the Parterre, and Flower-Garden.

Now (and not till now if you expect success) is the just Season for the budding of the Orange Tree: Inoculate therefore at the commencement of this Month.

Now likewise take up your *bulbous Iris's*; or you may sow their seeds, as also those of *Lark-beel*, *Candi-tuftis*, *Columbines*, *Iron-colour'd Fox-gloves*, *Holly-hocks*, and such Plants as endure Winter, and the approaching Seasons.

Plant some *Anemomy* roots to have flowers all Winter, if the roots escape.

You may now sow *Narcissus*, and *Oriental Jacynths*, and re-plant such as will not do well out of the Earth, as *Fritillaria*, *Iris*, *Hyacinths*, *Martagon*, *Dens Caninus*.

Gilly-flowers may yet be sipp'd.

Continue your taking up of *Bulbs*, *Lilies*, &c. of which before.

Gather from day to day your *Alaternus* seed as it grows black and ripe, and spread it to sweat and dry before you put it up; therefore move it sometimes with a broom that the seeds clog not together.

Most other Seeds may now likewise be gathered from shrubs, which you find ripe.

About mid-Aug. transplant *Auricula's*, dividing old and lully roots; also prick out your Seedlings: They best like a loamy sand, or light moist Earth.

Now you may sow *Anemomy* seeds, *Ranunculus's*, &c. lightly cover'd with fit mould in Cases, shaded, and frequently refresh'd: Also *Cyclamen*, *Jacynths*, *Iris*, *Hepatica*, *Primroses*, *Fritillaria*, *Martagon*, *Fraxinella*, *Tulips*, &c. but with patience; for some of them, because they flower not till three, four, five, six, and seven years after, especially the *Tulips*, therefore disturb not their beds, and let them be under some warm place, shaded yet, till the heats are past, lest the seeds dry; only the *Hepaticas*, and *Primeroses* may be sow'd in some less expos'd Beds.

Now, about *Bartholomew-tide*, is the only secure season for removing and laying your perennial Greens, *Oranges*, *Lemmons*, *Myrtils*, *Philyreas*, *Oleanders*, *Jasmines*, *Arbutus*, and other rare Shrubs, as *Pome-granads*, *Roses*, and whatever is most obnoxious to frosts, taking the shoots and branches of the past Spring and pegging them down in very rich earth and soil perfectly consum'd, water them upon all occasions during the Summer; and by this time twelvemonth they will be ready to remove, Transplanted in fit earth, set in the shade, and kept moderately moist, not over wet, lest the young fibers rot; after three weeks set them in some more airy place, but not in the Sun till fifteen days more; Vide our Observations in April, and May, for the rest of these choice Directions.

Flowers in Prime, or yet lasting.

A *Maranthus*, *Anagallis Lusitanica*, *Aster Atticus*, *Blattaria*, *Spanish Bells*, *Belvedere*, *Campanula*, *Clematis*, *Cyclamen Vernum*, *Datura Turcica*, *Eliochryson*, *Eryngium planum* & *Amblystimum*, *Geranium Creticum*, and *Triste*, *Yellow Stocks*, *Hieracium minus Alpestre*, *Tuberose Hyacinth*, *Limonium*, *Linaria Cretica*, *Lychnis*, *Mirabile Peruvian*, *Yellow Milkfol*, *Nasturt. Ind.* *Yellow mountain Hearts-ease*, *Maracoe*, *Africanus flus*, *Convolutulus's*, *Scabious*, *Aphodils*, *Lupines*, *Colchicum*, *Leucoion*, *Autumnal Hyacinth*, *Holly-hoc*, *Star-wort*, *Heliotrop*, *French Mary-gold*, *Daisies*, *Geranium nocte olens*, *Common Pansies*, *Lark-beels* of all colours, *Nigella*, *Lobells Catch-fls*, *Tblaspi Creticum*, *Rosemary*, *Musk-Rose*, *Monthly Rose*, *Oleanders*, *Spanish Jasmine*, *Yellow Indian Jasmine*, *Myrtils*, *Oranges*, *Pome-granads* double, and single flowers, *Agnus Castus*, &c.

Sun { rises-05^h-41^m }
 { sets-06--19 }

SEPTEMBER

{ Hath Days }
 { xxx. } long-12^h-37^m

To be done

In the Orchard, and Olitory-Garden.

Gather now (if ripe) your *Winter Fruits*, as *Apples, Pears, Plums, &c.* to prevent their falling by the great *Winds*: Also gather your *Wind-falls* from day to day: do this work in *dry weather*.

Sow *Lettuce, Radish, Spinage, Parsneps, Skirrets, &c. Cauly-flowers, Cabbages, Onions, &c. Scurvy-grass, Anis-seeds, &c.*

Now may you *Transplant* most sorts of *Esculent, or Physical plants, &c.* Also *Artichocks, and Asparagus-roots.*

Sow also *Winter Herbs and Roots, and plant Straw-berries* out of the *Woods.*

Towards the *end*, earth up your *Winter Plants and Sallad herbs*; and plant forth your *Cauly-flowers and Cabbages* which were sown in *August.*

No longer now defer the *taking* of your *Bees*, streightning the *entrances* of such *Hives* as you leave to a small *passage*, and continue still your *hostility* against *Wasps*, and other robbing *Insects.*

Cider-making continues.

Fruits in Prime, or yet lasting.

Apples.

The *Belle-bonne, the William, Summer Pearmain, Lording-apple, Pear-apple, Quince-apple, Red-greening ribb'd, Bloody-Pepin, Harvey, Violet-apple, &c.*

Pears.

Hamdens Bergamot, (first ripe) Summer Bon Chrestien, Norwich, Black Worcester, (baking) Green-field, Orange, Bergamot, the Queen hedge-pear, Lewes-pear (to dry excellent) Frith-pear, Arundel-pear (also to bake) Brunswick-pear, winter Poppering, Bings-pear, Bishops-pear, (baking) Diego, Emperours-pear, Cluster-pear, Messire Jean, Rowling-pear, Balsam-pear, Bezy d' Hery, &c.

Peaches, &c.

Malacoton, and some others, if the year prove backwards, Almonds, &c.

Quinces.

Little Blew-grape, Muscadine-grape, Frontinias, Parsley, great Blew-grape, the Verjuyce-grape excellent for sauce, &c.

Berberries, &c.

Sun { rises-05^h-41^m }
 { sets--06--19 }

SEPTEMBER

{ Hath Days } long-12^h-37^m
 { xxx. }

To be done

In the Parterre, and Flower-Garden.

PLant some of all the sorts of *Anemonies* after the first *Rains*, if you will have *flowers* very forwards; but it is surer to attend till *October*, or the *Month* after, lest the over *moisture* of the *Autumnal* seasons give you cause to repent.

Begin now also to *plant* some *Tulips*, unless you will stay till the later end of *October*, to prevent all hazard of rotting the *Bulbs*.

All *Fibrous* Plants, such as *Hepatica*, *Heliebor*, *Camomile*, &c. Also the *Capillaries*; *Matricaria*, *Violets*, *Prim-roses*, &c. may now be *transplanted*.

Now you may also continue to sow *Alaternus*, *Philyrea* (or you may forbear till the *Spring*) *Iris*, *Crown Imper*, *Martagon*, *Tulips*, *Delphinium*, *Nigella*, *Candy-tuft*, *Poppy*; and generally all the *Annuals* which are not impair'd by the *Frosts*.

Your *Tuberoses* will not endure the wet of this *Season*; therefore set the *Pots* into your *Conserve*, and keep them very *dry*.

Bind now up your *Autumnal Flowers*, and *Plants* to *staks*, to prevent sudden *Gusts* which will else prostrate all you have so industriously rais'd.

About *Michaelmas* (sooner, or later, as the *Season* directs) the weather *fair*, and by no means *foggy*, retire your choice *Greens*, and rarest *Plants* (being *dry*) as *Oranges*, *Lemons*, *Indian*, and *Span. Jasmine*, *Oleanders*, *Barba-Jovis*, *Amomum* *Plin.* *Cistus* *Lunatus*, *Chamelea* *tricocco*, *Cistus* *Ledon* *Clusij*, *Dates*, *Aloes*, *Sedum's*, &c. into your *Conservatory*; ordering them with fresh *mould*, as you were taught in *May*, viz. taking away some of the utmost *exhausted* earth, and *stirring* up the rest, fill the *Cases* with rich, and well consum'd *soil*, to wash in, and nourish the *Roots* during *Winter*; but as yet leaving the *doors* and *windows* open, and giving them much *Air*, so the *Winds* be not sharp, nor weather *foggy*; do thus till the *cold* being more intense advertise you to *enclose* them all together: *Myrtles* will endure abroad near a *Month* longer.

The *cold* now advancing, set such *plants* as will not endure the *House* into the *earth*; the *pots* two or three *inches* lower than the *surface* of some *bed* under a *Southern* exposure: Then cover them with *glasses*, having cloath'd them first with sweet and *dry Moss*; but upon all *warm*, and *benigne emissions* of the *Sun*, and sweet *showers*, giving them *air*, by taking off all that covers them: Thus you shall preserve your *costly* and precious *Marum* *Syriacum*, *Cistus's*, *Geranium* *noite olens*, *Flos* *Cardinalis*, *Maracocs*, seedling *Arbutus's* (a very hardy plant when greater) choicest *Ranunculus's* and *Anemonies*, *Acacia* *Egypti*, &c. Thus governing them till *April*. Secrets not till now divulg'd.

Note that *Cats* will eat, and destroy your *Marum* *Syriac*, if they can come at it.

Flowers in Prime, or yet lasting.

A *Maranthas* *tricolor*, and others; *Anagallis* of *Portugal*, *Antirrhinum*, *African* *fl.* *Amomum* *Plinii*, *Aster* *Atticus*, *Belvedere*, *Bellis*, *Campanula's*, *Colchicum*, *Autumnal* *Cyclamen*, *Chrysanthemum* *angustifol.* *Eupatorium* of *Canada*, *Sun-flower*, *Stock-gill* *fl.* *Geranium* *Creticum*, and *noite olens*, *Gentianella* *annual*, *Hieracium* *minus* *Alpestre*, *Tuberous* *Indian* *Jacynth*, *Linaria* *Cretica*, *Lychnis* *Constant.* single and double; *Limonium*, *Indian* *Lilly* *Narciss*. *Pomum* *Aureum*, and *Amoris*, & *Spinosum* *Ind.* *Marvel* of *Peru*, *Mille-fotium* *yellow*, *N.* *sturtium* *Indicum*, *Persian* *autumnal* *Narcissus*, *Virginian* *Pbalangium*, *Indian* *Phasciolum*, *Scarlet* *Beans*, *Convolvulus* *divers.* *gen.* *Candy* *Tuft*, *Veronica*, purple *Volubilis*, *Aphodill.* *Crocus*, *Garnsey* *Lily*, or *Narcissus* of *Japan*, *Poppy* of all colours, single, and double, *Malva* *arborescens*, *Indian* *Pinky*, *Ethiopic* *Apples*, *Capiscum* *Ind.* *Gilly-flowers*, *Passion-flower*, *Dature* double and sing. *Portugal* *Ranunculus's*, *Spanish* *Jasmine*, yellow *Virginian* *Jasmine*, *Rhododendron* white and red, *Oranger*, *Myrtles*, *Muske* *Rose*, and *Monethly* *Rose*, &c.

Sun { rises-06^h-26^m }
 { sets--05 -24 }

^m
OCTOBER

{ Hath Days } long-10^h-47^m
 { xxxi. }

To be done

In the Orchard, and Olitory-Garden.

Trench Grounds for Orcharding, and the Kitchin-garden, to lye for a Winter mellowing.

Plant dry Trees (i.) Fruit of all sorts, Standard, Mural, or Shrubs which lose their leafe; and that so soon as it falls: But be sure you chuse no Trees for the Wall of above two years Graffing at the most.

Now is the time for Ablaqueation, and laying bare the Roots of old unthriving, or over hasty blooming trees.

Moon now decreasing, gather Winter-fruit that remains, weather dry; take heed of bruising, lay them up clean lest they taint, Cut and prune Roses yearly.

Plant and Plash Quick-sets.

Sow all stony, and hard kernels and seeds, such as Cherry, Pear-plum, Peach, Almond-stones, &c. Also Nuts, Haws, Aspen, Sycomor and Maple keys; Acorns, Beech-mast, Apple, Pear and Crab kernels, for Stocks; or you may defer it till the next Moneth towards the later end.

You may yet sow Letuce.

Make Winter Cider, and Perry.

Fruits in Prime, or yet lasting.

Apples.

Belle-et-Bonne, William, Costard, Lording, Parsley-apples, Pearmain, Pear-apple, Honey-meal, Apis, &c.

Pears.

The Caw-pear (baking) Green-butter-pear, Thorn-pear, Clove-pear, Roussel-pear, Lombart-pear, Russet-pear, Suffron-pear, and some of the former Moneth.

Bullis, and divers of the September Plums and Grapes, Pines, &c.

Sun { rises-06^h-26^m }
 { sets-05--24 }

m
OCTOBER

{ Hath Days } leng-10^h-47^m
 { xxxi. }

To be done

In the *Parterre*, and *Flower-Garden*.

Now your *Hycinthus Tuberosus* not enduring the *wet*, must be set into the *house*, and preserved very *dry* till *April*.

Continue *sowing* what you did in *Sept.* if you please: Also,

You may plant some *Anemonies*, and *Ranunculus's*, in fresh *sandy earth*, taken from under the *turf*; but lay richer *mould* at the *bottom* of the *bed*, which the *fibres* may reach, but not touch the main *roots*, which are to be cover'd with the *natural earth* two inches deep: and so soon as they appear, secure them with *Mats*, or *Straw*, from the *winds* and *frosts*, giving them *air* in all *benigne intervals*; if possible *once* a day.

Plant also *Ranunculus's* of *Tripoly*, &c.

Plant now your choice *Tulips*, &c. which you feared to *interre* at the beginning of *September*; they will be more secure, and forward enough: but plant them in *natural earth* somewhat *impoverish'd* with very fine *sand*; else they will soon lose their *variegations*; some more rich *earth* may lye at the *bottom*, within reach of the *fibres*: Now have a care your *Carnations* catch not too much *wet*; therefore retire them to *covert*, where they may be kept from the *rain*, not the *air*, trimming them with *fresh mould*.

All sorts of *Bulbous roots* may now also be safely *buried*; likewise *Iris's*, &c.

You may yet sow *Alaternus*, and *Philyrea* seeds: It will now be good to *Beat*, *Roll*, and *Mow Carpet-walks*, and *Camomile*; for now the ground is *supple*, and it will *even* all *inequalities*: Finish your last *Weeding*, &c.

Sweep and cleanse your *Walks*, and all other *places*, of *Autumnal leaves* fallen, lest the *Worms* draw them into their *boles*, and foul your *Gardens*, &c.

Flowers in Prime, or yet lasting.

A *Maranthus tricolor*, &c. *Aster Atticus*, *Amonum*, *Antirrhinum*, *Colchicum*, *Heliotrop*, *Stock-Gilly-fls.* *Geranium triste*, *Ind.* *Tuberosa Jacynth*, *Limonium*, *Lychnis* white and double, *Pomum Amoris* and *Ethiop.* *Marvel of Peru*, *Millefol. luteum*, *Autumnal Narciss.* *Pansies*, *Aleppo Narciss.* *Spherical Narciss.* *Nasturt.* *Persicum*; *Gilly-fls.* *Virgin.* *Phalangium*, *Pilosella*, *Violet*, *Veronica*, *Arbutus*, *Span.* *Jasmine*, *Oranges*, &c.

Sun { rises-07^h-34^m }
 { sets--04 -26 }

NOVEMBER

{ Hath Days } long-08^h52^m
 { xxx. }

To be done

In the Orchard, and Olitory-Garden.

Carry *Compost* out of your *Melon-ground*, or turn and *mingle* it with the *earth*, and lay it in *Ridges* ready for the *Spring*: Also *trench* and fit ground for *Artichocks*, &c.

Continue your *Setting* and *Transplanting* of *Trees*; lose no time, hard *Frosts* come on apace: Yet you may lay *bare* old *Roots*.

Plant young *Trees Standards*, or *Mural*.

Furnish your *Nursery* with *Stocks* to *graft* on the following year.

Sow and *set* early *Beans* and *Pease* till *Shrove-tide*; and now lay up in your *Cellars* for *Seed*, to be *transplanted* at *Spring*, *Carrots*, *Parfneps*, *Turneps*, *Cabbages*, *Cauly-flowers*, &c.

Cut off the *tops* of *Asparagus*, and *cover* it with *long-dung*, or make *Beds* to *plant* in *Spring*, &c.

Now, in a *dry* day, gather your last *Orchard-fruits*.

Take up your *Potatos* for *Winter* spending, there will enough remain for *stock*, though never so exactly gather'd.

Fruits in Prime, or yet lasting.

Apples.

THe *Belle-bonne*, the *William*, *Summer Pearmain*, *Lording-apple*, *Pear-apple*, *Cardinal*, *Winter Chest-nut*, *Short-start*, &c. and some others of the former *two last Months*, &c.

Pears.

Messire Jean, *Lord-pear*, *long Bergamot*, *Warden*, (to bake) *Burnt Cat*, *Sugar-pear*, *Lady-pear*, *Ice-pear*, *Dove-pear*, *Deadmans-pear*, *Winter Bergamot*, *Bell-pear*, &c.

Bullis, *Medlars*, *Services*.

Sun { rises-07^h-34^m }
 { sets-04--26 }

NOVEMBER

{ Hath Days } long-08^h-52^m
 { xxx. }

To be done

In the *Parterre*, and *Flower-Garden*.

Sow *Auricula* seeds thus; prepare very rich earth, more then half dung, upon that sift some very light sandy mould; and then sow: set your *Cases* or *Pans* in the Sun till March.

Cover your peeping *Ranunculus's*, &c.

Now is your best season (the weather open) to plant your fairest *Tulips* in places of shelter, and under *Espaliers*; but let not your earth be too rich, vide *Octob.* Transplant ordinary *Jasmine*, &c.

About the middle of this Month (or sooner, if weather require) quite enclose your tender Plants, and perennial Greens, Shrubs, &c. in your Conservatory, secluding all entrance of cold, and especially sharp winds; and if the Plants become exceeding dry, and that it do not actually freeze, refresh them sparingly with qualified water (i.) mingled with a little Sheeps, or Cow-dung: If the season prove exceeding piercing (which you may know by the freezing of a dish of water set for that purpose in your Green-house) kindle some Charcoals, and then put them in a hole sunk a little into the floor about the middle of it: This is the safest Stove: At all other times, when the air is warm'd by the beams of a fine day, and that the Sun darts full upon the house shew them the light; but enclose them again before the Sun be gone off: Note that you must never give your *Aloes*, or *Sedums* one drop of water during the whole Winter.

Prepare also *Mattresses*, *Boxes*, *Cases*, *Pots*, &c. for shelter to your tender Plants and Seedlings newly sown, if the weather prove very bitter.

Plant *Roses*, *Althæa Frutex*, *Lilac*, *Syringas*, *Cytisus*, *Peonies*, &c.

Plant also *Fibrous roots*, specified in the precedent Month.

Sow also *stony-seeds* mention'd in *Octob.*

Plant all *Forest-trees* for *Walks*, *Avenues*, and *Groves*.

Sweep and cleanse your *Garden-walks*, and all other places, of *Autumnal* leaves.

Flowers in Prime, or yet lasting.

A *Nemonies*, *Meadow Saffron*, *Antirrhinum*, *Stock-gilly-fl.* *Bellis*, *Pansies*, some *Carnations*, double *Violets*, *Vetonica*, *Spanish Jasmine*, *Musk-Rose*, &c.

Sun { rises-08^h-10^m }
 { sets--03--50 }

DECEMBER

{ Hath Days }
 xxxi. } long-07^h-40^m

To be done

In the Orchard, and Olitory-Garden.

PPrune, and Nail Wall-fruit, and Standard-trees.

You may now plant Vines, &c.

Also Stocks for Graffing, &c.

Sow, as yet, Pomace of Cider-pressings to raise Nurseries; and set all sorts of Kernels, Stones, &c.

Sow for early Beans and Pease, but take heed of the Frosts; therefore surest to defer it till after Christmas, unless the Winter promise very moderate.

All this Moneth you may continue to Trench Ground, and dung it, to be ready for Bordures, or the planting of Fruit-trees, &c.

Now feed your weak Stocks.

Turn and refresh your Autumnal Fruit, lest it taint, and open the Windows where it lyes, in a clear and Serene day.

Fruits in Prime, and yet lasting.

Apples.

Rousseting, Leather-coat, Winter Reed, Chest-nut Apple, Great-belly, the Gono-further, or Cats-head, with some of the precedent Moneth.

Pears.

The Squib-pear, Spindle-pear, Virgin, Gascogne-Bergomot, Scarlet-pear, Stopple-pear; white, red and French Wardens (to bake or rost) &c.

Sum { rises-08^h-10^m }
 { sets -03-50 }

DECEMBER

Hath Days }
 xxxi. } long-07^h-40^m

To be done

In the Parterre, and Flower-Garden.

AS in *January*, continue your *hostility* against *Vermine*.
 Preserve from too much *Rain* and *Frost* your choicest *Anemonies*, *Ranunculus's*, *Carnations*, &c.

Be careful now to keep the *Doors* and *Windows* of your *Conservatories* well *matted*, and guarded from the piercing *Air*: for your *Oranges*, &c. are now put to the *test*: Temper the *cold* with a few *Char-coal* govern'd as directed in *November*, &c.

Set *Bay-berries*, &c. dropping ripe.

Look to your *Fountain-pipes*, and cover them with fresh and *warm Litter* out of the *Stable*, a good *thickness*, lest the *frosts* crack them; remember it in *time*, and the *Advice* will save you both trouble and charge.

Flowers in Prime, or yet lasting.

A*Nemonies* some, *Persian*, and *Common* winter *Cyclamen*, *Antirrhinum*, *Black Hellebor*, *Laurus tinus*, single *Prim-roses*, *Stock-gilly-fls.* *Iris Clusii*, *Snow flowers* or *drops*, *Tucca*, &c.

FOR by such a *Kalendar* it is that a *Royal Garden*, or *Plantation* may be contriv'd, according to my Lord *Verulam's* design, *pro singulis Anni Mensibus*, for every *Month* of the *Year*.

But because it is in this *cold Season*, that our *Gard'ner* is chiefly diligent about preserving his more *tender*, *rare*, *exotic*, and *costly Shrub's*, *Plants* and *Flowers*; We have thought fit to add the *Catalogue*, as it is (much after this sort) collected to our hands by the *Learned*, and *Industrious Doctor Sbarrock* (though with some *reformation* and *improvement*) of all such, as according to their different *Natures* do require more or less *indulgence*: And these we have distributed likewise into the *three following Classes*.

I. CLASSE.

Being least *patient of cold*, and therefore to be first set into the *Conservatory*, or other ways defended.

A *Cacia Egyptiaca*, *Aloe American*. *Amaranthus tricolor*, *Aspalathus Cret.* *Balsamum*, *Helichryson*, *Chamelæa tricocco*, *Nasturtium Indicum*, *Indian Narcissus*, *Ornithogalon Arab.* *Ind.* *Phaseol.* *Capsicum Ind.* *Pomum Æthiop.* *Aureum*, *Spinosum*, *Summer Sweet Majoran*, the two *Marum Syriacum*, *Dactyls*, *Pistacio's*, the great *Indian Fig*, *Lilac flo. alb.* *Lavendula Multif.* *Clus.* *Cistus Ragusæus flo. alb.* *Colutea Odorata Cretica*, *Narcissus Tuberosus*, *Styrax Arbor*, &c.

II. CLASSE.

Enduring the second degree of *Cold*, and accordingly to be secur'd in the *Conservatory*.

A *Momum Plinii*, *Carob*, *Chamelæa Alpestris*, *Cistus Ledon Clus.* *Citron*, *Vernal Cyclamen*, *Summer purple Cyclamen*, *Digitalis Hispan.* *Geranium triste*, *Hedysarum Clypeatum*, *Aspalathus Creticus*, *Span.* *Jasmine*, *Virgin.* *Jasmine*, *Suza Iris*, *Jacobæa Marina*, *Alexandrian Laurel*, *Oleanders*, *Limonium elegans*, *Myrtyls*, *Oranges*, *Lentiscus*, *Levantine tufted Narcissus*, *Gill. flo.* and choicest *Carnations*, *Phalangium Creticum*, *Asiatic double and single Ranunculus's*, *Narcissus of Japan*, *Cytisus rubra*, *Canna Indica*, *Thymus capitatus*, *Verbena nodi flo. Cretica*, &c.

III. CLASSE.

Which not *perishing* but in *excessive Colds*, are therefore to be last set in; or rather *protected* under *Mattresses*, and *sleighter Coverings*, abroad in the *Earth*, *Cases*, *Boxes* or *Pots*, &c.

A *Brotonum mas. fem.* *Winter Aconite*, *Adiantum Verum*, *Bellis Hispan.* *Calceolus Mariae*, *Capparis*, *Cineraria*, *Cneorum Matthioli*, *Cytisus Maranthæ*, *rub. Lunatus*, *Eryngium planum totum Cæruleum*, *Fritillaria mont.* *Geniſſa Hispan. flo. alb.* *Pom-Granads*, *Oriental Jacynth*, *Bulbous Iris*, *Laurels*, *Cherry Laurel*, *Lychnis double white*; *Matricaria double flo.* *Olives*, *Pancration*, *Papaver spinociss.* *Maracoc*, *Rose-mary*, *Sisynrichium*, *Turpentine-tree*, *Tencrium*

um mas Tithymal. Myrtifol. *Vetonica* doub. flo. single *Violets*, *Lavender*, *Serpentaria* trifol. &c. *Ornithogalon Arab.* white and doub. *Narcissus* of *Constantinople*, late *Pine-apples*, *Moly*, *Persian Jasmine*, *Opuntia*, or the smaller *Indian Fig*, *Jucca*, *Seseli Æthiop.* *Agnus Castus*, *Malva Arborefcens*, *Cistus mas.* *Althæa Frutex*, *Sarsaparilla*, *Cupressus*, *Crithmum marinum*, &c.

And to *these* might some others be added; but we conceive them *sufficient*, and more then (we fear) some *envious* and *mercenary Gard'ners* will thank us for; but they deserve not the name of that *Communicative* and noble *Profession*: However, *this*, as a *Specimen* of our *Affection* to the *publick utility*, and in *Commiseration* of divers *honourable*, and *Industrious persons*, whose *Inclination* to this *innocent Toil* has made them spare no *Treasure* or *Pains* for the *furniture* of their *Parterres* with *variety*, the *miscarriage* whereof being sometimes *universal* to the *Curious*, has made us the more *freely* to impart both what we have *experimentally* learn'd by our own *Observations*, and from *others* of undoubted *Candor* and *Ingenuity*: But of this we promise a more ample *Illustration* as it concerns the *intire Art*, together with all its *Ornaments* of *Use* and *Magnificence*, as these *Endeavours* of ours shall find *entertainment*, and *opportunity* contribute to the *Design*.

FINIS.

THE HISTORY OF THE
REIGN OF CHARLES THE FIRST
BY JOHN BURNET

IN WHICH IS CONTAINED
A FULL AND COMPLETE HISTORY
OF THE REIGN OF CHARLES THE FIRST
FROM HIS MARRIAGE TO HIS DEATH
BY JOHN BURNET

FINIS

ERRATA.

Vulnera sanentur citius quam sentiantur.

E *Fig.* to the K. r. more equal. To the Reader, r. *homine libera*.
 Pag. 8. lin. 20. r. *Croic*. 48. this large spreading *should be read with the third Paragraph without any break*. p. 16. l. 29. r. other. 38. r. *Fren & Elm*. 22. 5. for *Omnis* r. *Fraxinus*. 25. 18. for *ule* r. *Wood*. 27. 10. r. *Nobleffe*. 29. 1. & c. r. *Syctmor* in all that *Chapter*. 42. 11. r. *flaves*. 47. 2. *dele* of. 49. 3. 25. r. *Brezaigne*. 52. 5. for *Halls* r. *Nuts*. 55. 32. r. tree does. 57. r. renders. 57. 34. r. gathered? 67. 4. for *shade* r. *shoot*. 73. 25. r. *ad ara*. 80. 43. r. *Avenine*. 81. 2. r. *juxta*. 8. *Tyburion*. 82. 18. r. *Fraiting*. 83. 41. r. in apt *Soil*. 47. by a *Couper*. 84. 5. r. four square Beams of four and forty foot long each of them. 14. r. *Wotton*. 87. 18. r. or thirty. 40. for *sale* r. *sole*. 88. 31. for *out side* r. *one side*. 104. 16. r. *Leves*. 25. *Talia*. 29. *Amnicoleque*. 35. *Palmar* by a mistake of the *x*. 114. 33. r. *mischievously*. 119. 22. r. *suggested*.
 The *Breaks and Positions* of some of the *Figures and Paragraphs*, with *literal mistakes and mispundations*, require the *Reader's* benevolence.

ERRATA.

Pomona.

In *Pref.* p. 4. l. 37. *dele* 48. 5. 32. for *extracted* r. *experienc'd*. 7. 6. r. *perform'd* it. 13. 2. for *prepar'd* r. *prolper'd*. l. 32. r. *affect*. 25. 11. r. *Laurenberg*. 35. 50. r. (two or three times).

ERRATA.

Kalendarium Hortense.

Intro. p. 57. l. 4. r. *Nobleffe*. 53. 8. for *huss* r. *Matt*. 63. 17. r. *Peruvian*. 64. 2. 1. *Oferty*. 66. 1. r. *hath* days xxxl. 68. 9. r. in the *Shade* then *Sun*. 69. 25. r. *Campanula*. 70. 28. r. *Morocco*. 75. 59. r. *Najfarium*. 80. 12. for *Seed* r. *feed*. 83. 7. r. *mercenary*.

ERRATA

In the former and latter Editions

It is to be observed that the Author has corrected the several Errors which were pointed out in the former Editions. The first Edition was published in the Year 1751, and the second in the Year 1763. The present Edition is the third, and is published in the Year 1771. The Author has taken great Care to correct the several Errors which were pointed out in the former Editions, and to add several new Observations which were not in the former Editions. The Author has also corrected the several Errors which were pointed out in the former Editions, and has added several new Observations which were not in the former Editions.

ERRATA

In the former and latter Editions

ERRATA

In the former and latter Editions

