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England's
IMPROVEMENT
REVIV'D:
Digested into
SIX BOOKS.

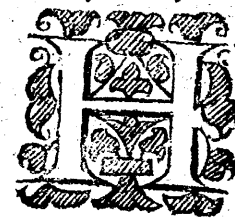
BY
Captain JOHN SMITH.



In the SAVOY.
Printed by Tho. Newcomb for the Author,
An. Dom. 1670.

TO THE
 RIGHT HONOURABLE
 WILLIAM,
 Lrd VISCOUNT BROUNKER
 President of the ROYAL SOCIETY.

My Lord,



Having at length finish'd that Discourse of
Planting, which about six Months since
 in the first rude Draught I presented to
 Your Lordship; I now take the Confi-
 dence from the Incouragement I then
 had from Your Hand, and that unexpected Approba-
 tion thereof given me afterward by a worthy and lear-
 ned Member of Your *Society*, to whom, by Your Lord-
 ships Order, it was Referr'd, to make it more Publick
 under the Patronage of so great a Name: I question
 not but I shall have many *Readers*, who, respecting
 more the Manner, then true end of Writing *Treatises*
 of this Nature, will Cavil at the barrenness of my Ex-
 pression, and Faulting a thing I pretend not to, Con-
 demn my Book before they have scarce Examin'd its
 Contents: But, as that was very little discouragement
 to me in the Writing, when I sought only to please
 some few Friends and my Self, so will it be less now,
 when I can Retort on those who Carp at Me. This
 Dedication I beseech Your Lordship therefore to ac-
 cept of these my Endeavours (which I hope, being
 pursu'd, will conduce very much to the Publick A d-
 vantage) and that Profession which therewith I make
 of being, My Lord,

Your Lps Most Humble & Obedient Servant

A 2

John Smith.

The Report of John Evelyn Esquire, by Order of the Royal Society, concerning the Following Discourse.

Mr. Smith,

I Have Perus'd your Accurate Treatise, Intituled, Englands Improvement Reviv'd; and find it so Industriously perform'd, and in so useful a Method, that I cannot but chearfully give it my Approbation: I have my self been engaged on the same Argument, by Commands from the Royal Society, which has now been sometime at the Printers, towards a Second Edition; and I shall therein not fail to Publish a due Encomium of your work, before it come abroad; For, though in some particulars we may happen to Treat of the same Subject; yet, it is without the least prejudice to each other: and, I am glad to find my own Conceptions Fortified, by a Person of so great a Talent and Experience beyond me: Cedat ergo in bonum publicum.

Sayes-Court, Feb. 10. 68,

J. EVELYN.

A LETTER from one of the Royal Society to his Friend the Author.

Worthy Kinsman,

Upon a second Perusal of your Papers, I am very glad to find the Opinion your Friends long since had of their worth, and your great Abilities confirm'd by the Approbation of so Learned and Honourable a Person as Mr. Evelyn: I knew they could be no longer alone in the Sentence they pass, than till your self would make your Experience in that main Piece of Husbandry, whereof your Book Treates more Publick. 'Tis a design truly generous, and an Improvement every way so advantageous, if thoroughly pursu'd, both to the Nation in general, and all Gentlemen who have a desire to make their Estates more considerable, that you would have done Posterity (that I may not say this Age alone) an Injury, in suppressing your thoughts. The next thing I wish to see, is, your Proposals put into Practice, and then the many New Plantations which in every Shire of this Kingdom shall be propagated, will be so many standing Monuments of your great Love you bore your Country. I am

Sir,

Yours,

Bensled, Octob. 23. 1669.

Sam. Woodford.



TO THE READER.



About 5 years since being informed by several Gentlemen Commissioners of the Navy, and others, that His Majesty having taken into consideration the great Wafts and decay of all Woods and Timber in England, especially in His own Forrests; was resolved not only to Preserve those young Trees which were left standing, but to Plant others for a future supply; and, being desired by some of the foresaid Gentlemen my Acquaintance, to give them an Account what I might Judge would be the Charges to Plant a Thousand Acres of Land with Seed and Sets of Oak, Ash, Beech and Elme, at 5 distances, as from one Foot to 4 Perches, together with the Manner and Way of Planting I should most approve of; in obedience to their Commands I set about the following Work, my intent at the first writing was, not to have exceeded half a score sheets of Paper; and when I had communicated my Thoughts to the Persons who Imploy'd me, to have laid them by for my own, or the use of any of my Friends who should undertake such a Design: but, I know not how one sheet produc'd another, and at length my Book has sweld to the Bulk you find it; for, besides that it is such a Piece of Husbandry that I have much delighted in, and endeavoured to know above 30 years, and, to effect the same, have made many Experiments throughout this Kingdom,

To the Reader.

Kingdom, and in other parts (particularly in *Ireland*, where I formerly kept three Ploughs of my own, till the Rebellion about 26 years since forc't me thence.) When I was once enter'd beyond my Comm'ssion, I took into Consideration all those sorts of Under-Woods that are most proper, and most in use, as to present advantage; and, I did it the rather, because I had Experienc't they might conveniently be planted among the Timber-Trees, till they grow to some considerable bigness, what other Improvements thou shalt find, take it as thrown into the Bargain.

I might have spoken here concerning the Firr-Tree, useful for Mafts & Yards of Ships, &c. but I fear the Clime partly, and partly the Soyle in *England* will not agree with it; For, although those kind of Trees will live where the Crust or good Earth is but shallow, and of reasonable depth, as the Beech does, yet if they find a deeper Crust they will thrive much better; Onely this in the General concerning the Firr, if they like the Earth, where they shall be Planted, and grow, as in the more Northern parts, an acre planted with them, at about 30 years end or growth may be worth 140 pounds; but, it was neither my business, nor much in my mind to Treat of this kind of Timber, and therefore as I omitted it in my Book, I forbear any further mention of it in this place.

In the Fifth Book I have taken occasion to Treat of Planting 200 Acres of Land, as well for pleasure as profit; and though part of that Discourse may cause Merrym't in some, yet with the Pleasute I have intermingled many good Rules and Observations, and I am so well satisfied with the Method I have Propounded in that and the other Books, that if any Person of Honour should so employ me, being unable by reason of the great Losses I have sustained, to put my own Rules in Practice for my self, I doubt not but I should answer his utmost Expectation.

If it be Objected, That this is a Subject which has been handled by several, and that so it is impossible but I must, if I do well tread in their Steps: I can safely answer for my self, and the main of my Discourse, that it is wholly New, and such as never

never before appeared in Print, both as to the Manner, Charges, and Advantage of Planting either one, or a thousand Acres, in the way, and at the Distances propounded: I confess I am but a bad Writer, and have been all my time more experienc'd in the Practice, then the Theory of this kind of Husbandry; yet, having more consulted the Publick then my self; I hope the Learned will indulge me, and so I deliver things as they ought, pardon the Rudeness of my words and expression.

A farther Advertisement to the Reader.

Though this Book came out t' us late, yet it was finished, at least the first and biggest part, about three years since; but, I was not able to publish it, by reason of my own great want, and former Losses, till I had obtained the Subscriptions of several Gentlemen in the Countrey, who Reading it, and approving both my Design and Method, freely contributed to the Charges of this Publication.

E R R A T A.

Page 2 l. 25 r. within these few years. p. 7 l. 4, for which in, r. within. *ib.* l. 29 r. dy-square. p. 19 l. 32, after but r. of. p. 20 l. 9 r. that time. *ib.* l. 18, for Mafts r. Mast. p. 22 l. 14, 15 r. Incroachment. p. 26 l. 12, for chalk r. shank. p. 32 l. 33, fo every r. very. p. 33 l. 32 r. they will. l. 34 r. of Trees. p. 39 l. 14 for their r. the. p. 41 l. 22, after whole r. ground. p. 49 l. 23 for parted r. planted. p. 51 l. 5, for that r. after. p. 63 l. 1. for de r. side p. 65 l. 20, after preserved r. in every Acre. p. 66 l. 33, after small r. houses. after p. 160, as far as 169 r. for 141, 142, &c. 161, 162, &c. p. 161 l. 32 dele the breadth of. p. 177 l. 33, for whereby r. where. p. 181 l. 13, for as r. when p. 182 l. 8 Anniseed r. Anniseed. p. 236 l. 19, for as in, r. alike in. p. 251 l. 17. for Rona r. Rova. p. 253 l. 21, for Stars r. Scars. Other Faults less considerable, and onely literals, the Readers judgment will easily supply.



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The First Book.

IN this Book is set down the great benefit that does arise from Trading, which is the Strength and Riches of a People, as also that the Kings of England are the Sovereign Lords of the British Seas, and that the said Seas have by force of Arms been kept and protected from the Power of all other Nations or Kings in memory, by undoubted Records ever since Edgar, Etheldred, Canutus the Dane, Edward the Confessor, William the Conqueror, and all the Kings of England successively to this day. You have in it also a Collection of certain Breviats of several Records now in the Tower of London proving the Sovereignty of the British Seas wholly to belong to the Kings of England demonstrated by the Examples of several other Kings and Princes; how they keep by force of Arms all Seas within their Territories. You have also here in passage shown the great use of Ships, how they are the strength of a Kingdom or People, and the chief Instruments of Trade: And this part lastly is concluded with a short Declaration of the woful Wasts and Decay of all Woods and Timber in England; especially in His Majesties Forests, not only during the Troubles, but to this very day; together with some short Proposals for preserving those Trees that are now standing and growing; planting wast Lands for a future supply, and several wayes of improving Barren Lands.

The Second Book.

IS treated the Planting Forrest-Lands, and other wast-Lands, with Plants for Timber-trees; also of all kinds of Earth Simple or Compound, Rich or Barren; and the manner and way of improving the same, either by planting
Seed

The Contents.

Seed or Sets for Timber-trees or Underwoods; Likewise by draining or watering such Lands that require the same: and Devonshiring or Burning those Lands grown over with Bushes, Heath Furrer, Goss, or such like: Also the way of Improving all the said several sorts of Earths by Lime, Marl, Dung, and many other such like Improvements; likewise by Plowing, Delving, Trenching, or Plow-trenching the said Land, and sowing seed for Corn or Grass, and of several Observations and Directions therein.

The Third Book.

You have set down the manner and way of planting one Acre of Land Statute-measure, that is 16 foot and a half to the Pearch; with seed or sets for Timber-trees and Underwoods, at several distances, as from 1 f to 4 Pearch: Also the converting the said Woods to several uses, with the Charges and Profit of performing the same, and several Observations in planting the said Woods: Also a Conjecture at the growth and Age of Timber-trees, as Oaks that are now standing and grow; which said Trees may be probably concluded to be the Production of the Earth at the Creation of the World: together with Preparatory Directions by plowing and sowing, with choice of Seed and Plants in order to the planting a thousand Acres.

The Fourth Book.

You have Directions to plant a thousand Acres of Land, Woodland-measure, 18 foot to the Pearch, with Seed and Sets for Timber-trees and Underwoods at the several distances before mentioned; and that is from one foot to four Pearch. Also here is set down the particular and total accounts of the Charges and Profit of planting of the said Land by Plowing or delving, and sowing or setting the same with seed or sets: As also converting the said Woods to several uses.

The Fifth Book.

IN this Book are Directions set down how to plant 200 Acres of Land as well for Pleasure as for Profit, wherein there shall be pleasant Walks with Timber-trees and Groves of Underwoods; and several Orchards and Gardens, with Fruit, Flowers and Herbs both for food and Physick, variety of
(a) Fowl,

The Contents.

Fowl, Bees, Silk-worms, Bucks, Does, Hares, and other Creatures of several kinds: And a short account of the Charges and Profit of keeping a thousand Doe-Cenies in Hutches, the Profit amounting to 4500l. per Annum; Also Fish-ponds and Streams of Water stored with many kind of Fish, and stocked with Decoy Ducks: And the use and vertues of all the Plants growing in this Garden of Pleasure.

The Sixth Book.

You have a Description of the Islands of Orkney and Shotland, with the manner and way of the Hollanders Fishing and Trading in those Seas and Islands: Also a Diurnal or short account of Coasting from London to those Islands, with a discovery of several Rocks and Harbours on that Coast: Here is likewise set down, that the Original of the Hollanders Trade, which is now much increased and spread through a great part of the World, was and is from the Fish they every year take on the Coast of England and Scotland. And in this Book lastly is set down the great benefit that does arise from Trade, with a short discourse, that the Traffick of Europe hath been engrossed into the hands, and carried on all along by the Venetians, Genoese, Portugals, Easterlings, Hollanders and English; and that the fallure and decay of the one was the original rise to another. Also a Composition which the Hollanders made with King Charles the First, to pay unto his Majesty one hundred thousand pounds yearly, and a hundred thousand pounds ready down.

The



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ENGLAND'S

(1)

ENGLAND'S IMPROVEMENT REVIVED.

THE FIRST BOOK.

The Argument.

In this Book is set down the great benefit that do arise from Trading, which is the Strength and Riches of a People; as also that the Kings of England are the Sovereign Lords of the British Seas; and that the said Seas have by force of Armes been kept and protected from the Power of all Nations and Kings in memory, by undoubted Records ever since Edgar, Etheldred, Canutus the Dane, Edward the Confessor, William the Conqueror, and all the Kings of England to this day. You have in it also a Collection of certain Breviats of several Records now in the Tower of London, proving the Sovereignty of the British Seas wholly to belong to the Kings of England, demonstrated by the Examples of several other Kings and Princes, how they keep by force of Armes all Seas within their Territories. You have also here in Passage shewn the great use of Ships, how they are the Strength of a Kingdom or People, and the chief Instruments of Trade. And this part lastly is concluded with a short Declaration of the wofull wasts and decay of all Woods and Timber in England, especially in his Majesties Forrests, not only during the Troubles, but to this very day: Together with some short Proposals for preserving those Trees that are now standing and growing, planting wast Lands for a future supply, and several ways of improving Barren Lands.

Having not long since in obedience unto his Majesties Gracious Declaration for the Fishing-Trade of Great Britain, discoursed something of Trade in general, and how it hath flourished; together with its Decay throughout Europe, as well as here in England, and particularly of the Fishing-Trade,

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Trade, and the great advantage that might accrue to this Nation thereby; I think it needless to repeat here what I have other where more largely set down: It is well known that Trade is the Life of all the habitable World, and that by the extent thereof the *Venetians* and *Genoese* did engross the greatest part of the Wealth of *Europe*, and by their Shipping, which continually supplied them with Men, became a Terror unto all about them: But when their Trading decayed, their Strength and Glory did with it fall; as if those two Twins, who were happily born together, were unwilling to survive each other. After the *Venetians* and *Genoese*, the *Easterlings* or *Hanse Towns* being Masters of the Trade, were very powerfull at Sea and Land, and in their own Bottoms transported our Staple Commodities all over *Europe*, when we for want of Ships could only look on and see them grow rich by our encrease. I need not tell how also by their Shipping the *Saxons*, *Danes*, and *Normans* invaded *England*, being the more powerfull, because Masters of a great Trade; but when that began to fail, their Strength and Shipping sensibly decayed. After the *Easterlings*, the *Portugals* discovering the way to the *Indies* by the *Cape of good hope*, quickly became Ingrossers of the whole Trade thither, and at once undermined the *Venetians* and all the *Hanse Towns*; and encreasing with the strength of *Spain*, became as formidable at home by Land, as they were abroad at Sea: But now in these years, those great Trades are fallen betwixt Us and the *Hollander*, only the *Hollander* by art and industry hath better improved his Interest, and made himself rich by our Staple Commodities; For the Original of all their Trade and Merchandise, together with the great support of it, was and is from the Fish they take in the Seas belonging unto *England* and *Scotland*, with the Product whereof, they are grown to that greatness that now they are; and may be as ill Neighbours to *England* as the *Easterlings* were. Now although there have been many that by way of Argument and for discourse sake, would goe about

to prove that the Seas are free and Common, and ought not to be bounded by any other Laws than their own Shoars and Sands; yet the necessity of Order in Mutual Commerce, and the safety of Mens Goods and Lives, may teach us by the very light of Nature, that Laws are as necessary for the government and preservation of such as frequent the Seas, as of those that trade on the firm Land: And though there be such Persons that dare presume thus to dispose of, and at their pleasure dispossess his Majesty of this his undoubted Birthright, the Royalties of the Seas, which his Ancestors have held beyond all memory; yet I hope he will never be unprovided of others to vindicate, as much as in them lies, by their Lives as well as their Pens, that Right of his Crown, and maintain those ancient Laws and Customs of his Kingdoms, unto which all foreign Princes and Nations have freely submitted, as by several Records yet to be seen in the *Tower of London* will evidently appear: And because it is the general disposition of Men, to choose rather to remain in ignorance than to be at charges, or by labour and industry to search and find out the truth of things; to inform such as are willing at least at anothers cost not to be ignorant, and strengthen the knowing, they being many and very copious, I shall here only give you a Breviat of so many of them as may suffice for this occasion.

1. There is to be seen a Record therefore in the Rolls there Concerning Taxes and Tributes, imposed upon Ships passing and Fishing upon our Coasts; the Ordinance was made in the second yeare of Richard the second, by the assent of Parliament.

2. And to like purpose, is that of *Edward* the fourth, where it is manifestly exprest, that the King appointed Wasters to guard the Fishers, not only of his own Realm, but Forrainers and Strangers that Fish upon his Coasts; and that the Wasters tooke a Ratable proportion of Every Ship towards their Cost and Expences securing their Fishing; and that these Wasters were to Prohibit all other Wasters whatsoever, that presumed to take the Office upon them, and to Commit them to Prison.

3. *Cambden* in his description of the North Riding of *Yorkshire*, sayth that the *Hollanders* in their Fishing for Herrings upon the North Coast of *England*, did first obtain Licence from *Scarborough* Castle.

4. And all Neighbour Princes upon any such occasion have obtained Licence for their Subjects to Fish in our Seas, as in a Truce of War, agreed between *Henry* the 4th and the *French King*.

5. Also during a Treaty between *Henry* the 6th and the *Duchess* of *Burgundy*; those of *Brabant* and *Flanders* had Liberty of free Fishing granted them.

6. And so it was in another Truce, between the said King and the *Duchess* of *Burgundy*.

7. The like we find in a Truce between *Edward* the 4th and *Francis* Duke of *Britain*.

8. *Phillip* the 2^d King of *Spaine*, in the first year of *Queen Mary*, Obtained Licence for his subjects to Fish upon the North Coasts of *Ireland*, for the terme of 21 Years, paying for the same yearly 1000 pounds: which was accordingly brought into the Exchequer of *Ireland*, and received by *Sir Henry Fitton* the then Treasurer there.

9. And the King of *France*, as others of his Predecessors, by speciall Licence only of the King of *England*, Fisheth upon our Coasts near *Rye*, with a sett and Limited Number of small Boats, and that only for Provision for his own Houshold.

10. All States and Princes, doe generally give Laws to pass and fish in the Seas Coasting upon their own Territories, and also Impose Taxes and Tributes for their own Profit and Commodity.

11. The Emperour of *Russia* compelleth all Fishermen within his Seas, though it be many Leagues from the *Maine*, to pay him Tribute.

12. In the Seas and Islands under the King of *Sweden*, they pay Taxes to him.

13. The

13. The King of *Denmark* at his Wardhouse in the sound, hath for every Licence a Doller, and for the Seale and Rose, a Noble of every Ship, and for every Last of Herrings being 12. Barrels, a Doller.

14. The Duke of *Medina Sidonia* in *Spain*, hath his greatest Revenues out of the Taxes lay'd on Fishermen.

15. All Princes of *Italy* bordering upon the Seas, Receive a proportion of like benefit.

16. And the *Hollanders* themselves Impose Taxes on the Fish taken by their Fishermen in our Seas.

But I shall keep my self neare home, and within the Sovereignty of our own Seas, which our Antient Monarchs of *Britain*, even from the first Memory that we can have of them, were always most carefull to preserve; for First, the Antient *Britains* admitted very few or no strangers at all into their Service at Sea, least turning Renegadoes, they might upon occasion lay them open to the Incurfions of their Neighbours the *Gaules*, by discovering to them the manner of their Shipping, which they kept as a very great secret: and therefore when *Julius Caesar* came with an intention first of all to invade this Island; *Gaul*, though very near and in sight of it, could not supply him with any that could give him a certaine Intelligence of the Place, or which way, unless in Vessels of his own, or a few passage Boats used by Traders to get thither: But these were Countermanded by a great Strength at Sea, which the *Britains* were Masters of; Shippes of a good Bulk, and serviceable in that Age for fight; which they continually employed to Round the Island and scoure the seas, which course the *Romans*, after they once came to be settled in the Isle, put in practice; and after something a better method, finding here such Timber as they could not be provided with for that use in any other part of their Empire.

After the *Romans*; *Edgar* King of the *Saxons* continually kept in readines a Navy of 400 Shippes, which being divided into 4 severall fleets, did every year after Easter, take their Course

Course to the 4 quarters of England, where they remained to Guard and scower the Seas, until the Winter following.

After *Edgar*, then *Etheldred*, for defence of the *British* Seas and Kingdom, caused of every 310 hides of Land a Ship to be built; which all meeting at *Sandwich* made the greatest Navy that ever this Kingdom set forth to Sea.

After him, *Canutus* the *Dane* Maintained a mighty Fleet of Ships, for the safety of the Seas and Kingdome; and so the succeeding Kings to *William* the Conqueror: I might instance in severall of our Kings of later Ages, who to maintain the Rights and Priviledges of the Seas, have set forth Mighty Fleets, and by force kept off the *Hollanders* and other Nations, till they by the increase of their Shipping have grown to that greatness both in Riches and strength, that they think they may doe any thing, and for some time have usurpt that right which undoubtedly belongs to his Sacred Majesty.

I might here enter upon the praise of the great use of Shipping, and the farr greater advantage that comes to a Nation thereby, of what importance it is to any People, both for encrease of their Riches and Wealth, Maintainance of their Peace and to make them formidable to those that are round about them: But I shall forbear, only thus much, it cannot but be infinitely more to us of this Island, then to any other Nation in *Europe*; Nature haveing given us the Sea for our bounds, which we can neither Pass nor Defend, but by the Convenience of Shipping; Adding to this the great love his Majesty hath to Navigation, and his promoting all kind of Industry that may conduce to the securing of this Nation from all assaults that way, there is none of his Loyall Subjects but think themselves bound, as much as their Talent and Capacity will amount to, some one way, some another, to advance so Noble a Design. For my own part, till an opportunitie offers of serving his Majesty upon that Element abroad, I shall endeavour what lies in my power for preparing something in order to it upon the Land at home; and shall hence take the occasion

occasion to Discourse of that great foundation of all Shipping; Tymber, chiefly the Oak: None therefore can beignorant of the great Waits committed in this Nation, of all sorts of Timber and especially of this, which in the space of 100 years, but much more within these 30 years; so that his Majesty's Forrests, that have most abounded with the best Materials in the World for Shipping, are very much impoverished and Decayed: Partly therefore upon the Reasons before mentioned, as a good Subject, and partly out of my duty, having had Employment as a sworn Officer in one of his Majesties Forrests, and at present dwelling on the Borders thereof, and thereby better able to see and judge the Waits that have been Committed: In Order to the preserving and increasing of this so necessary a Materiall, I Humbly Propose;

First, That there be speciall care taken for the Preservation of all such Timber as shall yet be found standing and Growing.

2. That there be provision made for the Planting of young Timber Trees, in such waist places of the Kingdom as are capable to produce them.

3. That no Person, whether of the Nobility or private Gentlemen, be permitted to Cut down, Grub or stock up any Timber Trees or Woods of Timber under full growth, or at the growth of 9 foot in the girt or Compass which is 3 foot Diameter; For in the Parish where I dwell, there hath been 5 several falls of Timber Trees, the most of them Oaks, fould by private Gentlemen within this 7 years, whereof the greatest grown Oak was not above 12 Inches at the Lower or butt End, if hewed by square, but the most part of them not above 8.

4. That all Owners of Woods be enjoyned at the time and season of their Cutting or felling the Under Woods, to leave standing and growing 20 of the best thriving young Trees, in each or every acre of Wood so cut or felled, if there be not so many already standing and Growing at the time of

of Cutting; and those to be preserved until they be of growth as aforesaid; for all Woods have Univesally Received a Mortal Blow within the space of 30 years, notwithstanding there is a statute for the Preservation and Maintainance of the same, Made the 35 *Henry 8*, and the 1. *Elizabeth*. That at every fall of Timber there should be 12 stovers or standils left and growing upon an acre or every acre of Land so felled; Now if the King and Kingdom were so sensible of the want of Timber in those daies, being 116 years since; much more may we now; therefore it is a thing to be regarded and of great Concernment, for the abuses of Woods are Infinite and intollerable, notwithstanding the words of the Statute: Indeed I have seen in many places at the falls, where they have left the number of Standils and more; But instead of them, have cut down those that were Reserved before; and at the next fall, even they escaped not, only a new race of young standils were left againe in their steads, to answer the bare word of the Statute, and not the true meaning of it, which by this shift is very much abused; therefore if Provision be not made to prevent that, and to put the true intention of the Statute in more force, there can be no encrease of Timber trees expected.

5. Sith Timber and timber Trees by due observation are found to decay very fast, it behoveth every good husband not only to Maintain and preserve such trees as remain, and so by the Statute to be set out, but voluntarily to Plant more, and because there is such a universal inclination to hurle down, it were expedient, that since Wit and Providence will not, Authority should Constrain some men, as well Lords as Tenants, to Plant, set or sowe, with Acorns, Ashenkeyes, Beechmast &c. For every hundred Acres of Land one acre: Or to Plant the said Acre with sets or Plants, and to preserve and keep the same until they come to full growth as aforesaid; Now although in former Ages, when *England* was overgrowne with Woods; The Felling, Grubbing, or Stoc-

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ing up of Trees did prove a great benefit to the Nation, by making room for Men, Corn, and Cattle; Yet moderation is now more necessary, for the too much overthrowing of Timber-trees, and stocking up Woods, hath brought a great scarcity of that Necessary Commodity; and if for the over-greedy use and advantage, though but small at the present, there be no regard of future occasions, there will follow Extream want, for there are many necessaries which without Firing are of little use, and Corn will require Mills to grinde, if all were Meddow and Pasture the Life of Cattle, then Arable Land the Life of Men were dead; when for one commodities sake, another is abandon'd by some private men, less expedient for the Publick Weale, it must of Necessity be destructive, and much it is to be lamented that the Devaluation of Woods, threatens a grievous weakening to this Kingdome; such a pestilent heat, issueth out of the many forges and furnaces for the making of Iron, as hath Devoured many Famous Woods, and by credible report there hath been lately in *Sussex* above 130. Hammers and Furnaces for Iron, the hammers and furnaces spending each of them in every 24. hours three or 4 loades of Charcole more or less, which in a yeare, amounteth unto an infinite quantitie, but because for lack of Water in the summer to blow their Bellows all of them cannot worke the whole year, we cannot give an account so Exactly, yet a probable Estimate we may make how many load of Coale, all the said Hammers and Furnaces may expend in one yeare; and to that end We shall suppose, that one time with another they may all worke two third parts of the year, which is 243. Dayes 8 howrs: Each day containing 24 hours or day and Night; and because all Hammers and furnaces spend not a like quantity of Coale, we shall therefore take or compute the least or smallest Number for all, which is 3 loades of Coale in 24 hours for each furnace and Hammer; Then there is spent in the 243 Dayes 8 hours: 1460 Load by one furnace and Hammer, which a-

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mounts unto for the 130 Hammers and furnaces, 94900 Load in one yeare; Now if there were so many loades spent in one County, it is an unknown quantity that hath been spent throughout *England*; and besides this great Consumption of Wood in making Iron, there have been many Glasse-houses which were likewise great spenders, so that if there be not a restraint layd on all Hammers and furnaces to provide other firing, and not Wood or Charcole, *England* will soone find a wofull want of that Commoditie, and be sensible of that great Evill, wilfull Waste, without any care taken either to preserve or Maintain a stock of Wood by new Planting; for there are too too many that except against Planting, Objecting that it will prejudice the poor, by Diminishing Corne and Cattle: to which is answered, that the greatest part of Woodland now in *England*, is overgrowne with Dwarfie trees, shrubs, Bushes and such like Incombrances which are of small benefit, either to the Poore or Rich, Corne or Cattle; of which Woods if there were but a third part cleansed or cleared by grubbing or stocking up those incumbrances, and good Plants planted for Timber Trees and Woods for firing, one Acre of the said Woodland would produce more Timber to the worth of it, and Wood for firing then 10 Acres of the said Land doth at present; and then if the other 2 thirds be likewise Cleared, the Land will breed and feed 5 times as many Cattle as now it doth; How then are the Poore hindred or Impoverished; but Secondly, if the one half of all Meadow, Pasture, and Arable Lands now in use and Tillage throughout *England*, were Improved by good Husbandry, Watering, Draining, Dunging, Marling, Liming, Sanding, Devonshiring and such like helps; (Also by considering the Constitution of the Ground, Whether best for Meadow, Pasture, or Plow, and what Corne or Graine will best Thrive in such and such grounds; for that there is a naturall affinity or Enmity between graines and ground, Experience doth teach; where there is a Mutuall agreement between Seed and ground the Increase hath been

an hundred for one; and on the contrary scarcely the seed again that was sowed, although the Land may be in strength; Also considering the Clime wherein the Land lyeth, thereby to order your Husbandry Early or late in the year.) This performed, the one half of the Land in *England* as was said before, will produce double the quantity of Corne, that the whole which is now in Tillage doth, as also Breed and feed many more Cattle; And Consequently *England* will maintain above Double the Number of People in a better Condition by the encrease of Trading; which will encrease his Majesties Revenues, and be more strength and safety to the Kingdome; for it is the greedy Covetousness of most men, Especially Farmers, to have much Land in their Occupation, when they cannot well manure the fourth part, but wear out the strength and Heart thereof with the Sythe and Plow; for Meadow Land will require soyling or Dunging as well as Arable; Now if Land that have been improved as Arable, Meadow and Pasture, may be yet improv'd higher, much more may those Lands that were never improved, admit of it; which are many waste Lands in Common throughout *England*: We shall instance in one County for all; which is that of *Surrey*; wherein there are many Thousand Acres of Land, overgrown with Shrubs, Bushes, Heath, Furrs, Goss, Whinnes, and such like, All which if they were stockt up, the Land Hackt and burnt in the place, and the ashes well spread all over the ground, every Acre of Land thus husbanded would be worth 10. Acres as it now is; But because there are severall hundred families of Poor People that have a livelyhood therefrom, it is my great Designe, That they should have the chief benefit by this Improvement: We shall speak more particularly to the severall parts as followeth: The Land being thus Cleansed by Devonshiring as is before explained; In the second place, all those Lands that lye wet by reason of Inundation of Water or Land Springs, &c. would be layed dry by Drayning. Thirdly the said Land that were Drayn'd, and also other Lands,

except Arable, would be watered or overflowed again at pleasure, as the Land may require, considering the season of the year, either with water springing or running from or out of Rocks or Hills of Chalk, Marle, Allom, or such like Mines, or from hills of arable land; for great Rains will wash down the Dung or soyl therefrom, and much enrich those grounds it runs into. Let no man spare charges according to his abilities in improving his Land; for I have known many men undone by building stately Houses, and others by neglecting their Lands; but did never know or hear of any that was undone by improving his Lands. Fourthly, this performed, we will suppose the fourth part of the whole Land to be one inclosure, and the same plowed and sowed with Corn; and that every poor Borderer that hath right of Common have 4 or 5 Acres more or less, as the said Common doth extend in largeness, and the number of the Poor belonging thereunto; and those Acres to be set out by Mears or Boundstones. Fifthly, another fourth part to be planted with Seed or Plants for Under-woods, only allowing 7 or 8 Plants in each or every Acre of Land to grow for Timber-trees, or one Acre out of every ten Acres to be planted only with Timber-trees, allowing 40 Trees in each Acre; for the Poor must have Houses to dwell in, as well as Bread and Firing. Sixthly, the other two fourth parts, or the one half of the whole Land to be reserved for Meadow and Pasture, and be in Common as the other Lands. This said half being well ordered, will breed and keep twice as many Cattel as the whole Land did before it was improved; And wherein now is the Poor wronged by planting Woods, if Lands were thus improved? for those that have right of Common will have much more Pasture, and provision is made for more Wood. And that there may be a greater improvement of all and every part of the said Lands, my advice is; first that the Arable Land after 2 or 3 years Crops of Corn at the most, be well manured with Dung, Lime, Marle, Chalk, or such like helps; and then plowed and sowed again: Secondly, that the Pasture Land be either Marled or soyled with good Dung, and plowed and

and sowed with Clover, Treafoil, Centfoil, or some other seed for Grass, and this to be performed presently after the burning of the Earth; for Pasture Land being once in heart will encrease by Cattle feeding thereon: The richer the Land is the more Cattle it will keep; and the greater number of Cattle, the greater quantity of Soil or Dung comes from them; also the often or much feeding and treading on the land will both sweeten the Grass and destroy the Moss which poor grounds are subject to, and all manner of Weeds: for in green paths that are often trodden, nor Weeds nor Moss grow; and Cattle will feed on such paths or places rather than on any other part of the field; so that there is no better Husbandry to kill Weeds and Moss than to enrich the Land, and keep the Grass short or low by Cattle constantly feeding thereon. Thirdly, that the Woodland be planted with the seed or Plants of the Ash-tree, Chesnut, Hasle-nut, Alder or Withey, because they are the quickest growing plants, and will produce the greatest quantity of wood, good for fireing and other necessary uses, as Hoops Hop-poles, &c. But where the Land is wet or moorish, and cannot be drayned or layed dry; in those places Alder and Withey are the best thriving Plants or Wood, and in the wettest parts of all, Osiers or Alders: Those Lands that are planted for Timber-trees, as Oak, Ash, Beech, Elme, may be made use of by feeding Cattle, so that they are kept from cropping and rubbing against the trees while they are young; but if the Land be delved or plowed and sowed with Corn, then it must be well soiled with good Dung; for else the Plow will impoverish the Ground and starve the Trees. Now for the carrying on so good and necessary a Work, if the Rich will lend their Purfes, and the Poor their utmost labours and industry, God will second all with such an increase, that the monies may be returned again with interest, and the Poor plentifully provided for: And as it is my great request to God that there might not be one Family in England want bread, so, if it lay in my power, every foot of land in England should be improved that is capable of improvement;

ment; for one foot square of good land may produce a quarter of a pint of Wheat, which comes to by the Acre, there being 43560 square foot, 170 Bushels 5 quarts: yet he that is ingenious will not deny but that there may be a Liquor prepared wherein to steep or soke Corn, that it being after set or sown, may bring forth or produce above 100 for one; so likewise Earth may be enriched to produce the like increase; yea, wonderful Crops beyond ordinary sense and reason: therefore all hidden benefits must be sought; for ignorance and idleness are alwayes enemies to thrift. And those that are studious in natural causes, know that by the exhalation of the earth, the moistness, richness and fatness of the earth and soil is drawn forth, therefore the careful Husbandman will not spread his Dung in the heat or middle of the Summer, except he cover it with earth by delving or plowing. Now this richness of the earth or soyl is by the heat of the Sun drawn forth and rarified into air; and by reason of the coldness of the air the same is condensed into water, and becomes Clouds; which said water so condensed is powred down again either into the Seas to refresh and feed the Creatures therein, or on certain Lands; and all this done by the wise Disposer, who in exchange rains down cold, thin and barren waters as a token of his displeasure, or else withholds the Rain; for earth is nothing else but thickned and hardned water; water thickned air, air subtilized water, water liquified earth. But now because these waft lands over-grown with Ling, Heath, Furrer, Bushes, Shrubs, and such like, are for the most part poor Clays or Sands; in some places mixed with Gravel, therefore to all those who are resolved to be industrious, and whom it hath pleased God to place upon such barren Earths, my advice is, that after the land is cleansed according to former directions, and also well plowed and hacked: If it be a simple Clay, or mixt with other Earths, and the Clay most predominant, and the Sea be not too far, that they thence fetch good store of the salt Sand, and with it cover their ground, allowing at least 200 Bushels for each or every Acre; after the land is thus sanded, then bestow about 70 Bushels

70 Bushels of Lime, or else 100 Cartload of the best and fattest Marle on every Acre so sanded, and putting thereto 50 or 60 Cartload of good Dung likewise to every Acre; then having well spread and mixed these severall Manures, that they plow over the land again, and after it is well hackt with a pair of strong iron Harrows, goe over the ground, tearing that which was plowed and hackt into smaller pieces, which will not only mix the severall Manures with the clay, but also raise and increase good store of mould. If the land lie so far remote from the Sea, that to fetch this salt sand will not equal the cost, in such cases they may lay other earth, or the best and richest fresh sand, only adding a greater quantity; for of this sand every Acre of land will require at least 100 Cartload; and likewise they must add a greater quantity of Lime and Dung, also 100 Cartload of Marle or Chalk. Now the Wheat seed-time being at hand, they must plow up their ground again, and prepare the seed as followeth: Make a strong Brine of Bay-salt and water, put your Wheat therein, the quantity you intend to sow the next day, letting it so lye ten or twelve hours, then drain the brine from it, and having a Tub or Chest or such like, put the said Wheat therein with good store of the best lime, stir and mix them well together, and then sow the Wheat thus limed. Now as soon as the Land is sowed, forthwith cover the seed very close by well harrowing it, and no doubt with the blessing of God, you will have a plentiful increase, so that one years Crop of Wheat will pay all charges with interest. But if the Land you would improve be a barren sand, then being cleansed, plowed, and hacked as was the clay, you shall lay or bestow 200 Cartload of the best slimy or fattest Marle or Mame on each or every Acre of Land; and if you be near the Sea, then lay 50 or 60 bushel of salt sand on each Acre; for fresh sand availeth little on this kind of land: but if you cannot come by salt sand, then on every Acre of land you may lay 60 or 70 bushels of lime, also 100 Cartload of good chalk: All this being performed, add a good quantity of dung: you need not fear laying too much at the first dressing on poor Land; but if you cannot get any perfect and rich Marle or Mame,

Mame, then may you lay a good quantity of rich Clay, or instead of Clay a rich Lome, or which is better, the Earth called Fullers Earth; then plow sow and harrow in the seed as you have been directed, that all the manures may be well mixed. For as in Medicinal compositions, if the ingredients be confusedly cast one upon another without care of mixture, melting or dissolving, there will be but a corrupt and ill compounded Receipt; so he that dresseth and manureth his ground, and doth not by hacking, plowing and harrowing mix the earth and the soil perfectly well together, he shall seldom find profit from his seed. Now the causes of the unfruitfulness of barren Clays are from their cold and binding nature, whereby they stifle and choak any thing that grows within them, and will not give them liberty to sprout; or if it do, yet the cold presently starves the root, and makes the stem utterly unable to bring forth fruit: the mixture of the sand takes away the toughness and opens the pores of the earth or clay; the lime and salt bring heat, the dung comfort and liberty; so likewise all barren sands are loose and light, therefore their unfruitfulness ariseth from these two causes; First by reason of their porishness or hollowness, and much rain or wet weather washeth quite away or down into the earth, deeper than the roots of the corn and grass, all the goodness, heat and fatness which should nourish that which groweth therein; and although such Land be well soiled with dung, yet it will not last above one Crop of Corn or two at the most. Secondly, what the Rain leaves, the Sun by his heat draws forth out of the Earth from the roots of Corn and Grass. Now Marle is not only an enemy to all Weeds, but giveth a general virtue to all Corn and Grass, and by its glutinous substance being incorporated with the sand, closes the hollows and porousness thereof, so that what ever Soyl or Manure be layd thereon, it will last many years, and abundantly increase that which was planted, set, or sowed therein: And if the said Marle be layed on Meadow or Pasture, the land will be much enriched, and may so continue some hundred years: And as the the Marle likewise

likewise the Clay, Lome, or Fullers earth will worke the like Effect on Arable land, yet not to so good purpose as the Marle; Now although Dung be most proper for Pasture land, yet Marle is of speciall Use and much differs from Dung in one particular, for Dung spends it self upwards, and although it lie deep within the Earth, yet the vertue will Ascend, and if it lie upon the ground in Summer, it will grow light and spongy, whereby the goodness is drawn forth or consumed by the heat of the Sun, but it is the Nature of Marle to work downewardest into the Earth, and it is dissolved only by Frost; therefore the best season to lay it on the Land is about Michaelmas, that so the Winter following may break and melt all the Stones or Cloats, and being thus broken, the Rain will help to wash the same into the Earth; now although Naturally sandy Earth is hott, yet these barren sands by reason of their poverty, are very cold, therefore Lime and Salt are of great use, and to good purpose laid on them and mixed together; wherefore you must not forget to steep all seed except Rye, in brine as before mentioned; but you are to take notice, that Oates will not require or endure so long to lye in steep as the other Grain; Now to give a tast of the sweetness which Labour and industry brings unto such as take pleasure therein; We shall suppose these barren Earths before mentioned, were not worth above 2 shillings the Acre yearly Rent before they were improved, and the charges of improving may come to twelve pounds the Acre, which is tenn pounds more then the fee simple of the Land is worth; One Crop of Wheat, if God bless the Increase, will sufficiently pay all the charges with Interest; Then likewise may you receive two years crops more of Wheat, and 5 or 6 Crops without intermission either of Rye, Barly, Pease, Beanes, or Oates, and be at no more charges about the Land then once Plowing and Harrowing, seed, salt and lime to steep the seed; Now as salt is a great destroye of all Weeds, so likewise it is of great strength and vertue, for the bettering all manner of Arable Land

Land, and a great Nourisher of seed in the Ground, if moderately used, like Blood in the Body of man, which carrieth the vital heat and is in taste salt, as being a nourisher and maintainer of all the inward faculties; now after 7 or 8 years sowing with Corne the said Land may be worth about twenty shillings the Acre yearly rent to lye for meadow or Pasture.

To treat of all and every part of Husbandry, Would swell my Book into too great a Volume, which is not my task at this time. I shall therefore returne to my intended work, and treat only of Planting Timber Trees.

Now although it hath been Objected, that the Planting Forrests and other waste Lands will much prejudice the Poore, yet it is well known, that the Rich have the benifit and are great oppressors of Commons by the multitude of Cattle they feed thereon: having Land of their own to keep them in the Winter or when the Commons are eaten bare, and the Poore for want of such Winter Provision have little or no benifit at all, but are many times undone; and thereby accustom themselves to be Idle, and Neglecting their constant labour, steale his Majesties Wood, and spoyle his Timber, by Chipping, Shredding, Lopping and such like, All which Spoyles or Wastes being beneficial unto the keepers, are overseen, but not provided against as they should be; yet the Poore are not the greatest offenders, they only break the ice and prepare it for others, who almost every Day before Sun Rise and after Sun set make the sound of many Axes, heard by their Lopping, Chipping, and Committing such like evils: There are likewise other Wastes then all these, for where as there are some thousands of young Oaks and other trees which have been preserved and succoured by Bushes growing about them, many of these Bushes being lately cut down as in in the yeare 1664. These young trees being thereby left naked, are many of them cut down and carried away: and as if a Totall destruction was intended, the dead trees devoure the living; I meane many upon pretence only of Cutting downe a dead Tree have made another

another so to bear it company; for to my knowledge about the Month of October last 1664; two Dead trees were sould by one of the Keepers of the saide Forrest, to a Neighbour living in the next Parish, and the party that was appointed to cut downe or fell the said trees, Cutt downe two other Trees which were not dead; And this is no new thing but hath been often done without doubt, though then I feare Especially, when there was a better Opportunity offered by so great a number, as have been lately felled for the use of the Navy and the Bishop of Winchester, The same Party that committed this fact being one of the chief workemen employed for their felling. Nor may any man think strange, that there should be such spoyles made in those Days; the Officers appointed to take care of the said timber being rather Farmers then Keepers, or good Woodmen; Also there hath been but one swaynmote this 40 yeares, nor a Wood Court to any effect, and consequently no Presentment these 4 or 5 last yeares, which only then can be made. But to proceed in my propofals.

Lastly, Whereas his Majesties Forrests have formerly flourished and abounded with the best timber Trees in England, Nay I may safely say, for the Building of Ships the World doth not afford better, especially the Oake; which are now utterly wasted and decayed

My humble Propofal is: that part of the said Forrests, Especially of such as lie within 20 Miles of any Navigable River, and are not so usefull for the Breeding his Majestys Deer, and that have but few Deer, be Planted as aforesaid: I dare not undertake to Proportion the quantity of Ground to be Planted in each Forrest, not knowing his Majesties Pleasure, also some Forrests are larger and of greater extent than others, and doe more abound with timber trees, neither can I speak Experimentally of all Forrests, but that which is best known unto me, and wherein I have dayly walked as a Forrest Officer, I will at present discourse a little. That Forrest then the care whereof hath been my employment, doth not containe above

3 Thousand Acres of Ground in the whole, yet it hath so abounded with timber Trees, and that of such excellent goodness, that it might be compared to any one Forrest in England; but it is now much wasted, and doth more and more daily decay; for besides the Wastes that have been committed within this 20 years, by reason of the unhappy Wars and Rebellion, there was also felled and cut down Anno 1663 above eleven hundred Trees, and but 600 of them employed for the use of his Majesties Navy; and since the time before the trees then felled were removed off the ground, There was in the year 1664, a Warrant delivered unto the Regarders of the said Forrest, to view and mark all the Decaying Trees, which are some of them accordingly Marked, and by vertue of the said Warrant, most of the Trees in the Forrest may be cut down, for they are generally Wasted and decaying but may live and be serviceable an hundred yeares yet to come: and if his Majesties Forrest be Stocked with Dear, then the worst of these Decaying Oakes will beare great store of Mafts or Acorns, which is good for a Winter Dear, and of my owne knowledge and Experience, there are many very hollow Oakes that bear greater store or more Acorns to the Number and greatness of Boughes then the soundest tree in the Forrest.

In the year 1665 the Commissioners of the Navy procured another Warrant from his Majesty for the cutting down 2000 Trees more in the said Forrest to Build and repair his Majesties Shippes, and to effect the same, they sent down a Purveyor to mark and fell the said Trees, which was accordingly performed; But by severall Reportes of Workemen Employed about Cutting down the said Trees, there was not above 15 or 16 hundred of them converted to the uses appointed by his Majesties Warrant, for severall Gentlemen in the County and noe farr dwellers from the Forrest, Bought the Offall of 2000 trees for 750 Pounds, or thereabouts, by which said Offall is to be understood if rightly taken the Bark, and Boughes, and all that part of the tree only which is not used for Shipping

Shipping: but making an agreement with them that had power to sell, under the name of Offall were taken in whole trees marked and cutt downe which were not usefull for Building his Majesties Ships, though they might have been easily perceived to have been unserviceable for that end by the surveyour that chose them, or any Man of very indifferent Judgement, and so left as they ought standing, but these had the ill fortune to be cut downe, to make advantage by their fall, some hundreds of them, whilst many other sufficient Timber trees and most fit for the use aforesaid were left standing and are yet Growing; Neither is this all, for I have been informed, that there were many Trees which were cut to pieces as Offall which had Ship timber in them, and not unlikely, whilst the workmen who were chiefly Employed about the Offall were known Enemies to his Majesties Woods and timber, and have lived on the spoyle above 20 years: and to my owne Knowledge have been presented some of them for the same; But because there hath been no swainmot Court kept within that time, they have escaped the Lash: these men were also employed about Cutting down his Majesties trees, and the chief Hewer appoynted by the Perveyor was as honest as the rest, and being so, they had fit opportunities to commit such villanies as are reported, and whereas the Officers as Regarders and Keepers, are sworne to endeavour to prevent all Wastes Committed; the Keepers have been so much employed about cutting down trees for their own profit, that they have not had time to look to the preventing the spoyles of others, and therefore care not or dare not accuse others, being themselves Guilty, and some of the Regarders also doe more mind to buy Wood and timber for their owne use and Profit, then they doe for his Majesties interest and good of the Kingdome, in preventing Wastes committed, and this is not all the Evil done to his Majesties Woods: for the Borderers dwelling about the Forrest, taking notice of the Wastes committed by Officers, take boldness to make likewise great spoiles, and many

many of the said Borderers have and do to this Day inclose his Majesties Land, some one or 2 Acres some more some less; In which Inclosures or encroachments are and have been sometimes 2, 3 or 4 Oaks Growing; the said Land so inclosed is fenced with a dead Hedge the first year, and the Bushes within the Plot Grubbed up, and one of the Trees; Also the said Land Delved and sowed with Corn; the next year if no disturbance happen, a Ditch is made about the inclosure, and the Land sowed again with Corn, and another tree stocked up; and so the work goeth on till all the trees are cut down, and in some encroachments fruit trees have been Planted, and other Trees in hedge rowes: as also Houses built of his Majesties Timber as if it were the Occupiers Inheritance, though but small Plots of Land now, in comparison of what hath been formerly, are taken in by way of Incroachment.

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ENGLAND'S
IMPROVEMENT
REVIVED.

THE SECOND BOOK,

The Argument.

In this Book is treated the Planting Forest Lands, and other wast Lands, with Plants for Timber-trees; also of all kinds of Earth Simple or Compound, Rich or Barren; and the manner and way of improving the same, either by planting Seed or Sets for Timber-trees or Under-woods; Likewise by draining or watering such Lands that require the same: and Devonshiring or Burning those Lands grown over with Bushes, Heath, Furses, Goss, or such like: Also the way of Improving all the said several sorts of Earths by Lime, Marl, Manure, Dung, and many other such like Improvements; likewise by Plowing, Delving, Trenching, or Plow-trenching the said Land, and sowing seed for Corn or Grass: and of several Observations and Directions therein.

Now considering that his Majesties Timber and Woods standing and growing will not be a sufficient stock to maintain and keep in repair the Royal Navy for any long continuance of time to come without a supply by new Planting those wast and vacant places that have no Trees or very few growing, I shall humbly offer my Judgment and Experience in this thing, and will lend my assistance to the utmost of the ability God hath given me for the Planting and thus improving them; And because

cause his Majesties Forrests and other Wast Lands, do much differ in goodness and largeness, and also some of them are better replenished with Timber trees then others: and not knowing his Majesties Pleasure, Either what Forrest or part of the Forrest or what quantity of Ground shall be Planted, I cannot set down the Proportion, but will suppose a Thousand Acres.

A skilfull Arborist will make choyc of such a soil, where he may provide a strong and sufficient fence, before he will be at the Charges of Planting; In the first place then is to be considered, the making the fence about the Plott of Land before mentioned, which was a Thousand Acres; and although there be many Figures of Land I shall mention but one; for it is not my intent to multiply Words; We will suppose the thousand acres to be a square piece of Ground; The square then of this Plot or parcel of Land is 400 Perch or Pole, Land measure, the Pole or Perch containing 16 foot and a half in length; for although there are divers Opinions risen, grounded upon long custom in many places, of the length of a Perch, yet there is but one true Pearch by Statute appoynted for the Measuring Land, which is as before mentioned: but for Wood Measure or hedging and ditching there is 18 foot allowed to the Pole or Pearch; the Reasons are because Under Woods which are thus Measured for sale, have in many places sundry gals or void places, wherein groweth little or no Wood, and to supply these defects the Buyer Claimeth this supply by measure; What to make this fence of, is the next to be considered: and because my great care and indeavours are for the preservation of his Majesties Timber; therefore I would not have one tree cut down or felled for this purpose, although the Paling thereof would be a sufficient fence but not of a very long continuance; all fences therefore commonly are made of Wood, Brick, Stone, or Earth as dry Wals, or Ditches, or Earth compounded, there are other fences as Motes or ditches of Water, where the ground is levell and springy, or the Water brought from some Spring or River, but of all other according to my Iudgement, the White thorn Hedg is the best;

best; for in 8 or 9 years it will make the best fence both for height to succour the young Timber trees or Plants for trees; as also for strength to keep out all Enemies to the said Plants, and although the Planting of this Thorn hedge is so well known to all Husbandmen, that there will not seem to need many words to Demonstrate it, yet because I intend to direct you hereafter to Plant Timber trees the same way, I shall take a little the more paines in it; I shall not use much curiosity in pleasing every mans fancy in the making this fence; as how many Rows of Plants or setting them upright, or slope ways, or flatt, or the distance more or less, but shall give you my particular opinion of it.

Now to begin the work, the Ground being viewed, Proportioned and measured, that is to be Planted, We will suppose it as I said before to be a square piece of Land, and to contain a Thousand acres, the square then is 400 Perch; the whole Plot or the 4 squares contain 1600 perch about; which is the content of the fence, but if the fence be measured by Wood, Hedge, or Ditch measure allowing 18 foot to the Perch; then the one angle or square will contain but 366 Perch 12 foot, and the content of the whole fence by the said Wood measure is 1466 Perch 12 foot, the fence must be thus made; First I would advise the Ditch to be 6 foot wide or broad at Top, and 5 foot deep slopewise, so that the breadth at the bottom or lower part of the Ditch be but 3 foot or thereabouts, according as the ground is stiff and binding, or hollow light and loofs, for if it be a light ground, the bank must be more sloping, or else it will founder and fall into the Ditch again, and the repairing thereof will be the increase of Charges; In the next place, care is to be had in providing Plants, wherein you may please to take these observations following: First that your Plants be not too great nor too small; for, there are severall opinions concerning both these sizes; The best size according unto my opinion, is to have them about the bigness of an ordinary Mans little finger; Secondly that you have them drawn or taken out of the Earth but a day or two before the Planting; if with convenience

venience it may Be; the same day is better, for although it is usuall to have Plants gathered a Week or more before they are Planted, yet it is a great Evil and not to be approved of, Thirdly in drawing or taking your Plants out of the Earth, let not the Bark or Roots be broken or bruised, 4ly in trimming or preparing the Plants for Planting, my advice is, to cut off the top of the Plant above 6 inches from the stem of the Root, and let it be cut slope ways with a sharpe Knife clean and handsome; but cut not the Roots, except there be a superfluous Root that was broken off from some other Root, or that is bruised, broken, or part of it dead, *in such cases you may*; see the Chack or body of the Plant be clean without shoots, And although it hath been and is a custom to cut and trim the Roots, yet it is not to be allowed of, because every cut is a Wound and the more Wounds the greater danger; The Plants being thus Proyned, trimmed and fitted for Planting; after the first Turf layd with the grassy side downwards, and the upper part of the Turf or clod of Earth which was the lower, pared plain, near one third part of the thickness of the Turf, then lay on the Plants in a rank or row *containing in distance (or the distance between the Plants would be) one foot of ground*, and this Rank or row of Plants *to extend to the end of the Angle or square and so of all the Squares*. In the laying of the Plants in the ground, *must* be observed these 3 Rules; First let the Plants be layed sloping or slope ways that the top or head of the Plant may lye 4 or 5 Inches higher than the Root, or the level of the lay of Earth, Secondly let not the top or head of the Plant lye above 2 Inches out of the Earth, Thirdly let the slope side that was cut lye downwards or side ways, that the wounded place may have the benefit of the Sun, as also that the Water may not rest upon it, for in Winter, the Water being frozen on the place cut will be a great annoyance unto it; and much Rain often dropping on the wound may penetrate the Pith, and causing hollownes may much endanger them: After the first Rank, Row, or Chers of the Thorn Plants laid or planted as aforesaid, then there must
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be of the best earth laid on the roots of the said Plants, to the quantity of 6 or 7 inches deep; then a spadeful or spades depth of such earth as the ditch will afford, or else another turff on the good earth: this being performed, and the ground prepared as was formerly directed, then lay another row of Plants of the same distance as the first, yet not over against them, but over against the middle space between the first Plants: Order this second Row of Plants as the first, and because the Bank will be great, there being much earth to be cast out of the ditch, there may be another Row or Chers of Plants laid above the second, over against the middle distance between the second Row, still observing the distance of earth between and above the Plants, as you did in the first and the second Rows; then cast or lay some of the best earth the Ditch will afford, as aforesaid, on the roots of this third and last Row: This done, cast up all the earth out of the Ditch on the last earth, making the bank firm by clapping or beating the earth close with the Spade. Upon this bank must be made a dead Hedge, so called because it is made of dead wood, as Bushes or Frith, which is all sorts of small wood that are not Thorns. This Hedge is to shrowd or shelter the young Plants, as also to keep and preserve the Banck from being trodden upon and thrown down by Cattel. Now in planting this and all such like Fences observe this rule; mix not your white Thorn with any other Plant; for although it be and hath been a general Custom in *England*, to have several sorts of wood growing in Hedge-rows, yet it is my opinion that they were not so planted at first, but that this Island antiently being for the greatest part overgrown with Woods of all sorts, which of late years have been otherwise improved and converted into Pasture and Tillage: The Improvers, in the making the several Boundaries or Inclosures, troubled not themselves to do them all anew, of any one kind of stuff, but in their grubbing where they stood convenient for such use, left remaining not only the stems and roots of trees, but several whole trees young and old, which by their lopping or topping might
serve

serve for necessary Reparations; particularly Hedgeboot and Plowboot when occasion should serve, little valuing the substantialness of their Fences for the future, so they would serve the present necessity; for I did never yet see a sufficient strong Fence of White thorn, which is the best of all if thus planted by it self, where there were trees or any other kind of Plants growing or mixed with them; for trees will not admit of any kind of thorns to grow up with them; and if there be so great an enmity between thorns themselves, that the white and black will not thrive together, as if they naturally bore an antipathy to each other for their colours sake; we shall not so much wonder if we more sensibly perceive it when they are intermingled with other kinds; and that the white and black thorn do thus disagree, hath been my observation for a long time, in several Hedge-rows where at first they were joyned, but when they came to grow up, the white hath so over-mastered the other, that they have quite decayed, and leaving a gap in the place where they formerly grew, have rendred the Hedge thin, full of bracks and insufficient. Thus have you my Judgment for the making of a good serviceable and profitable Fence; for within 10 or 11 years after the first planting, the thorns will be grown to that height and bigness, that cutting them close near the ground, with part of the offal or stuff may be made a sufficient dead Hedge, as before mentioned, on the bank of the ditch, to shrowd the second growth of the Thorns and Under-woods (it being supposed the young Timber-trees will by that time be grown to the height and greatness, they will not want the Hedge to shelter them.) This first cutting of the thorn Hedge will cause the next growth to come more thick, and make the Fence much more strong than before; the overplus of the offal, which will be considerable, may be made into Brush Fagots good for Brewing, Baking, or be sold or used to make or mend other Fences. Now the second cutting of the quick or thorn Hedge aforesaid you may begin sooner than the first, as within 8 or 9 years, if the Quick-sets or Plants do well thrive, which they

they will the better do, if you observe these rules following; First, let the Plants be well weeded the first, second and third years after planting; Secondly, observe that they all grow alike, and where they fail plant new plants in the vacant places, which must be done betimes before the other plants grow too big; for in digging or opening the ground to set or put in the new plants, you may cut, break, or bruise the roots of the old, which is hurtful; or the roots of the old, being grown great and entred deep into the ground, will so draw the moisture of the earth to them downwards below the reach of the roots of new younger plants, that they will thereby be in danger to be starved; or by over topping them; besides the keeping away the benefit of the Sun from them they will be subject to drop continually upon their cut or wound, and so quite destroy them: as for the planting of several sorts of wood in Hedge-rows it is only for the benefit of the lops and shreading of the said trees, and regarding not the strength and goodness of the Fence; for although by plashing the boughes of trees, laying them along the hedge, or on the bank of the ditch, Deer and Horse or such like Cattel may be kept from leaping over; yet it is very weak to keep out Swine or smaller Cattel from creeping under; First because those boughes cannot be laid very close, and secondly they have not prickles or thorns, whereby they may be a guard against such an enemy. And whereas it is the opinion of many men, that planting trees in Hedge-rows doth save ground, accounting Hedge-rows wast places; if such men would but seriously consider of these observations following, they would be of another mind; first, the trees planted in Hedge-rows being often shred and lopped cannot live the tenth part of the age of trees other waies planted; secondly they shall not grow to that greatness either in body or boughs, as others do which come much short of them as to the time of their growth; for a tree well planted shall be greater and larger every way in twenty years, than those in Hedge-rows shall be in fifty; Again, consider the uselesness and loss of ground on both sides of

of the trees along the Hedg-rows, for so far as the roots and boughs of the trees extend; the ground will not be good either for Corn or Grass; for the Grass, not having the benefit of the Sun, will be sower, and of more use for purging than feeding Cattel; also the roots of the trees, which usually extend as far underground, as the boughs above will hinder and indanger the Plow; or being great, and growing low into the ground, will not only over-master and oppress the roots of thorns by winding about them, but by sucking and drawing the fatness and moistness of the earth which should nourish, utterly starve them; and the boughs by over-topping will not only over-shade them, but with often dropping, as I said before, spoyle both Corn and Hedge. Now if Planters were but sensible of the loss sustained by reason of bad Fences, and the small profit of trees so planted (all things considered) they would soon alter their opinion; to give a reason for every particular observation would take me up too much paper and time; only take this general, of which I have made the experiment, and till any proof appear to the contrary, or more profitable way be found out, my desire is that this may be allowed. Thus have you directions for the planting and making the best Fence: Now the charges cannot be certain by reason Plants are scarcer and dearer in some Countries than others, as also the labour or hire of men; for in some Countries good Plants may be bought for two pence or three pence the hundred which will cost in other places five pence or six pence: also in some Countries a good labouring man will work at hedging or ditching for eight pence or ten pence the Summer day, and in other Countries not under twelve or fourteen pence the day; we shall therefore compute the charges indifferently between the highest and lowest prices, allowing for the Plants four pence the hundred, and for the Labourers twelve pence the day.

A Pole or Pearch then of Hedge or Ditch measure will take up to plant it well 54 Plants; there being 3 Rows or Chers of Plants set or planted at a foot distance, and if so, then the one angle

angle or square of the 1000 acres formerly mentioned containing 400 pearch, will after the same rule require 21603 Plants, which at four pence for each hundred cometh to three pound 12 shillings. The four angles or whole squares will need or require 86406 Plants, there being six Plants abated for two of the sides or squares, they all at the same rate by the hundred amount to fourteen pounds eight shillings. And now for the Charges of the Workman: a good Labouring man may ditch and quick-set about the Spring or fall of the Leaf a ditch of six foot broad and five foot deep; half a pearch in one day, allowing 18 foot to the Pole or Pearch: A man also may make a good and substantial Hedge sufficiently staked three or four Rod in a day; so that he may cut, carry, or draw the Bushes or Frith for the Hedge, and make the Ditch six foot wide, and five foot deep, being planted with three Rows or Chers of Quickset and a good dead hedge on the Bank, and sufficiently finish the whole work, and pay the charges of the Plants for three shillings the Pole, still supposing the Frith and Bushes to be near at hand, and to be free except cutting and carriage: Then the total charge of making the Fence about the thousand acres at three shillings the Rod, the angles or squares containing 1600 Perch is 240 Pounds besides the Bushes and Frith for Stakes, not doubting but that all his Majesties Forests are well replenished with Bushes and Frith; and that the same will be allowed gratis for so good a work. Now because several Countries give divers names for one and the same thing, that you may the better understand what is meant by Frith, my meaning is, all small lops or shreadings of trees, as also all Under-woods. Thus having made preparation for the planting Timber-trees by preparing a sufficient Fence for the shrowding and safety of the tender Plants, *In the next place we shall consider of the Original of Grounds and Plants: The Eternal God hath been pleased to reveal many things unto us exceeding sense and reason; as the first production of the World, and the constitution of things invisible; and by his exceeding wisdom saw that his invisible things might be expressed by visible images,* *wherein*

wherein his Power, Wisdom and Goodness might be revealed; therefore he proceeded in an order and manner proper to every creature. The first Principle of this visible world was matter but confused and dark, then secondly the Spirit of Life diffused throughout the whole matter made it begin to stir, and insinuating it self into all the parts, produced every Creature, introducing into every one its own form; and to the perfecting all things which are and have been made in the World, there was added Light which is the third Principle: this Light began presently to display its threefold Virtue of illuminating, moving it self, and heating; from the brightness and motion of the Light was the difference of Nights and Dayes; the third effect of Light was from heat, which rarified and purified the matter, but condensed it on both sides upward and downward, whence came the division of the Elements; so that the waters above the Firmament, and the waters below, the Earth as thick dregs came together. The Earth being settled, God begins to fit and prepare it by the heat of the Celestial Light, which began to beget fat vapours on the Earth, whereinto the living spirit of the world insinuating it self, then began Plants to grow up in various forms. We shall proceed to consider of the Nature of Grounds in general, and also in particular of barren and fruitful Earth: Grounds are simple or compounded, simple are Clays, Sands, or Gravels, compound where these Earths are mixed or all mixtures of earth: Clays, Sands or Gravel may be all good, and very fit to plant all manner of Trees in; and likewise they may be all very evil and barren; for all Earth simple or compound doth participate with the Clime wherein it lieth, as hot or cold, moist or dry: And where the ground or earth participateth of all the Elements equally, there it is the more fruitful: All grounds may be known as well by their several Characters as by the Clime or situation of the Continent. Some grounds naturally produce Weeds, as Mallows, Nettles, Docks, Hemlocks, or such like, which generally grow in every good and fruitful ground; there is another sort of ground that hath a different face or character, such as beareth Daiesies, Clover, Charnock, Mustardseed, Rushes, &c. this also may

may be a very good ground to plant in; but this is ever to be observed; where weeds or grass doth naturally grow strong and big, that earth is undoubtedly most rich and fruitful: But although both these grounds may be good for Corn or Grasse, yet the Planter may be deceived by these outward faces and characters, if he search not deeper into the Bowels of the earth; for it is well known that many a Tree of great bulk and worth is and hath been seen to grow in a barren earth for Corn or Grasse; and on the contrary there are and have been seen many small Trees of little worth growing in strong grounds as to the outward appearance, and those small trees of the age, or older than the other of greater bulk; for that ground may be good for Corn and Grasse; or the planting of small Fruit-trees, which hath but six or seven inches of good earth, or the crust of the earth but six or seven inches deep. Another character of barren earth is when you see instead of Grasse which would be green, rank, and thick, a pale thin small grass something blewish, also much Moss, or when the ground is covered with Heath, Furrs, Whins, Gors, and such like, these are apparent signes of great barrenness, especially if weeds or rubbish be small; for as before is mentioned, what ever it be that cumberes the ground, the greater and ranker it is, it argues the richer ground. Thirdly, there are other barren grounds which may be so adjudged by the scite or clime wherein they lie; as when the ground is far remote from the Sun, or very near the borders of the sea; for the storms and ill vapours arising from thence poison and starve the earth, and are destructive to Plants and Trees; also when the ground lies mountainous and high, and very stony and rocky, these are signes of barrenness; yet the stony and rocky ground may have good earth underneath, so that the Rock be not an intire stone, but have clefts and passages unto the earth to plant the Seed or Plants, and being once planted and thriving, will in time open a wider passage, and produce a Timber-tree of as great a bulk and worth as other grounds void of stones. And this experience tells us also, that Trees of small strength in comparison of the Oak, being planted near a

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stone Wall, the roots have so swelled or increased, making their own way by reason of a hard Rock some depth under ground, which the roots could not enter, that they have lifted up the said wall, & in few years thrown it to the ground. Fourthly, there is another character or signe of barrenness, which is to be adjudged by the constitution of the ground: *For it is well known to them that are not ignorant of the Constitution of the World, that a Body is composed of all the Elements, Earth, Air, Fire, Water; and although all these Elements are simple Bodies of themselves; yet in all Bodies else are all the Elements; for that Water doth evaporate into Air, and that Water is made again of Vapour, the Rain teacheth us: and that earth and water also is rarified may be proved by many examples, and that fire the spirit infused working by heat in all bodies is not to be denied; by this you see, that the constitution of a Body participates of the four Elements, which is to say qualities; hot, cold, moist, and dry: But to return again from whence I digressed.* The constitution of that ground where one of the four Elements doth most predominate is an apparent signe of barrenness, as when the grounds are either extremely cold and moist, or else hot and dry: Now these cold grounds are generally Clays, except such as are subject to inundations of water or land Springs, which are all cold and may be unfruitful. These cold and barren Clays, *as by the outward face and character judgement may be given,* generally produce Broom, Gorse, Moss, Shrub-bushes, and such like; and the reason of their unfruitfulness is, first from their tough nature and bindingness, in the Winter the Pores are so closed that the rain or snow falling and melting cannot soak into the earth farther or deeper than the pores are opened by the roots of Trees and Plants, or Corn and Grass; wherefore lying at the roots it doth benum and chill them; and thereby hindereth the growth, and indangers the stock through an extreme moistness, and every extreme is death or dangerous. Secondly these barren earths will require much more dung than better earths, and yet not last half the time, for by reason of the stiffness and bindingness of the Clay the soil cannot

cannot incorporate with it, so that both Corn and Weeds will soon draw away or spend the substance thereof, and that which remaineth good above will exhale, or if the ground ly steep, then the rain will wash it away. Thirdly if the Spring or Summer be very hot and dry, the natural toughness of the Clay doth so fetter and lock the roots or grain within the mould, that it will not give them liberty to sprout, or if it doth, yet the cold after much rain will presently starve the root, and make the stem utterly unable to bring forth profitable fruit, as I have formerly declared: next unto the Clay is Marle and Chalk grounds, they being derived from the Clay: Marle is of several colours as are the Clays and Sands; Chalk is only a kind of white Marle; *for it was Marle before it was Chalk, and both of them earth or clay at first (only) became hardened and coloured by accident, as stones are coagulated with water and fire, which we may well observe in Bricks and earthen Pots; for here Art imitates Nature; as also that they are subject to Calcination, as Lime, Stones, Flints, and the like;* but because Marle hath its original from the Clay, I shall leave it to be adjudged by the outward appearance, as the clay ground is; excepting that there you will find no Broom and Gorse, or such like weeds, for Marle is a great enemy unto those kind of incumbrances. *As the barrenness of Clay grounds are known by the outward faces and characters, so also are Sands.* This earth is of several colours as the clay: those Sands that lye upon mountainous and rocky places are generally barren, which may be perceived by the small, pale, mossy, and yellowish grass which they bear: other Sands that lye lower in wet morish Plains or bottoms are generally of colour blackish, and produce a long sower unwholesome grass, but where the ground lieth dryer, the earth or sand will be very white or yellow, and produces a short small blewish mossy grass: the greatest part of these unfruitful Sands are much subject to Heath, Fures, Brakes and such like. Now a great cause of the unfruitfulness of this barren sandy grounds, is by reason of the porousness or hollowness of the earth, as was said before; for although it be

well manured with soil or dung, yet much rain or wet will wash down the dung lower into the earth than the roots of the Corn or Grass, which is the reason of Plow-trenching in sandy Countries. Now the manner and way of Plow-trenching, (having here mentioned it) and because we may have occasion further to mention it in our after planting is as followeth: First the Plow having cast up the furrow, taking a good stich (as they call it in husbandry,) after the Plow there follows 12 or 14 men with spades, who delve or dig a spit or spade deep in the bottom of the furrow where the Plow hath gone, which they cast or lay upon the earth or ridge which the Plow first threw up; then follows the next turn of the Plow, but that which is then cast up is thrown into the Trench, the men left to fill it again: the men as before still follow the Plow, and dig or cast up out of this second furrow another spades depth of sand or earth, which they cast on the second ridge of sand that is thrown up by the Plow; and so a third and fourth ridge, the delvers following the Plow and the Plow them, during the dayes work; by which you may perceive that the upper earth or sand is buried, and the undermost or fresh sand laid uppermost: so likewise in delving, or more properly trenching, the ground is delved two spit deep, the second spit or undermost earth is laid upon the first spit or spadeful of earth. By this piece of Husbandry it is easily to be understood that this barren sandy ground, being hollow, loose, and light, the fatness or substance that should nourish the roots of the grain, is by much rain within two years time washed or sunk so deep into the earth, that it will not serve for any other season or seed time without more soil or new trenching: And as much wet and rain is the cause of unfruitfulness of the hungry hollow barren sands, so likewise is drought, for the earth being loose and hollow, the Sun by his heat doth draw up the moisture and richness of the earth and soil which the Rain doth leave. A third sort of simple ground being barren and unfruitful, is the Gravel which is mixt with it, a hungry earth not much unlike the gritty loose Sand: This ground if it lie high and moun-

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tainous, then the outward face and character will appear as it did in the poor Sand and Clay; one cause of its barrenness is from cold, the Gravel wanting good earth to warm and nourish that which should grow in it: Also because in time of Drought the Sun will scorch and burn up the fruit thereof, be it either Corn or Grass, &c. And if this Gravelly ground lie low, then it is subject unto Land-springs, which within the Earth wash away that substance and fatness from the Roots of corn and grass, that should be their nourishment, also much Rain doth likewise wash away the fatness and goodness of the Earth, by reason of the roundness and hollow looseness of the stones; so, that what with the waters within the ground, and the Waters above, also the heat and scorching of the Sun, which doth dry up more easily its moisture; this kind of earth must of necessity be unfruitful, neither is there any way to improve it but by gathering out the Stones, laying store of good Earth and Soil in the room, and making draynes to carry away the Water: I shall not advise any to begin this piece of Husbandry, because the Charges will amount unto so much, and better Land may be purchased at a cheaper rate. Now, as by the outward face and character, and by the Clime and Constitution of all simple Grounds doth appear the Richness and Fruitfulness of the one, and the poorness and barrenness of the other, so likewise by the same Rule, there may be judgment given of all Compounded Grounds, or mixed Earths, as Sand, with Gravel, or Clay, or Looe, with Gravel or Sand, or other Earths. By this which hath been spoken concerning the Nature of Grounds, either simple or compound, the Husbandman may have true Knowledge to order and dress his Ground, and by purging and cleansing the same from those faults that hinder the increase, expect a large and ample Crop of Corn or Grass. But yet the honest Arborist may be at a loss in Planting of Timber-trees, if he go no deeper then the outward face of the Earth, for almost every *Ditcher* can speak by experience in making of a Ditch, that the crust or good earth many times doth lie but two or

or three inches deep, and the next Earth proves a hard hungry Gravel about a Spades depth more, the next Spades depth, or under the Gravel, it may be shall rise a cold barren Clay, and under that, 8 or 10 inches more, a good Looe or Sand; Also in rich Earths the Crust may lie 17 or 18 inches deep, and under that depth a hard Gravel, or Rock of Stone, Quarry of Slate, or such like; There being as many faces, or characters of good and bad earths under the ground, as above, or upon the Superficies, but this must be tryed by an instrument hereafter mentioned. There are other grounds that have no crust or good earth above, but either a barren Sand, hungry Gravel, or cold Clay, and such like, and yet within twelve inches depth have a very good Earth; And that there are several Vaines and sorts of Earths, good and bad, of all these Qualities, he that diggeth Mines and Wells can averr: Also, *That there are several Vaines of good and bad Earth upon the Ground, Gardners and Plowmen can testifie; There are likewise several sorts of ground that may be good for Corn and Grass, or small Fruit-Trees, and Bushes, yet not good for the Planting of Timber-trees.* First, such Grounds that have a good crust or earth 12 or 14 inches deep, and under this good earth a cold wet Gravel, being full of Land-springs, (which is Water running within the Earth, and shews it self, or is discovered by breaking out, or spewing up in many places) this and the like are not sound grounds to Plant Timber Trees in, because after the Rootes of the Trees have passed downwards deeper then the good Earth, the young and tender shootes of the Root, that the sap causes every year to spring forth, are by reason of the too much moisture and cold water within the earth chilled and benumbed, so that they have not strength to enter the earth underneath the Water, or if they do, the Water following also after, doth continually hinder them in their growth, and keep them from thriving, and so consequently the Tree. Secondly, such grounds as have the same, or as good earth as before mentioned above, but underneath a Rock or Quarry, extending many Yards or Rods, are also not proper
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for Planting Timber-trees, for after the rootes of the Trees have grown deeper into the earth then the crust or good earth as aforesaid, and reacht unto the Rock, they cannot enter, and being only maintained by the upper Roots that spread along the crust of the earth, can never grow to any bulk, not having sufficient nourishment for all the Roots, and thereupon necessarily want so much of their due growth; And a'though such Trees may thrive 50 or 60 years, yet as they grow in height and greatness, so much the more are they in danger of every Wind; because those Rootes that should grow deep into the earth, not only to support the Tree by nourishment, and ballance it by weight, but, as strong Cordes, to bind it fast unto the earth, are altogether hindered and disappointed of their true use, by reason of their Rock or Quarry; also those Rootes that touch the Rock, for want of entrance will in a short time perish and decay, and not only to the hinderance of the growth, but shortning the life of the Tree: This stoppage, or decay of the Root, may be discerned several wayes, first, the middle Boughes that generally grow streight upwards, and proceed from the heart, will decay at top, which may be known by the falling of the Lease. Secondly, The Bark will grow black. Thirdly, The Sap, which is as the Blood, having not its natural course, by reason of the stoppage of the Root, will break out into Boyles, which are great Bunches in the Barke, Body and Limbes of the Tree; All which evils will hinder the growth and increase of the Tree, and in time cause it to be hollow. Now, since it concernes every one that will be at the Charges of Planting, to search into the Bowels of the earth, and not to be satisfied, or trust to the outward face thereof, There should be provided for the same use or purpose an Iron Augar, such as is used for the searching after Mines or Minerals: and although this way of searching or trying the goodness of the Earth under ground, will require labour and expences, yet it will be of great concernment and singular use; there being a vast difference between the Planting and Sowing
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of Corn, and sowing and planting Seed or Plants for Trees; for the Husbandman, in a years time after his Seed is sown, may know the goodness of the ground, and amend the evils thereof, or forbear farther charges, and let it rest for the feeding of Cattel; whereas the Planter must wait many years in expectation to know the goodness of his ground, and only guesst it at last, without any certainty, only by the growth, or thriving of the Trees Planted.

Having briefly discoursed of unfruitful grounds, by reason of the Constitution and Clime, or scituation of the Countries wherein they lie, it will be needless to speak of those rich and fruitful Claves in *Buckinghamshire, Leicestershire, &c.* and of the fruitful Sands in *Surry, Middlesex* and *Suffolk*; also those rich and fruitful Gravels, and compounded or mixt Earths in *Barkshire* and *Hartfordshire*, with many other Shires: All these fruitful Soiles, if there be not those hindrances in the Bowels of the earth formerly spoken of, will require no other charges then only the choice of good Plants, and care in planting them: As for poor unfruitful Grounds having but a thin Crust, yet good earth at the depth of 18 or 20 inches, the Seed or Plants that are to be planted in such grounds, are to be nourished and maintained until their Roots descend and reach unto that good earth, therefore not only choice Plants are to be provided, but also good earth, thereinto to set or plant the Seed and Plants: But of this it is necessary that you have more particular directions; There is therefore not any of those Lands formerly spoken of, either fruitful or barren, but may be very good for planting Timber-trees, except these few following; First, all Lands that lie near the skirts and borders of the Sea, for the Mists, Fogs and Winds that come thence will much indanger them, and hinder their thriving. Secondly, All high and dry Mountains, for they do not only want moistness of Earth, but are infested by great Winds, which frequently blow in such places, and are very hurtful; and although there are, and have been seen great Trees growing on high Hills, yet it is my opinion they were not

not planted there by Man, but were the production of the earth, and an effect of the first Creation. Thirdly, All Lands that lie flat, and are subject to Inundations of Waters, for want of a Descent or Current to carry them off some other way; for although moist earth is good for Trees, yet too much moisture, as Water, lying long on the ground, or at the rootes of Trees, is dangerous, if not Mortal. Fourthly, All Moorish wet grounds, for although there are, and have been many great Trees growing in such grounds, yet very seldome any sound, well coloured, or long-liv'd Timber-tree. Fifthly, All entire Chalke Grounds, for such grounds are cold and dry, and not good for Trees; but if there be a mixture of other Earth with them, then it may be good. Sixthly, All grounds that are Rocky, or very Stony, either under, or above the Earth; for, although Trees may thrive in such grounds, yet it will require much labour and charges, and I am very dubious of any long thriving of Trees so planted. Now the Plott of ground that I shall make choice of to Plant Timber-trees in, should be low and plain, but somewhat ascending towards the middle of the Plott, that so the Floods after Rain may run clean away, yet slowly, not rising higher, if possible, then may be convenient to water the whole from some spring or River, that in the summer, or drought it may be moistened, cooled, and refreshed, and laid dry again at pleasure; which would not only produce Grass wonderfully, but make the Plants and Trees grow more in seven years, then they will in other grounds that have not these helps and conveniences in 15 or 16 years. The Soil or Earth should also be a rich and fruitful Clay. Being now provided of a Plot of Ground to Plant, and having proportioned the Fence, and computed the Charges, the next thing to be considered is the choice of seed and Plants; *Seed is only the Image of the Plant or Tree gathered together into a very small part of the Matter; Plants are the Production of Seed, for the universal spirit of Life was infused, or put into the matter of the World by that great Herbatist our Eternal God; and so insinuating it self through all the parts thereof, introduced*

duced into every Creature its own form. Now the Spirit of life contracted into this lesser forme as aforesaid, is the seed of all Creatures, of what kind soever they be, and whereby their several species are propagated in the World. Having now propounded it to my self, as the end of my discourse, by Planting Timber trees to supply the Wasts that have been committed in His Majesties Forrests, and to shew how other parts of the Kingdom, which now are but of little use and profit unto the owners, may be improved; I shall in the next place do something in order thereunto: But, because it would be tedious to run over all the several sorts of Trees known to us in England, which upon occasion may be made use of for Timber where no other can be had; I shall confine my self to four sorts only, the Oake, the Elme, the Ash, and the Beech; And he that can well Plant these, may likewise all other sorts of Trees, whether of Pleasure or Profit; and because Seed, as I told you, is the Original of Plants, we shall begin with the sowing of that; And to do it more effectually, follow the course that it is to be supposed every careful Husbandman doth, before he begineth to Plant his Ground, viz cleanse it of all incumbrances which may either hinder his Plow, or choak the Seed; as Bushes, Stumps, or Rootes of Trees, which is performed by Grubbing; but, if Goss, Whin, Heath, or such like, then it will be needful for such ground to be Hackt, or Devonheard, so called, because in that Country this work, or kind of Husbandry is much used; And if any hard Gravel, Quarry of Stone or Rock be within the reach of the Plow-share, it will be loss to Plow, and Sow, or Plant such Grounds with Seed for Trees; but, having a true knowledge of the nature and condition of the ground, it being thus cleansed of all Rubbish, and prepared ready for the Plow, we shall proceed in the choice of our Seed; And, as it argueth much weakness in any man to want Seed at the season his Land should be sowed, so is it unnecessary expence to provide much more than will serve the turne; for Seed is generally dearer then that Corne of the same kind, which otherwise may be better spent in the House; and, although it ought to be
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of the cleanest and soundest Corn, yet the smaller is rather to be chosen then that which is very large; Now, to bring this home to our purpose; of the foresaid Timber-trees, there are but three usually produced by Seed, the Oake, Ash, and Beech, for the Elme is renewed from Age to Age by Slips, Shoots, or Suckers, which sprout from the Rootes, it being a general Rule, that those Trees which bear little seed, or seed of small use, the Slips and Suckers will grow sooner, and thrive better then those of Trees bearing Seed: I can speak it of my own knowledge, that the Chips of Elmes newly cut, and falling among long ranck Grass, have in few years taken root, and grown up to a reasonable Coppice, the reason thereof may be from the Oyley and glutinous substance; or because the Spirit of a Plant or Tree is dispersed throughout the whole body; and therefore however the matter may be vexed by Chipping, yet the Spirit contains it self, and will remain in that small portion of the matter that is cut off, rather then forsake it quite, or else Slips and Succors could not grow to so great Trees as usually they do; yet it is my opinion, that the Elme taken from Chips will not be long lasting, or grow to any greatness, because there is but a very small portion of the matter in comparison of that which is in Slips and Succors: Now there ought to be great care taken in the choice of your Seed for Trees, because the defect of them is not so visible as that of Corne. The Kernel of an Acorn may be Worm-eaten, or half rotten and perished, and yet the husk or shell whole and firm, as we see in Nuts; so likewise will the Seed of Beech, very few of them prove sound and fit for our purpose; The Acorns which I would advise for Seed should be of a middle size, or something better, and not of the largest; but very full and hard, and the husk or shell smooth and shining; and in the water those that soonest sink are the best Seed: The Beechen Mast, and the Ashen Keyes would be of the largest size, plump, and full of Kernel. We shall now consider the Quantity of Seed to be set or sowed, which must be proportioned to the ground that is to be planted, and the distance between the Plants. The nearest
distance

distance that can be allowed to have good Plants, and most profitable to be afterwards transplanted, is 12 inches, or one foot; And, to save every man a labour in counting the quantity of Seed and Plants to be Sowed and Planted, I have thought my Paines well bestowed to do it here.

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ENGLAND'S IMPROVEMENT REVIVED.

THE THIRD BOOK.

The Argument.

You have set down the manner and way of planting one Acre of Land Statute measure, that is 16 foot and a half to the Perch; with Seed or Sets for Timber-trees and Underwoods, at several distances, as from 1 foot to 4 Perch: Also the converting of the said Woods to several uses, with the Charges and Profit in performing the same, and several Observations in planting the said Woods: Also a Conjecture at the Growth and Age of Timber-trees, as Oaks that are now standing and grow; which said Trees may be probably concluded to be the Production of the Earth at the Creation of the World: together with Preparatory Directions by plowing and sowing, with choice of Seed and Plants in order to the planting a thousand Acres.

WE shall proceed in an orderly way, beginning with one Acre, and then having given you the Distance for Sowing, Setting, or Planting Seed and Plants in this Acre, will do the same in a Thousand: An Acre of Land therefore containeth 160 square Perch, Rod or Pole, at 16 foot and a half to the Perch, which is 4840 yards, and at three foot to the yard is 43560 foot; so that one Acre of Land will take up of Seed to Plant or Set at the distance aforesaid, being one foot, 43560

43560 Acorns, Ashen Keyes, or Beechen-Mast, or if planted with Plants, the same number of Plants: Now because Seeds are not bought by Tale, but by Measure, I shall give you also the number of them by the Bushel, which containeth eight gallons, and the gallon eight pints, Winchester-Measure; a Pint will hold or contain 100 of the greater sort of Acorns: by this measure you will find 800 Acorns in one Gallon, then in one Bushel will be contained 6400, so that one Acre of Land, containing 43560 foot will require so many seed of Acorns as come to 6 Bushels, 3 Pecks, 3 pints, half pint and 10 Acorns; Always observing what distance of Land is left between the outmost row of plants, and the fence or bounds of the Land planted, and for so many foot, or every foot left in distance, to deduct one seed or plant out of the Number given, and the remainder will be your desire.

This first, or nearest distance of ground between the plants, is only proper for the setting and sowing seed for Transplanting other Lands or plots of ground, which must be performed by drawing the middle or inmost plants, leaving the remainder thinner, or at a greater distance; And this work would be done at 2 or 3 years growth at the farthest, before the Roots touch, or are too much intangled. The next distance in planting is three foot, or one yard, then have you in this Acre of ground containing 160 perch, 4840 square yards, and the same number of seeds or plants must be provided as there are yards, which, if Acorns, come to in measure three pecks 40 Acorns; but this distance is too near by one foot; however we shall improve the ground to best advantage thus, suppose there be planted 4800 Ashen Keyes, or plants, and 40 Acorns or Oaken plants, the Oaken plants to be planted at 33 foot distance, and that they all grow and thrive: The Ashe may be cut at ten years growth, and sold for Hop-poles, worth 10 or 12 shillings the hundred, to be delivered in the Wood or place where they were cut, then there will be 4800 poles, which is 48 hundred, and at 10 shillings the hundred, they come to 24 pounds; but, if
sould

sould for 12 shillings the hundred, it amounteth unto 28 pounds sixteen shillings, which is a sufficient allowance for one Acre of Land, before only worth 20 shillings yearly Rent, and will sufficiently defray all the charges in fencing and planting; The Oakes are to grow for Timber-trees, which within a hundred years will pay double the Purchase of the Land. The next, or second growth of these Ashen stocks may be cut at 9 years; and, if they all thrive, the Sap will put forth four or five shoots out of every stock, and from each stock may be chosen two Hop-poles, then there will be 9600 Poles in the Acre of ground, besides the Offal Wood; the Poles being sould at the lowest price aforesaid, amount unto 48 pounds; but, if sould for 12 shillings the hundred, then they will amount to 57 pounds 12 shillings: A third felling, or cutting of this Ashen-Wood may be at eight years end, and then the shoots will be so increased, that you may cut three or four Poles from every stem or stock; we shall reckon of the least number which is three; then have you from the 4800 Ashen Plants 14400 Poles, which cometh unto, at 10 shillings the hundred, 72 pounds; but, at twelve shillings the hundred, 86 pounds eight shillings, besides that which is made of the Offal Wood. This is a gallant improvement; if there were vent for many Acres of Land to be thus Planted. Now, by the next time of felling or cutting, the Oaken plants will be grown to handsome Trees: But, it is to be observed, that as the Oakes grow in greatness, they will hinder the thriving and growing of the Ash, which is now become under-Wood, and the Rootes of the Ashe winding and twisting about the Roots of the Oakes, will much hinder their growth, and this is the evil of Planting at too near a distance: A third distance in Planting Timber-trees is one Perch; at this distance there may be made use of the Ground that lies between, either for Corn or Grass: And if you intend to sow Corne after the Land is Plowed, Sowed and Harrowed, you may set the Seed, or Plants for Trees thus; At the distance before mentioned plant four Seed or Plants four foot distance from each other in

a square, then either about the square-piece of ground, or about every seed or plant you must set up several sticks, that the Mower or Reaper at the time of harvest do not cut off, break or bruise the young Plants; also, that the plants may be weeded, and the ground kept plain about them: Now, if you will not sow the ground, but keep it for Hay, then there must be digged at the distance aforesaid a Plot of ground four foot square, and in that Plot set or plant four seed or Plants as aforesaid, at each corner one; you may let all these plants grow nine or ten yeares, and about that time you may thus dispose of them at your pleasure; first, leave one of the best growing Plants in each Plot to be a Timber-tree, then cut down the other three and preserve the stocks for under-wood, as before mentioned, or grub them up, that the Timber-trees may the better thrive; or, if you approve not of their so long growing together, you may draw, or pull up three of the four plants at three years growth, and plant them in other grounds: At this distance and way of planting there will be planted in one Acre of ground 640 plants. Now all these plants that you appoint for Hop-poles, must be such, as are most capable to produce those poles; for Oake, Elme and Beech are not of use for poles, the reasons shall be given when we speak of planting Coppice, or Groves for under-wood; Now of these 640 plants we will suppose 600 of them to be Ash, and 40 Oakes, these Oakes to be planted at 33 foot distance, and to grow for Timber-trees, at 9 or 10 years growth the Ashes may be cut down; then have you 600 poles worth 12 shillings the hundred, and comes to 3 pounds 12 shillings, but at fourteen shillings the hundred is four pounds four shillings. The stocks of these Ashes will live longer, and thrive better, also produce larger and more poles then if planted at the last distance mentioned, because they have more ground to feed them, and the hindrance, by touch of the Root, will not be much prejudice for many years, by which means, at the second season for cutting, you may have 1200 good Hop-poles, worth in the Wood or place of cutting fourteen shillings

shillings the hundred, which do come to 8 pounds 8 shillings, out at the next or third season of cutting the said Ashen stocks may produce 3600, which being sold for 14 shillings the hundred amounts to 25 pounds 4 shillings.

Now although the profit of this Acre by Poles doth not amount unto so much as the last planted at three foot distance, yet it is made up another way: First we have in this last Acre the benefit of the ground for Corn and Grass: Secondly the Trees and Under-wood will thrive better and grow greater in a shorter time than the other: more might be said, but this at present may suffice. And if you do not esteem of or like the way of planting for Hop-poles or Under-wood thus amongst the Timber-trees, but would have the benefit of the ground only for Corn and Grass, then you cannot plant at a nearer distance than two Perch, which is 11 yards; and because all grounds have not depth of earth alike; for the crust in some places will be 15 or 16 inches deep, and in other places of the same ground but 5 or 6 inches, and yet good earth a greater depth, Therefore my advice in planting all Grounds at any great distance is, first to delve a Plot of land 4 foot square, and let the 4 angle points or corners of the square lie North-east, North-west, South-east, and South-west; that the Plants which are to be parted in those Plots may have the benefit of the Sun all the day; this performed, then cast up a small trench or ditch a foot deep if there be so much good earth, and 18 inches wide; let all this earth be evenly laid on the Plot delved, the Clods hacked or cut small, and the grass and weeds gathered or weeded out; this done, set or plant one seed or plant about a foot from each point or corner of the square Plot, and in the middle one, then you will have 5 Seeds or Plants in this Quadrat: Now at every 30 foot distance throughout the acre of Land delve or cast up such a Plot of ground, so you will have 40 quadrats or square plots in the whole, and leave a sufficient distance of land between the outmost Rows and the Fence: The Seed or Sets planted in the whole ground are 200, which may all grow 3 or 4 years, then

then leaving one of the best Plants of what kind of Timber-trees you please; pull or draw up all the rest, which you may either sell, give away, or plant in other grounds; the remainder will be 40. By this way or manner of planting you may make as much benefit of the Acre of Land within a small matter, as if there were not a Tree growing in it; and these 40 Timber-trees being all Oaks within a hundred and fifty years may be worth 200 pounds, which is a good improvement, requiring no more charges than the first planting, and not losing any benefit of the land: And if this quadrat or square figure doth not like you, there may be digged or delved so many Plots of ground as aforesaid, round or circular, and the ditch cast up as about the squares; then plant or set the four Seeds or Plants equally about the Circle, and one in the middle, the four Seeds or Plants pointing to the four quarters of the Wind, as hath been directed. The reason of this way of planting is, to increase the mould or earth, for the Plants to put forth their shoots in; also the being inclosed will preserve them from danger in time of Harvest; you may set Beans in these plots of ground, but not too near the Plants; and if you sow seed of the Furr-bush about the edges of the bank, The Furr will keep the Plants warm in the Winter, and preserve them from being hurt by Cattel; and as the Plants or Trees increase the Furr will decrease, or after the Plants are grown up out of the reach of Cattel, the Furr may be cut, and so destroyed, if the right season of the year be observed.

Now there is another way of planting not inferior to any of these formerly spoken of. We shall consider of the Acre of Land in length and breadth to be 40 perch long and 4 perch broad, the just content of an Acre at 16 foot and an half to the pole or perch. The Plants to be provided for the planting this ground may be of all the sorts of Timber-trees formerly mentioned, they should be about the size of the Thorn plants, yet something greater, but not bigger than an ordinary mans finger. The Plants being provided, you may begin to work thus, on the

the North, North-east, or North-west side of this Acre of Land make a Ditch 3 foot wide and 18 inches deep, the said Ditch to extend to the farther ends of the plot, which is 40 Rod: After the first Turf is laid with the swarth or grass side downwards, the upper side pared, chopped, and made even, and that the Plants are cut and trimmed, lay them on as you were directed in planting the Thorne hedge, only observing to leave the trunk or body of these plants one inch longer than those of the thorns: Also the distance of ground between these plants must be 3 foot. After the Plants are laid in an even rank or row with the slope or cut side downwards, or sidewayes towards the South, and the head of the Plants lying at least 7 or 8 inches higher than the roots; then cast or throw up good store of the best earth on the roots; afterwards all the earth which you cleanse out of the Ditch, spreading it all over the Plants plain and even: This bank is not to lye high as that of the Thorns, but level as other grounds: There is in this row or bank 220 Plants; now allowing 4 foot of ground that the first Plants and earth cast up as aforesaid doth cover. The second Ditch must be begun five foot distance from the head of the first bank, which is 8 foot from the beginning of the first Ditch. This second Ditch or Row of Plants will fall behind the first, and must be made and planted every way as the first; and after the second a third, and so continue keeping the same distance till all the Plot be planted: Then have you in the Acre of Ground 8 Rows, and 1760 Plants. The Trees that are thus planted will thrive and grow wonderfully; between the Ditches and Banks you may delve and sow, or set Beans, Pease, or any other grain or corn: This Acre of ground may be improved by planting for Timber-trees, and under-Woods for Hop-poles, as you have been formerly directed. So much may serve for the improvement of one single Acre, which being too little a Plot to take up the whole industry of a Man, or my designe: I shall now take in a greater quantity of land, and proceed to a thousand Acres, which I at first intended.

The thousand Acres then doth contain by the Rod, Pole, or Pearch, at 16 foot and a half to the Pole, 160000, which is in yards 4840000, and doth amount unto in feet, or by the foot 43560000 : Now according to every one of these three Numbers, only considering the distance between the Fence and outmost row of Plants, as before mentioned, must the quantity of seed be provided, because you shall not be put to the trouble in counting how many of these seeds a Bushel by measure may contain, I shall give a particular account thereof, which take as followeth : The first number, the distance being Perches, will require 160000 acorns, which amounts to by measure, according to the former Rule in the one Acre given, 25 Bushels ; The second number, according to the distance of yards, will require 4840000 acorns, which comes to by measure 756 Bushels one Peck : The third or last number being feet will require 43560000 acorns, which will come to by measure 6806 Bushel one Peck : As for the other seed, which are Ashen keyes and Beechen Mast, they may be also measured by the Bushel as the Acorns, first counting how many of each will go or will be contained in one pint or gallon : Having considered and computed what the charges both of seed and Plants will amount unto, by knowing what quantity to provide, and how you may be furnished to serve your occasions. The ground being in good season, and the time of the year answering thereunto, you may proceed thus : The chief Instruments which are useful for this work of planting is the Plow and Spade ; the Plow will dispatch the greater quantity of ground in a day, but the other will make the best work ; we shall compute the charges of both in his due place : There is no certain rule to be observed in plowing ground in all places alike ; for according to the nature and climates of Countries, where much heat or cold, moisture or drought, as is the Earth or Air, so must the arborist alter his season ; strong or stiff grounds will require great strength of Cattel ; also the season must be early in the year : in other Countries where the earth is warmer, richer, and lighter, the Plow need not be

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of that strength which the former ground did require, neither will the labour of man or beast be so much ; And, in such Countreys the season may be latter, yet nevertheless for all these Observations, he that hath much work to do must begin betimes, especially if he hath not a sufficient strength of Men and Cattel : Now the Plowman ought to be very careful in the plowing of his ground, how he shall lay his furrows, either high round and close together, or low and flat ; also what depth he shall plow them, to raise and gain the greatest store of mould, for that is very considerable in planting Trees.

I shall not give particular directions or instructions in the Rules of Husbandry, as concerning the manner of Plowing, Sowing, and Harrowing all kind of Earths and Seed, and the several wayes of laying the Furrowes, as deep, or shallow, near together, or more open, and the Reasons of each several way ; as also the means of improving barren grounds by divers Manures or helps, by fresh Earths, as sand on clay, and clay on sand, with many other mixtures of Earths ; also Mareling, Limeing, Stable-Dung, Mud out of Ponds and Ditches, old Rags, and many more sorts, as also by grubbing, hacking, burning of Bate, or Devonshireing, and the like ; improving of Meadows and Pasture by draining and watering, propagating Plants for Orchards and gardens, with the several wayes of grafting and setting slips and succors, &c. Also sowing, setting, or planting seeds of all sorts, and increasing their production by several wayes of steeping or soking in Brine, or other Liquors ; also Reaping, Mowing, Hedging, Delving, Housing and Stacking Corn and Hay. The seasons for gathering and preserving, or keeping all sorts of grains, fruits and seeds, with many more particulars ; for it is not my intent to speak any father of Husbandry then will serve for this our present occasion of Planting.

The best time to begin Plowing for the planting Timber-trees, will be about the latter end of February, or the beginning of March ; if the Land require twice Plowing, which all Hey or Pasture-grounds do, for the swarth must be first broke, and torn

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to pieces with the Harrowes, or else cut with Instruments for that purpose, called Hacks, made of Iron; therefore there must be a second plowing, which will, by raising up new earth, increase, and make good store of mould again; and by this twice plowing, the Weeds and grass will be withered and destroyed, which are great enemies to young plants, as we have formerly declared: Now, for the manner of Plowing, supposing the Land to be very good earth for the purpose intended, and free from all Waters lying on the ground, & other incumbrances with a strong Plow, the share being of a good sufficient length, and the Culter somewhat bending, Throw down your Furrows, but if the ground be subject to waters, either by springs or floods in much Rain, then you shall lay the furrowes more high, near, and close together; and that every one of these Lands lie highest in the midst, observing to turn the swarth inwards or downwards unto the Earth, that the Roots of the grass and weeds may be scorched and dried by the Sun and Wind, and so withered and destroyed: But, if you will be at the charges, which is the best Husbandry, then with the Hackers formerly mentioned you shall hew and cut to pieces all the earth that was plowed up, also all Balkes that the Plow had escaped, for by this work the weeds and grass will sooner wither and decay, and make the mould finer; after the hacking you shall take a pair or two of strong Iron Harrowes, and with them going over the ground break the Clods smaller: In the Month of *August* you shall begin to Plow over that ground again which formerly you had plowed, still observing what quantity of Land you have to plow, and your own strength of men and cattel, and accordingly you may begin sooner or later; At this second plowing let the Furrowes be made deeper and greater then at the first; Now, if the ground were a stiff Clay, or such like, then it would require to be hacked again, which will thoroughly break the Clods, and increase the mould, and by making the furrows great and deep, raise up more Earth which had been untouched before. This work being finished, you may then sow and plant

plant your seed; but before you begin, it must be considered what part of the Land is most moist and dry, also in what part is the best and deepest mould, and where it is most shallow and meanest; for you must order and dispose of your seed according to their several qualities, the Elme will require the best and deepest Mould, but beareth no Seed, therefore must be planted by Plants or Setts: The Oake will require a moist deep Earth, but will not thrive if the water lie long on the ground: The Ashe will require a more dry kind of Earth, and will grow in a shallower Mould; The Beech will grow and thrive in a dryer, shallow and meaner earth then the Ash: And so having considered of these particulars, and finding your ground to have these several sorts of Earths, you must plant, sow, or set your seed and plants in that part of the ground where they will best like or thrive: But, if there be no difference in the mold or earth, then you may mix your Seed, and Sowe it together; but if you set the seed, then there may be a Row of Oake, and a row of Ashe, and another of Beech; or mix all of them in one Row as best pleaseth you; and thus may all other seed or sets be sowed or Planted: The fittest time or season of the year for sowing or planting this seed for Trees, is, when it is full ripe, and falleth from the Trees, which is about the latter end of *October*: But, it may be sowed or set in other Moneths if well preserved. In sowing of your seed be careful you do not sow too thick, for the thinner they are sowed, the better they will thrive; one foot distance is the nearest they should be sowed or set; if the plants come up closer then one foot, they must be drawn, or pull'd up the first or second year at the farthest; for those Plants that are planted at a foot distance, will be larger and bigger at three years growth then others which are planted thicker will be at five. Secondly, if they grow at that thickness longer then two years, the Roots will be so knit and intangled one within the other, that, in drawing of them you will break the Roots, they being tender, and so spoil the plants which otherwise might be of use for the planting other grounds, or the wast places in the same ground; for it is supposed, all the seed

seed that was sowed will not grow and thrive; and if they come up at no nearer then a foot distance, yet there would be a sufficient quantity to spare for the planting other grounds, because within the space of one yard must two or three plants be pulled up about the time before-mentioned, that the rest may thrive the better, and grow for use and profit, which they will not do at a nearer distance. Again, If plants grow thick any long time, they will indanger the whole Plot of Ground by starving each other: The first year after planting it is neither proper nor profitable to draw them up for any use, because the substance of the Kernels of the Seed will not be spent in the Roots, therefore in drawing up such plants they cannot thrive, because they want part of the nourishment that should increase their growth: Now, for my own part, I would not have them set or planted nearer then four foot in any great quantity of ground, but would the meanwhile have a Nursery of one or two Acres or thereabouts, as there may be occasion, where they might grow at a foot distance, but nigher, even there it would not be convenient; those that plant them nearer, or at even a foot distance, in any great quantity of ground, have but these two Reasons; The first is, for fear all that was set, planted, or sowed, should not grow and thrive: Secondly, To have Plants to stock other or more grounds; but, by this, they go about to make all grounds become Nurseries, and never consider, that the Land is thereby exceedingly impoverished. But now briefly to answer both these; To prevent miscarriage in the growth of Plants, there must be great care taken to provide good seed, & that it be well searched & picked from all that are defective: And for the other, a Nursery of about two Acres will stock or plant a thousand at a distance sufficient for Timber-trees; besides, there are many evils in sowing or planting at too near a distance, some of which have been already declared; we shall only add two more: First, The Charge in Weeding will be hereby increased unnecessarily; for, all Plants must be well weeded the three or four first years, and growing so near only with Weeding-knives, or by hand; whereas at a farther distance,

stance, a good labouring man with a Hacker formerly mentioned, will Weed or Clense above an Acre in a day, and make better work then seven Women, though they ply it never so hard. Secondly, At four foot distance, which I propounded, the ground may be delved five or six years; and between the Plants, Beans, Wheat, or any other kind of Grain may be set or sowed, only to prevent the danger of the Sickle or Hook; in time of Harvest there must be three or four sticks set up round the Plants, as we have told you before; And, if no Corne sowed, there may be benefit made of the Grass, for the Plants will require no more Weeding then half a foot round, to do otherwise, is to be at great charges and expences, and have little or no profit: It is not my design or intent to dissuade any man from sowing Seed for Trees, I only speak my judgement as to the distance. Now, immediately after you have sown your seed, take a pair, or as many as you can well spare, of very strong long-tooth't Iron-Harrowes (for in some Countries they use only Wooden ones) with sufficient Men and Horse to order them, and so cover close all the Seed, which you will the better do, by often going over the Ground, for by breaking the Clots the Mould will increase, and become both small and more fit for that purpose: After the Harrower hath finished his Work, then let four or five Women and Children, or more, as your Work may require (for, as they are fittest for this Work, so they have less Wages then men) go all over the ground with setting Sticks, and set, or put into the ground all the Seed they find still remaining above, and cover it close; by which meanes it will be preserved from Mice, Rookes, Crowes, and other Vermin; for if the holes be not close covered, they will devour, and carry most of it away in a short time; For, the Plowman can speak by experience of several Hoards of Nuts, Beanes, Pease, Acorns, Beechen Mast, and such like, that have been cast up, a Pint or two together in a hole in the ground, besides many hoards found under the Roots, and in hollow Trees. Having Discoursed of Plowing and Sowing your Seed, we

shall now speak a little of Planting; which may be divided into three parts;

First, Planting by Seed.

Secondly, By Sets; that is to say Sets from Seed, Suckers and Slips.

Thirdly, Transplanting young Trees.

Now a Plant is the production of Seed, and although all Trees do not bear seed, yet they came from Seed, which Seed is the Spirit of life, infused into the matter of the World, and was done the first day of the Creation.

Of Plants there are in general but two sorts, a Tree, and an Herb; yet the variety of them, according to their species, virtues and colours, is so great, that they can scarcely be numbred. The spirit of a Plant is called Vegetable, which puts forth its Virtue in Nutrition, Augmentation, and Generation; for Plants being indued with an inward Vigour break out of the Earth, and spread themselves in *Plano*; from thence called Plants: Again, a Plant by its Roots and Tawes, or Fibres, sucks in the Juice of the Earth; the Bole or Body attracting the same doth augment, or grow into a great Bulke or largeness, sending it to the upper parts, which being there better concocted, breaks out in Seed; Plants grow upwards, because the vapour included spreading it self, tends upwards; The Bark, Leaves and Shells are but as the Skin and Garments, serving to defend the body from the injury of heat and cold.

But to proceed: The best sort of Sets or Plants are such as grow from Seed, if they be removed before the Body and Roots are grown too large, and that all the Roots may be taken up without bruising.

The Second sort of Sets, and not much inferior, if there can be a good quantity of Root taken with them, are Suckers which grow out of the Roots and Tawes of Trees; those that grow out of the Roots cannot be clean taken away without cutting the Roots of the Tree or Plant, which will both hurt the Tree, and do little or no good unto the Plant; such as are grown out

out of the Tawes may be taken away, and enlarged as you please with the Tawes and not hurt the Tree, these Suckers are the best, and will soonest become great Trees: Slips are in use for want of other Sets, but are the worst of all that have been mentioned, because they have but little Root, and that which is, Receiving a main wound, will in short time destroy the Tree; for, although it may grow 60 or 80 years, yet it cannot well thrive, for the Roots will be so weak, that the Sap will be unable to put forth new of any strength, unless in a long time; and every wind will indanger it, by loosning the Roots, or else it will be soon nipt with frost or drought, these Slips are also Suckers growing out of the lower part of the Tree.

To apply all that hath been said of plants and sets. There is not one point more to be regarded then the choice of those that are good, the ground being well plowed, hackt and harrowed, according to former directions. The best time to transplant, or remove younger Trees, is at, or suddenly after the fall of the Leaf, about the Change of the Moon; supposing at that time the Sap to be most quiet: The fall of the Leaf is a Rule in all Countreys, though there be difference in its happening, as to the time of the year, as also in the time that is to be accounted before and after it: In setting your sets or plants see that you have a special care not to go lower then the Crust of the earth; you may not fear to set them as deep as that will well allow: What is meant by Crust of the Earth hath been formerly declared; where the Crust is shallow, there it must be helped by adding good Earth, otherwise such grounds, or that part of the ground inclosed will not be fit to plant in; for, in the Crust or good Earth, the Plants first shoot forth their Roots, and thence draw their Sap, which doth increase and strengthen them to enter, and pierce farther into the Earth. Again, in setting, let the mold be small and moist, also shake the Plant easily too and fro, that the earth may run among the Roots and Tawes, then put it close, a little treading it with your foot to keep out the Air, which is very hurtful; after the plants are

set, if no Rain falls, they should be watered now and then, which would make the Earth yeild sap and nourishment, and cause the Roots to grow and spread abundantly; Puddle-water would performe the Work excellently, were it not chargeable: All Parched and dry grounds that will not keep moisture, are very hurtful for young Plants, because every Plant hath a Body Pithy and porous, that the nourishing faculty of the earth may enter and pass through, and feed all the partes; but, dry earth cannot pass through the Tawes and pores of a plant, therefore the moisture of the earth only nourisheth: There are several Opinions about removing Trees and plants, most of them argued from the Rising, Descending and pride of sap; some at the removing will mark the North-side, and have the same set so again. Others there are that yet do it as happily, observing no such Rule at all: There are some that are of opinion, It is best to remove Trees and plants before the Fall of the Leafe, and say, That the Sap descending will make speedy Roots: Again, there are others that say, It is good to remove in the beginning of Summer: And, a last sort, that strongly affirm, It is not good to Remove till after the Fall, Several Countries have several Customes and Fashions answerable to the place wherein they live, we shall therefore leave every one to their own opinion. Yet it is not wisdom for a man to bind himself more strictly to that or this Custom, then Reason shall be his warrant.

Now, we have good experience, that it is dangerous to remove when the Sap is not quiet, by Trees that are removed in the Summer, for they seldome live long, or, if they do live, they thrive not; for the life of the youngest plant shall scarcely be saved, if removed in the pride of Sap; for, every remove gives a main check to the stirring sap, staying the course thereof in the Body of the plant; For, as the blood in a Man is alwayes in motion and circulating, although there be several kinds of that motion, as sometimes very slow, coole and quiet, other times much stirring, and very hot, by reason of its swiftness. Now, if
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the blood, which is the life, alters the usual course, diseases follow; And, if it be stopt, it soon grows cold; and, if universally cold, Death follows. So likewise, Sap is the blood of the plant, and every removing in the pride of sap is a great stay, or stoppage unto it; like blood-letting in the midst of summer, which is very dangerous, and never used but in extremity, and often-times proves mortal; As it hath been said, That drought and cold are great enemies to Trees and plants, by staying of the sap: Therefore, in those Countries that lie farthest from the sun, and that are subject to cold Winds, the sap doth not rise, nor is in pride so soon as in other Countrys that lie more warme and moist: Also, in those Countries that lie nearest to the Sun, the sap doth rise, and is in pride sooner then in any of the former, but doth not continue long, because of the excessive heate; by this you see, that one Country, Climate, or Continent is not a rule for others to go by; And, as heate, cold, moist and dry alter in several Countreys, so they do likewise in any one of them: for, as is the season of the year, either hot, cold, dry or moist, so also the sap riseth, and is in pride earlier or later, by that occasion, in the same Country.

There are many Men of opinion, That the sap lies still all the Winter in the Roots of Trees, and that towards the Spring it begins to stir, and after makes its appearance by Leaves, and Fruit, or seed all the summer: Also, that the sap riseth and passeth upwards only between the barke and Wood, with several more Opinions: But, because it is not my design to Resolve Questions, I forbear to mention any more at this time. The Sap, as it is the Blood and Life of the Tree, hath the Spirit of Seed included therein, and because every body being composed of vapours is moved towards a greater Company of its Conaturals, that vapour coming forth when the Seed is warmed tends upwards: But, because the matter of the Seed is fat and glutinous, the vapour being infolded therein, carries it upwards with it; and a part thereof being turned into the nourishment of the Plant or Tree, as covering of Wounds, putting forth of Buds,
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and the growth of the Tree; the rest being gathered together into a certain place usually in the tops or boughs of the Trees, makes or becomes Seed: Again, The sap doth not pass upward only between the Barke and the Wood, as some would have it, but also into and through the very substance of the Tree, both Bark and Wood and all: And as for the Sap resting in the Roots more then in other parts of the Tree, I cannot consent unto it; for, if the comparison of Blood with Sap will be allowed, then, as the blood in Mans body is alwayes in motion throughout the whole Body, and rests not after it hath circulated once only; but, as it hath been said before, in its motion is sometimes swift, other times slow, and very still and quiet, but, never at a stand except in great extremity, and that for a very small time; Even so must it be granted to be in Trees: Now, to conclude this point; it is supposed by most men, that a small time before the fall of the Leafe is the Stand, so called, or the turning of the Sap, or rather, that the Sap is cool and quiet; for, it makes no stay, except by reason of extreame drought or cold, at which time there is very small or little appearance of life; therefore, because we do not know when the Sap is quite turned, or turning, but by the fall of the Leafe, It is the safest way to begin removing them, as also to sowe, or Plant, and so you may continue all the Winter, except in Frost and Snow; but, a Plant set about the fall of the Leafe shall be larger at three years growth, then that which is set the spring after shall be at four years; therefore the sooner you set or plant in Winter the better.

Now, in transplanting it is but curiosity and trouble to mark every Tree and Plant, to have the same side stand to the sun as was before; for every plant that is right and well planted should stand free from shade, the second row to stand over against the middle distance between the Trees of the first row, and so throughout the ground, and all of them so planted, that they have the benefit of the sun on all partes, as hath been formerly directed: And, planting at first thus, you need not care,

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or fear which de stands either to the North or south: Now, if you Plant your ground with sets, let them be of seed if possible, and not either of slips or succors; to buy sets is chargeable, also they may be broken or bruised in drawing out of the ground, or carriage, if you trust unto such as either have not care, or skill in drawing them; therefore let the sets be of your own, if possible: In choice of your sets, let the Roots be found and many, for as they are in number and goodness, so will the boughes be: Lastly, if the tops be tall, or more spreading then the Roots, you may proyn them, and cut off the tops, for every wound given when a plant is young will recover firmly in a short time, as about six years, yet there will be a hindrance in the growth of the Plant during that time; therefore considering all these particulars, it is good to have sets of seed of your own, and at such a distance as not to remove at all, for every remove is dangerous: Although some of these observations have been formerly mentioned, and also are generally known, yet are they but little put in practice; I am sure it would quit cost for all the pains and expences that should be undergone in order to it.

Now, if you intend to Plant a Plot of Land for Under-Woods only, or young woods, for House-boot or Plow-boot, &c. and not let any of the Trees grow to be great Timber; then as the Land is wet or dry, rich or poor, the crust deep or shallow, you must sow, or set such seed or Plants which will best thrive in those places: and, although Coppices, Groves, or Under-woods consist of all sorts of Wood, as Oake, Ashe, Elme, Beech, Maple, Chesnut, Birch, Asp, Alder, Withey, Hornbeame, Hasle, Sicamore, Willow, and many others; yet, of all these, we shall make choice but of six, the rest being not considerable to answer the Charges this way in planting, which are Oake, Chesnut, Ashe, Withey, Hasle and Alder; Now, to give you the reasons of my choice, and why I look upon them as the best and most profitable, are these;

First, They are quicker of growth then any of the other that

that I have omitted, for the Chesnut, Alder, Ash and Withey, will be taller and greater at eight years growth then any of them will be at twelve.

Secondly, They will thrive in such ground as many of the other will not; as in much wet or moisture; also in dry and shallow earth.

Thirdly, They may be converted to such uses as will render them more vendible, and yield greater prices then the other; For now, suppose you have an Acre of ground to plant, and that there be in it all the sorts of Earth before mentioned, then in the wettest part of the Land must you plant the Alder; This Tree is not friendly to Pasture or Meddow, because the Root thereof is of such a nature, that it draweth to it self so much moisture for its Nourishment, that the ground near it is good for no other use: the next that doth require a moist ground, although not so wet as the *Alder*, is the *Withey*; the *Ash* and *Hassle* will grow in the driest part, and in the shallowest Earth; the *Oake* and *Chesnut* will require a good earth, and deeper Crust then the last two; Thus have you the Nature, Quality, or Condition of the Plants, and where they best like to grow; But, it is to be understood, the Richer the Earth is, and the deeper the Crust, there they will best thrive. Now, because this Acre is but a small Plot, we will therefore Plant it to the utmost bounds: Thus the Land lying length and breadth, sixteen Perch long, and ten broad; the plants to be planted four foot one inch and a half one from the other, which is the one fourth of a Perch; At this distance there should be a square plot of ground delved or digged two foot square; about half a foot from the end or point of the four Angles set a Seed or Plant, such seed or Plants as will best thrive, according to former directions; and, where the Crust is shallow, there should be made a trench about the several squares a foot wide and deep, the Earth to be cast upon the square Plot to increase the Mould; the whole ground being thus Planted, you will have 2560 square plots, wherein is plantèd 10240 seed or plants; if they
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all thrive, then about three years after at the season of the year for transplanting, one of the best of these 4 Plants in each or every square plot which doth most thrive must be preserved, and the other 3 drawn or puld up and disposed of at pleasure, either to be planted in other grounds, else sold or bestowed on your Neighbours, the Plant which is left must be removed and planted in the middle of the Plot; this performed you will have remaining 2560 Plants. And you are to take notice that the *Alder* and *Withey* is not planted by seed, but Sets or Plants; the *Ash*, *Chesnut*, *Alder*, and *Withey* will serve for Hop-poles: the *Oak* and *Hassle* is the slowest and smallest of growth, and not useful for Poles, but for Hoops and Hurdles for Sheep-pens and such like; the *Chesnut*, *Ash*, and *Withey* are likewise very good to make Hoops for wet and dry Cask, as Brewers, Grocers, Soap-boylers, and many more Trades: Now also all these will make many necessary Implements of Husbandry, as Ladders, Rails, Plow-stuff and handles for many Tools, besides Firing; the *Chesnut* is special good Timber for Building, and many other uses; also the *Oak* and *Ash*; therefore there may be 20 of these preserved to grow for great Trees.

To make the greatest profit of this Copice, Grove, or under-wood is to keep it clean from all Bushes, Brambles, and other Woods, which it may be subject unto if any old roots of trees be in or near the ground; also if any seed, as Acorns, Ashen keys, Beech-mast, Slows, and such like be brought in and scattered by Rooks and Crows among the long Grass or Plants; else by squirrels, field-Rats or Mice, and hid in the ground, or under roots of Trees or Plants; For if any of these seeds be suffered to grow, they will be Incumbrances, and much hinder those that were rightly planted. These things being observed, and that you keep the Plants clean by well weeding, about ten years after the planting, this Copice or Grove may be felled, and every sort of Wood converted to their proper uses, as Hop-poles, Hoops, and other necessities of Husbandry, which I shall have occasion more particularly hereafter to mention. Now in fel-
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ling this Wood be sure you cut it smooth, and close to the ground; and after the stuff is sold and disposed of, be careful to cleanse the ground of all Chips, Sprays, and small sticks; also see that you make the Fence firm and strong, that no Cattel get in to tread on, break, or bruise the stocks of the Plants; and when the sap puts forth new shoots, that they be not cropt or bit, which doth not only hurt and spoyl the Crop for the next season of cutting, but is very hurtful unto the stocks: if you be careful to prevent these evils about 8 years after the first cutting, you may cut again, and then will there be all sorts of stuff four or five for one that you had at first cutting; about 8 years after this second felling it may be cut again, and then the encrease will be 7 or 8 fold: Thus will your Wood increase unto a hundred years, although not in quantity, yet in goodness and greatness; so that this Acre of Land shall be worth 10 Acres of the best Wood land that is of its own growing, or at a nearer distance, planted and cumbered with Bushes or other Wood but little better. Now if you will plant an Acre of Land with Oak, Elme, Beech, and Ash at a pearch distance, then may you have the benefit of the Land for other uses; and preserving the Plants in growing, about 40 years after planting you may fell or cut down the one half of the wood, taking the middle Tree throughout the ground; some of them may serve for small Buildings, also for Laths, others to make Axes for Carts, also fellows and spokes for Wheels, Tree-nails for building Ships: The Elme stuff may be of use for Ships, also for the Millwright, and to make Navés for Wheels if not too small; the Ash for broad hoops for Coopers set-work, great Vessels and Fats for Brewers, Oars for Boats, useful pieces for Plow and Cart, and many more necessary uses, besides Firing: But if these Trees appointed to be cut down may grow 40 or 50 years longer, than they may be converted to several uses, besides the last mentioned, as for the building small Ships, Tree-nails of all sizes, Planks, Inch-boards, Quarter-boards, Quarters, Bouls, Trays, Dishes, Trenchers, and such like.

Having

Having discoursed of sowing, setting, and planting Seed and young Plants for Timber-trees and Under-woods in Copices, Groves or Spring Grounds; we shall now proceed and give our advice for the transplanting Trees of greater age and growth. It is no certain rule to judge the age of a Timber-tree by its bulk or greatness of body, for there are many hollow trees, and others not hollow, yet unsound, all of them much greater in the girt or body than sound thriving trees, which are twice the age of those great imperfect trees, and worth five times the value: Again there are young trees called suckers, that grow out of the roots of older trees, which both hinder their own and the others growth, because the roots are not able to maintain both; so that a Plant well planted and thriving will be a greater tree and of better use and profit at 30 years growth than those suckers will be at 50; but if such suckers were taken off in time, and planted, there would be a double profit, for the tree from whence it was taken will the better thrive, and also the plant may grow to be a great tree. Thirdly, there are trees that grow out of or from among the roots of trees that have been cut down many years; the roots of these young trees being much twisted about and entangled among the other although dead, yet as we have said formerly, every touch either of bough or root is hurtful, therefore such trees are much hindered in their growth and thriving: Also all trees that grow in hedge-rows or thickets, what ever the wood be, as thorns or other wood; such trees cannot thrive or be long lived. Fourthly, some trees there are that grow and thrive for thirty or 40 years, and then are at a stand many years; after which time they thrive again, but generally decay and dye; the reasons are from some stoppage or obstructions within the earth which the roots of those trees met with, as either some great Land Springs or Current of water under ground, or hard hungry Gravel Rocks of stone, Quarreys of Slate, Chalk, and such like, which the roots of those trees did not reach unto until such a time of growth. Now if the Current of water alter its course, and the

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Rocks

Rocks or Quarreys be not great, but that the roots grow beyond them, or through some cleft, then such trees may thrive again. Although it hath been said that the age of a tree cannot be judged by its bulk or greatness, yet of those trees that have not been lopped or removed, you may know their age by reckoning from the root up to the top twig, every years growth being distinguished from other by a knot, if the tree be not above 20 years old; yet this is not a certain Rule for all trees, the knots of some of them being not easily to be discerned, therefore their age is not certainly known but from the time they were first set or planed; or if you plant with slips or suckers, you must reckon from the time the sap first put forth shoots; for if you transplant trees, and there being in the bark knots or boyls, they may be of great age, and yet small of growth; as knotted Cattel being starved at first, yet may live possibly, but not thrive: Now if you cannot know the age of the trees you are to remove, then let your choice be of such as are streight, smooth, and whose bark is well coloured without knots or boyls. Secondly let the roots carry proportion with the body and boughs, that is round and spreading every way. Thirdly, let not the bole or body of the tree be above 8 or 10 inches about if possible; for this size or greatness will endanger life and growth; but the hazard will be much more if they are of greater bulk, because they must needs be tainted with deadly wounds either in the roots or top, or both, and after that are seldom or never good. This evil in removing may be discerned within few years, by the tree bearing a small hungry leaf, also by the blackness of boughs and bark. Again, another danger in removing trees of such an age and greatness is, that if they be not very well staked, the winds by often shaking the body will loosen the roots, and break the young Taws or Fibres, which are not only the mouth as it were of the Root, whereby it sucks and draws the moisture or nourishment from the earth, but are as strings or ties growing farther into the earth, fastning the roots and so the Tree; and these being broken will much hinder the thriving,

thriving, if not endanger the life of such Trees: Therefore all such great Plants or young Trees transplanted are only useful for ornament; as Walks and such like, or Pollards so called, because of the often poling or lopping of their heads; and usually grow in Hedge-rows, or else in Copices or other wast places; for of such trees the tops may be cut off at pleasure, and the bole or body left at such a height as may be convenient for the place and use of the said trees. Although these trees may not grow to become good Timber, yet they may live bearing arms and boughs, useful for Plowboot, Houseboot and Fireing many hundred years: And were it not for charges you may for these and such like uses transplan or remove greater Trees than those last spoken of; the way and custom is to take up the whole Roots with the earth about them, and so set or plant them where there is a deep and good mould, for the roots and earth will so ballance the body and top, that not any of the boughs will require to be cut off, only such as are useles, which would be proyned betimes: And although trees of such growth and greatness be removed, they may thrive and grow for Timber Trees, if the wast boughs be carefully taken off, and the wounds not too great, but recoverable. Many more Observations may be added, but these may suffice. Now in the planting or transplanting those trees formerly mentioned there ought to be greater care taken than in younger Plants, for there is greater danger; also the growing and thriving of them is more uncertain, therefore we shall repeat over again some of our former Directions: First let the trench or hole you dig to set the Trees in be so large every way that the roots may lie at length and not be bruised or broken by bending or forcing into the place. Secondly, set such trees in the deepest earth or crust, and so deep as the good earth reacheth, to prevent shaking by winds; also let the slope side of the wound be towards the South. As for those fond opinions of several men, that the roots of trees only grow and thrive in the crust of the earth as their Element, it is not denyed that the Earth is the Element for the roots of all

all Trees and Plants, as the Water for Fish; but as Waters have several distinct tastes, smells, colours, and operations; also several kind of Fish haunt, delight, and thrive in those several Waters; as some in salt Seas, others in fresh Rivers, others in muddy Pools or Ponds, as the Carp, Bream, Chevin; and others in shallow running gravelly streams, as Trout, Roch, Dace, &c. others in mud and holes in the earth, as Eels, Crawfish, &c. others in Stony bottoms under the water, as Lobsters, Oysters, Crabs, &c. So likewise the Earth hath several distinct tastes, colours, smells, and operations; and also several kinds of Creatures living therein: And the Roots of Trees and Plants thrive and delight to grow in those several sorts of earth; and not only the Roots of several Trees, but of one and the same Tree. We do acknowledge that those Roots which grow in the Crust of the Earth most nourish the Tree, by producing the greatest quantity of sap, and yet there are other Roots also that grow downwards beneath the crust or good earth, through the several earths, and are for special use, as tyes and staves to keep it up, by binding it fast unto the ground, as was said before, and likewise to nourish and feed both body and boughs: Also those Roots that run in the crust put forth other Roots downwards deeper into the earth; for were it not so those great and mighty Trees that lift up their heads high into the Air could not stand. Thirdly, let the earth be moist and mellow, that so falling between the Roots it may the better hold them. Fourthly, in setting be sure you shake the Tree easily, that the earth may fall and be dispersed every where among the Roots, and often treading it as you cast it on the Roots gently with one of your feet, holding the Tree upright with your hand, leaving no hollownes or vacant place for the wind to get in, which is very hurtful. Fifthly, let not your Plant or Tree be bound or tied to any Stake, or lean against any hold, but about every Tree set four Stakes, let two of them be set deep into the ground, the other two upon, or very little within the earth, that they may not reach the Roots of the trees; the 4 Stakes may stand
seven

seven or eight inches from the body of the tree, and would be four or five foot high above the ground, also braced above and below, about a foot from the top and bottom with braces to keep or joyn them fast each to other; but if the Plants or young Trees be in danger of being barked by any Cattel, as Deer, Goats, Hares, Connies, or any other, then you must board it between the Stakes, or add more Stakes, setting them close to the ground, but not drive them in: about the body of the Tree above and below, over against the braces there must be wound a good Wisp, Role, or Rope of Hay, containing in thickness 9 or 10 inches about: The Roles or Wisps of Hay resting or staying on the stakes and braces will bear off the body of the Tree from beating against them in every shake by wind from all parts or points from whence it doth blow, and so preserve the bark from bruising or breaking, and also keep the roots fast and free from shaking. Now considering all the trouble and charges about transplanting Trees of such greatness, it is better to plant by young Sets, and best by seed, and not remove at all; for a Set or Plant so small as a mans little finger, that doth thrive, in 20 or 30 years shall out grow and be greater in bulk and body than the greatest Tree before spoken of, both being planted at one and the same time, except those last removed, as aforesaid, with the earth about the Roots.

Although there have been sufficient directions for the planting of Timber trees, yet all these directions are of little worth, if after the trees are grown up you want skill to keep and dress them: for it is in a Tree as all things else, that they are subject presently to degenerate without good ordering: There be many men covet to have abundance of trees in a small plot of ground that will not maintain a fourth part of them; for we may see by daily experience many Woods that are so thick or overgrown with trees, where there are 4 or 5 suckers growing out of the roots of one tree, and the whole Wood so growing, the trees being tall and slender may so continue many hundred years and be of little worth: And at this thickness neither Sun nor
Air

Air, or Rain can profit, therefore neither themselves nor any thing under or near them can thrive. And besides this great evil of suckers, which not only draw out the heart of the tree from whence they grow, but also starve themselves; there are many unprofitable boughs which must be likewise taken away; for all Ages and Countries consent to pruning of trees, yet there are too many unskilful men that know not those boughs which are to be cut off, or the time and season when to take them away: Trees are very subject to make their shoots disorderly, and the greatest trees, and those which grow in the richest earth are the most subject to be over-loaden with wastfull boughs and suckers, which draw the sap from the boal or body, and hinder the thriving; these being timely taken away, the strength of all the sap will go to the Bulk, having recovered and skind as it were the knots or wounds, will put forth a long and streight body of profitable Timber, being great of bulk and of infinite lasting. Now these superfluous boughs are such as grow low under the others, or the lowest of all, called water-boughs, which by the over shadowing of them that are above, and by their often dropping on them are much hindered and want sufficient sap to maintain them, and therefore are better taken away. A second sort of suckers are your Scyons, which grow streight up from some lower part of the tree from pride of sap; these also receiving a great part of the sap much hinder the thriving of the tree, and therefore may be spared as the water boughs. A third sort are fretters, which are boughs, Arms, or branches growing so near together, that when the wind bloweth, they by their rubbing against each other wound their fellows, making galls, and breeding cankers, that in a short time will be incurable and indanger the whole tree, therefore such boughs must be taken away, for the longer they so grow, the worse they will be, and more dangerous to be taken off, because the wound will be so great that the bark will scarcely cover it again. Fourthly, in dressing Timber-trees, the chief care must be to maintain a long boal or body, which should be

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30 foot high before the first Bough be put forth; this may be easily performed following him upward with continual Lopping his under-growth and Water-boughes; and if he puts forth any bud in those parts that were lopped, which the Sap may do the next spring, or summer after; then rub off those Buds, or else Proyn them again before they are grown too big; And, as the end and benefit of an Orchard is much and good Fruit, so the end and profit in Planting Timber-trees is sound, well-coloured, Long, Large and Durable Timber, which is only to be accomplished by careful Planting, good Ordering and Dressing your Trees in time; before the Armes and Boughes be grown too great; for when a Tree is young you may bring it to what forme you please, for several uses in building Ships, as Beames, Rudder-pieces, Crooks, Knees, Wale-pieces, or any other; But, it will be needless to shape Trees for crooked Timber, for there will be enough for those uses without the help of Art from the natural production of the Earth; by reason of several hidden causes; since therefore the true ordering and dressing of timber-trees is so requisite, and the knowledge of superfluous Boughes very necessary, I shall add a few observations whereby you may the better perfect the work and know them.

First. There is no certain time of the year for all Countryes to begin Proyning; for, as the Clime is where the Trees grow, and the season of the year more or less temperate and mild, so may you begin earlier or later: Frost and Snow is no good season; any time may serve after the leafe is fallen till it shew again, if you observe the time of the Moon, which is about the change; the best season is when the Sap is ready to stir, not when it is proudly stirring; and, the older the Trees are, the sooner you may begin.

Secondly, The waste Boughes that you take away cut off smooth and close to the Body or Arme, or any part of the Tree, striking upwards, if conveniently you can, and leaving no bunch, that the Sap may soon cover the knot or wound; for, such boughes which are not cut off close to the body, the Barke cannot

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not in so good time cover the wound, but the heart of the knob which is left will slit or crack, and the winde and rain entering in, will cause hollownes, which will soon decay that part; and, if many such wounds, then untimely death of the Tree will follow.

This evil, of not close cutting, or lopping, we have daily experience of, for there are many thousand Trees now decaying from that cause only, it being a general custom in lopping Trees, to cut off Armes, Boughes or Branches, sometimes two inches, sometimes four or five, sometimes more from the Body: Now, as there is much danger to a Tree by small boughes thus lopped, although but one time, much more is there in often cutting great Boughes, which make great wounds not to be covered or cured; therefore all shredding and lopping of Trees doth much hinder their growth and thriving, which maketh so many Dwarfs, Pollards, and such like Shrubs, also so many May-pole-like-Trees, which are more fit for that then any other use, except it be a course Timber for the building Houses, making Postes and Rayles, or such like; These Trees may cumber the ground many hundred years, and their growth scarcely be discerned: Now, it is no wonder to see so much deformity in great Woods and Forrests that lie farr remote from the Owners, whose too much trusting to unskilful and unfaithful Servants is the cause of so many evil Trees; Nay, even this we see in Orchards which are near at hand, and ordained for Pleasure as well as Profit; the ground is covered and cumbered with a company of skragged and crooked Hags, which never were, nor ever will be good; some runing up into the Skies, without form or substance in Body or Boughes; others Dwarf-like-trees, more Boughes then Body or Rootes; others like Hydropical Creatures, great in bulk, but weak in heart, drinking in the moistness of the earth which swells the Boale, but the boughes and branches are weak and fruitless: How many Moss over-grown-Trees are there? How many others Bark-bound, Bark-Pil'd, Cancker'd, full of Galls and Freters? and many

many more evils, which are caused either by the first planting, or want of dressing, or both; all which may be prevented by a careful and skilful Gardner: Nor are these casualties incident to an Orchard only, but all other Woods, be they great or less.

Thirdly, If there be many Tops on one Tree, and that you would have it grow for long Timber, then may you take off all but the Principal Top, and follow him up by Lopping his under Boughes, as before directed: But, if you would not have the Tree grow high, but great in Bulke, and well spread in Boughes, then must you nip his top, or take it off.

Fourthly, If you find your Plants or Trees grow generally freight, and that those few that are crooked prove not useful, you may reforme them, or bring either their Body or Boughes to what forme you please if you begin betimes with them: Now the manner and way of performing this is better to be done then demonstrated, because the instrument that is to be employed must be framed and fashioned answerable to the bent or crookedness of the Timber you have occasion so to alter: There are other observations about the Dressing or Proyning trees, these already spoken of being to be understood of young Plants not greater in body then a mans wrist, but the same Rules may be observed in older Trees, so that the Boughes that are to be cut off be not bigger then as aforesaid; for there is no reforming Trees that are greater without much skill and labour; and the wounds being great must have Plaisters laid on them; As for Galls, Cankers and Freters I know no better cure then to cut off the Bough as before mentioned: Thus considering the great hazard, labour and charges you put your self unto by transplanting great Trees, also by suffering the Woods of Trees that are already planted to grow out of order for want of timely dressing when they were young; the best way to prevent it for the future is to follow some of these directions I have offered, and not persist in an error wilfully upon no other ground then because our Ancestors have done so before: if your Trees are

Mossy it proceeds from Poverty of the ground, which is one of the greatest causes also of their not thriving; And if Corn and Grass spend the fatness of the Earth, and will not thrive without a supply by Soile or Dung, much less can trees that have such great bodies be sustained without some additional helpe; therefore when your trees are grown great, and have spread the ground, you ought to lay good store of dung, yet according to the quantity of the Trees, and strength or weakness of the earth, you must add more or less compost: If all these Rules aforesaid were well observed and performed, *England* would abound with the best trees in the World, both for sound, long-liv'd, and long-lasting timber, and recover the Wastes that have been made, not only in quantity, but goodness and greatness. In the History of the West-Indies there is mention made of a tree, whose trunk or Body was 87 foot about, which is 29 foot Diameter: It is my opinion there have been trees of as great a bulk or body growing in *England*, for I have been informed of an Oake that was feld in *Hampshire* about nine years since, which did contain in timber and Wood fifty Load: Also of one Arme of an Oake, growing not far from *Horsbam* in *Suffex*, that was in the year 1664 blown down by Winds, containing thirteen Load of Wood and Timber; And I measured the 26th of *July* 1664, in the Forrest called *Ales-Hoult*, an Oake now growing, whose trunk or body contains 36 foot compass, which tree was girded or measured about five foot high from the ground; the Diameter thereof is 12 foot: And, by many credible reports there have been greater trees in *England* then any now growing; for the best timber-trees become alwayes a Prey to such as know their use and profit. Now if such great trees which have been growing in *England* did so far exceed in goodness and greatness the generality of our best Timber-trees now living and growing, which trees by the opinion of most Men are many hundert years old, and yet have not lived a third part of their age. These great trees then, if they had been carefully lookt unto by orderly dressing, proyning and soiling, might have

have grown to twice their bulk and greatness, and have lived, if not cut down, many hundred years yet to come. It is my opinion, that there are Oaks now living and growing which were Trees and Plants growing from seed, or as suckers from the roots of trees the next Summer or Spring after the Deluge; and I think I may truly say some were the production of the earth, and grew by the Command of God at the first Creation, not destroyed by the Flood: and there may be many reasons for this my opinion: First, Trees are an Ornament to the Earth, and are to the Earth as the hairs of a mans head, which without poison, intemperance, or some other forcible cause, will dure with the body. Mans dayes are now much shortned by reason of sin; for before the Flood we read the Age of men to be above 900 years: and although *Adam* by his transgression was the cause of our Mortality, yet we have encreased the Cause by evil Government, and are become degenerate from the natural Diet of our fore-fathers. The men of those dayes did live, and increase in all lust, idleness, gluttony, and drunkenness, answerable to this wicked Age; no marvail then if thousands or millions of men die before they have lived the tenth part of their age. But an Oak is a plant of solid substance, feeding naturally as from the beginning, capable of, and subject to any kind of dressing that shall be applyed unto it; not subject to diseases occasioned by intemperance, as in Man; And although for Mans sins the Earth was cursed to bring briers and thorns, yet we do not read that the lives of Vegetives were therefore shortned, but that every Plant according to the spirit of the species, by the good will and providence of God, lives to the time first appointed at the Creation: If Man had not sinned he had not been subject to mortality; it is therefore resolved upon good reason, that Trees may live during the world, or untill the dissolution of all things here below, not coming under Mans transgression; for if Man, whose body is nothing in a manner but tender rottenness, hath lived above 900 years, much more may the Oak live many thousand. But secondly, in all ancient

ancient History we read that the greatest part of *England* was much over-grown with Woods, and it is well known that these Woods have been cut down and destroyed in all Ages, and are wasting to this day : But we do not read of planting any, except in these latter dayes by Gentlemen for their private occasions : His Majesties Forrests, which are the ancient Woods and Woodland in *England*, have not been planted, nor ever were by Man, neither do we find that the oldest trees die and young grow up in their room, nor that decayed trees are cut down except some few for Firing, but the best and soundest trees, as hath been said before ; or that such old like decayed trees are the oldest trees, and are so decayed by reason of age, but chiefly by being often lopped, shredded, chipt and cut, either boughs or roots, or by other accidents, as being overwhelmed and oppressed by bushes or other trees growing too near them or otherlike, which may shorten the life of the soundest trees, besides other incumbrances under ground, as Land-springs, Water-courses, Rocks of Stone or Slate, which they meet with in their subterraneous passage. Thirdly, there are trees which are and have been ancient Boundary trees, or Land-marks many hundred years, which now are and have been by the memory of the oldest men living growing like trees. Fourthly, it hath been my observation in travelling abroad, that great Woods, or Woods of great Timber-trees have been so environed with Bogs or moorish ground, that not any Engin, Cart or Wagon could pass; neither hath it been known that any of those great trees have been felled or cut down : Other Woods I have seen containing many miles very rocky, and they so high and rugged, that not any Cart or Wagon could pass in many places, and yet both these grounds abounding with trees of great bulk ; also other parts of the Country have been generally full of Wood and Timber-trees, and not much peopled, nor ever was : Neither is there any Cart, Wagon, or other Engin thereabout in use to convey away Timber : And the Wood and Timber generally used is young trees, with which they
build

build their Cabbins, Booths or Houses, being but of one story, framed in the Woods, and drawn to the places where they make use of them, being made fast on both sides of a horse, or else carried on mens backs : I have travelled through a great part of these Woods, and as I well remember, the greatest part or quantity of the dead trees I then saw were such as the wind blew down, many of them lying rotting on the ground for want of use, the Country being full; and others that were standing, but dead, I found were for the most part young trees, which did either grow out of the roots of greater trees, or from seed falling in long grass, and so growing altogether hindred the growth of each other, and shortned their lives. I do not know any History that mentions either the planting, felling, or cutting any of these Woods, nor the oldest man then living in those parts could inform me. Fifthly, of my own knowledge in *Lancashire, Shropshire*, and other parts, there are many Firre-trees taken out of the ground, some of them 2 or 3 yards within the ground, and by all probability they have lien there ever since the Flood, for no History, nor any Lease Conveyance or Deed in writing doth mention any such trees growing in those parts : also they are found near the sea in moorish places, which is not a proper place for the Firr to grow in : there have been many years since and of late several discoveries of the said trees being found whole Bodies and Roots, and the Timber very sound : Now if such trees have dured sound so long after death, much longer might they have lived if they had had the benefit of the earths moisture in their Roots only. There may be several reasons for that which hath been said of the Firre-trees, I shall but mention one : At the Deluge the Waters continuing many Moneths on the earth did much soften and mellow the ground, and at the time appointed by the Command of God the waters were returned into their Channels by a strong wind, as in *Gen. 8. verse 1.* which said wind, after the waters were something asswaged, did blow down several trees : The Firre being tall, and the Roots running shallow within the earth, were the sooner blown down,
and

and left floating on the water by reason of their porousness and lightness. Now when the Waters were totally asswaged, where the last winds left them, there those trees sunk into the Mud, and every Tyde from the Sea casting up earth or sand did cover them; and the Sea in after time falling off or leaving those shores, that earth became dry, and produced grass, moss, weeds and such like, which did grow over and hide those trees untill such time that this Kingdom became more peopled, and then these trees were discovered as aforesaid: Many more proofs there are which much strengthens my belief in that which hath been said concerning the age of an Oak: But thus have we in a plain way and experimental, given helps and directions for the planting Timber trees: many more observations might have been added in the choice of seed and plants; the several wayes of planting, plowing, delving, sowing, and setting; the different wayes of dressing and proyning; also the several sorts of Timber trees, besides those before mentioned; all sort of Underwoods with their names and characters: But they being out of my Road at this time, I shall keep to my business, and in the next place give an account of the charges and profit in planting a thousand Acres of Land. Now the best Figure for this Plot of Land for profit and pleasure is a Quadrat or four square of equal angle, because it encloseth a greater quantity of Land with less charges then you can do in any other Figure; also the Plants may be planted uniformly and in order: To perform this there must be provided two Chains made of Wyer, each of them containing 22 yards, which is 4 pearch, the breadth of an acre of Land, as it is usually measured; for 40 pearch long and 4 broad is an Acre; but if Woodland measure, then the Chains must be 24 yards in length; one of the said Chains must be divided into 16 parts by 15 brass Rings, such as are used about Curtains, the said Rings to hang loose in that part of the wyer that joyns the links together; this performed the distance between the Rings will be one fourth of a pearch which is of Land measure 4 foot 1 1/2 inch, but of Wood measure 4 foot 6 inches.

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At each end of this Chain would be an iron wyer Ring 2 or 3 times the compass of the brass Rings: With this Chain all seed or plants which are to be set at one pearch, two pearch, three pearch, four pearch, half a pearch, and one fourth part of a pearch distance, may be orderly and speedily set or planted; and that you may readily distinguish between the parts of the Chain, at the one fourth part of a pearch must be a single Ring, at the half of the pearch 2 Rings, at one pearch distance 3 Rings, and at the middle of the Chain, which is 2 Pearch, 4 Rings: but to plant at these distances you may also make use of a streight Pole containing one pearch in length, and divided into four parts. The second Chain must be divided into yards and feet by brass Rings, as in the first Chain; it will require 65 Rings, being the distance of feet; and at every third foot, beginning at one end of the Chain, add one Ring more; there will then be two Rings, which is the distance of yards: this being finished, the single Rings distinguish the feet, and the double the yards, the Chain containing in length 66 foot and 22 yards; but if wood measure, then the length of the Chain will be 72 foot and 24 yards: with these two Chains you may plant Seed and Sets at all the distances mentioned in the Book. Now if you will not be at the charges to provide Chains, then may you make use of small Cords or Lines; and instead of Rings there may be knots with several coloured raggs at all the distances before mentioned; and if these Chains or Lines be not of a sufficient length to dispatch much work, then may you lengthen them according to your use or pleasure.

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ENGLAND'S IMPROVEMENT REVIVED.

THE FOURTH BOOK.

The Argument.

You have Directions to plant a thousand Acres of Land, Woodland measure, 18 foot to the Pearch, with Seed and Sets for Timber-trees and Under-woods at the several distances before mentioned; and that is from one foot to four Pearch. Also here is set down the particular and total accounts of the Charges and Profit of planting the said Land by plowing or delving, and sowing or setting the same with Seed or Sets: As also of converting the said Woods to several uses.

WE have formerly discoursed of the knowledge of several sorts of Land by their Characters and Constitutions; also of the Climate or Continent wherein they lie, and how you shall make choice of Land for planting Trees; the choice of seed and plants; the seasons for plowing, sowing, and setting; transplanting trees of great growth, with the several Distances of ground between the Plants; and the Improvement of one Acre of Land several wayes; and to plant with Seed and Sets for Timber-trees and Under-woods; therefore shall not trouble you with repetitions, but proceed.

Suppose therefore the thousand Acres of Land before mentioned,

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tioned to be totally planted, extending to the outmost bounds as it was measured without the Fence, it contains 160000 pearch at 18 foot to the pearch. In the planting this ground we shall mention only 5 several distances between the Plants.

I. Dist. The first and nearest shall be one foot: at this distance you are only to plant seed for the procuring Plants to transplant other Lands: we shall suppose this thousand Acres also to be a strong rich earth; and every way qualified for the planting all sorts of Timber-trees: This Plot of Land then contains 400 pearch square, or 7200 foot, but will require 7201 Rows of seed or plants, and the whole ground will take up 51854401 single seed or plants.

Now if you will plant at this distance with seed for present use and profit, my advice is to plant only these three sorts, that is to say, the Oak seed which is Acorns, the Ash-tree seed called Ashen Keys, the Chestnut-tree seed or Chestnuts: There being an equal number or quantity of the three several sorts of Seed, set or planted, the Land will take up of Acorns 17284800, of Ashen-keyes 17284800, of Chestnuts 17284801. Now supposing that all these seeds grow and thrive, about three years after the planting they will be of a sufficient growth to be transplanted. The Oak and Ash Plants may yield 18 pence the hundred, there being 345696 hundred, allowing five score to the hundred, which amounts to 25927 pound 4 shillings: of Chestnut Plants there will be 172848 hundred and 1 Plant; and they may be worth two shillings and six pence the hundred, and will amount to 21606 pounds 1 farthing: The total sum that all the Plants amount to is 47533 pound 4 shillings 1 farthing: A good Improvement if there were Markets or vent for so many.

II. Dist. But if at three foot distance you will reserve one of these Plants to grow for Under-woods, and that you leave them equally mixed as they were planted, then there will be for sale

or to be sold of Oak and Ash 30726400 single Plants, or 307264 hundred, and at 18 pence the hundred amount to 23044 pound 16 shillings; of Chesnut 153632 hundred of Plants at two shillings six pence the hundred come to 19204 pound. The total sum for all these Plants amounts to 42248 pound 16 shillings; the remainder of the Rods or Plants reserved are 5764801, which about eight or nine years after from the time they were planted, you may fell or cut down, and convert them to their several uses thus; the number of Chesnut Plants is 1921601, the number of Oak Plants is 1921600, the number of Ash Plants is 1921601. From the Chesnut Plants may be chosen 214234 Rods of the size from 12 to 16 foot in length: for smart hoops commonly used about wet and dry Cask of all sorts; and each Rod being carefully slit will make two Hoops, worth, if delivered at *London*, six shillings the hundred, allowing six score to the hundred; then there will be 428468 single hoops; and being reckoned by the hundred they come to 3570 hundred 68 hoops, and amounts at six shillings the hundred to 1079 pound 3 shillings 4 pence half-penny. There may also from the Chesnut Plants be gathered 1400566 Rods of the size from 6 to 12 foot long, which will make 2801132 single hoops, and they arise to 23342 hundred and 92 hoops, worth, if delivered as aforesaid, 4 shillings the hundred, they amount to 4668 pound 11 shillings 3 farthings: the total sum for the Chesnut hoops amount to 5739 pound 14 shillings 5 pence one farthing. Out of the Oak and Ash, containing 3843200 Plants, may be chosen 403700 Rods of the longer size from 12 to 16 foot, which may make, being carefully slit as aforesaid, 807400 hoops, worth, if delivered at *London*, 4 shillings the hundred; and there being of them accounted as the Chesnut by the hundred 6728 hundred and 40 hoops, they will amount to 1345 pound 14 shillings 8 pence. Also out of the said Oak and Ash plants may be chosen of the shorter size from 6 to 12 foot 2125900 Rods, which will make 4251800 hoops, worth at *London* three shillings the hundred, and there being of them

them 35431 hundred and 80 hoops, amounts to 5314 pound 15 shillings: The total arising of Oak and Ash amounts to 6660 pounds 9 shillings 8 pence.

These aforesaid hoops are generally used about Oyl or Wine Cask, Grocery ware, Brewers, and such like: but it may be objected that all or every Rod appointed for hoops, although carefully slit, yet may not make two hoops: Our answer is, That all the Plants or Rods growing in the said Wood, is not appointed for the making hoops; therefore out of the remainder of Rods or Stuff reserved for other uses, there may be more Rods chosen to answer the insufficiency of those Rods before appointed, or to make up the number of hoops according to the accounts. Now the Remainder of Plants or Rods, not made use of for hoops, are in number 1620401, of which although there may be many uses made of them, as to make Hurdles for Sheep-folds, brading of Walls, and the like; yet we shall not convert them to any other use than Firing, of which Rods therefore, and the offal of the hoops may be made 1464 hundred of Fagots, allowing five score to the hundred, and they being worth five shillings the hundred in the Wood, amount to 366 pound. The total Improvement of the thousand Acres of Land planted with the seed of Oak, Ash, and Chesnut at this second Distance amounts to 55015 pound one penny one farthing.

2. *Cut.* Now about 8 years after the first Felling, you may fell or cut this Wood again, and then every Stock will produce two or three Shoots: We shall consider of the least number, which comes to 11529602 Shoots, out of the Chesnut there may be chosen, there being 3843200 Shoots, 403700 Rods of the size from 12 to 16 foot, which will make being slit as aforesaid 807400 of the same size Hoops, and arise according to the former reckoning to 6728 hundred and 40 Hoops at six shillings the hundred, they come to 2018 pound ten shillings: There may be chosen also of the shorter size from 6 to 12 foot 2825900 Rods, which may make 5651800 Hoops, or 47098 hundred and

and 40 Hoops, and amount at 4 shillings the hundred to 9419 pound 13 shillings 4 pence.

The Total for Chesnut Hoops amounts to 11438 pounds 3 shillings 4 pence.

From the Oak and Ash, there being 7686402 Shoots, may be chosen 859202 Rods of the size from 12 to 16 foot, which will make 1718404 Hoops, and arise to 14320 hundred and four Hoops, amounting, at 4 shillings the hundred, to 2864 pound one penny two farthings : Also from the said Oak and Ash may be chosen from 6 to 12 foot 5264000 Rods, they will make 10528000 Hoops, and arise to 87733 and 40 Hoops, which at 3 shillings the hundred amounts to 13160 pound : The totall for Oak and Ash Hoops amounts to 160024 pound three half pence : From the remainder of Shoots, which is 2176800, and the Offal of the Rods for Hoops may be made 398600 Fagots, which arise to 3986 hundred at five score to the hundred ; they are worth in the Wood six shillings the hundred, and come in the whole to 1195 pounds 16 shillings.

The totall Improvement by Hoops and Fagots at this second felling amounts to 28657 pound 19 shillings 5 pence half penny.

3. *Cut.* At the third Cutting of this great Wood, which may be about eight years after the second, you will find the sap hath put forth five or six shoots out of each Stock ; and at the next or fourth Cutting or Felling, which will be about the term of 32 years from the first Planting, by reason of, or from the goodness and richness of the earth, the Stocks will encrease to such strength and greatness, that every one may produce ten or twelve Shoots more larger and of better growth than the former ; for you may please to understand the often cutting of this Underwood or Coppice (yet not oftner than hath been declared) will cause the roots to extend or spread themselves farther into the earth, and that will much increase their sap, and thereby they will be inabled to put forth speedy, streight, sound, and strong Shoots ; alwaies observing that you make choice of a good year and the best

best season when you begin to fell or cut the Stuff. We shall only give you an account of the last or fourth Felling, and according to our former Method shall reckon from the least number, which is 10. The remainder or the Plants left for underwood were 5764801, and the Increase which the Stocks do now produce arise to 57648010 Shoots or Rods to be cut down. Out of the Chesnut then containing 19216004 Shoots, there may be chosen of the longer size from each Stock one Rod, which doth arise to 1921601 Rods, and will make 3843202 Hoops amounting to 32026 hundred and 82 Hoops, and worth at six shillings the hundred 9608 pound 1 penny : There may be chosen also of the shorter size from 6 to 12 foot 8000000 of Rods, which will make 16000000 of hoops arising to 133333 hundred and 40 hoops, and worth at 4 shillings the hundred 26666 pounds 13 shillings 4 pence.

The total summ for the Chesnut Hoops amounts to 36274 pound 13 shillings 5 pence : The Oak and Ash Stocks, being in number 3843200, produce 38432000 Shoots or Rods to be cut down, and out of them may be chosen of the longer size Rods as before mentioned 2000000, and they will make 4000000 of Hoops, which arise by the hundred to 33333 hundred and 4 Hoops, worth at 4 shillings the hundred 6666 pound 13 shillings 4 pence : Of the size from 6 foot to 12 may be chosen also out of the Oak and Ash 16148005 Rods, which will make 32296010 Hoops arising by account as before to 269133 hundred and 5 Hoops, and worth at 3 shillings the hundred 40370 pounds 3 pence.

The total summ for Oak and Ash Hoops amounts to 47036 pounds 13 shillings 7 pence.

Now although there may be many Necessaries of Husbandry gathered out of the Offal, as Rods to make Hurdles for Sheepfold ; also thatching Houses, brading Walls, and the like ; yet the quantity vented for such uses being so inconsiderable, we shall convert the Offal to no other use than Firing as before said. There may be then made of the 29578404 Shoots or Rods that

that are not useful for Hoops, and the shreding of the 2806966 Rods converted into Hoops 2264500 Fagots, worth in the Wood 6 shillings the hundred, and there being of them 22645 hundred at 5 score to the hundred, they amount to 6793 pounds 10 shillings.

The total Improvement at this fourth Cutting by Hoops and Fagots amounts to 90104 pounds 17 shillings.

Now if we should proceed to another season of felling, the increase would overcharge the Markets, and bring the Prices for smart hoops down to so low a rate, that there will be greater vent and more profit in converting the wood into Firing; also by that time the Stocks will begin to decline or decay, they being planted at too near a distance. But omitting that, we shall go on to consider of some other waies to improve the thousand Acres of Land to be planted as aforesaid.

III. Dist. The next or third Distance therefore formerly mentioned is at 4 foot 6 inches, which is the one fourth part of Pearch: This is the nearest Distance I would advise to plant Under-woods; for the more liberty the roots have to extend themselves, the greater nourishment they receive from the earth, which doth not only add many years to their time of living, but also much expediate and increase their growth, whereby they will be enabled to produce a more plentiful Crop for quantity, goodness and greatness at the time of cutting, then if planted at a nearer distance. And because the Oak is of a slower growth than the Chesnut, Ash, or Withey, and is not useful for Hop-poles, nor any sort of Hoops, but those called smart hoops; we shall therefore instead thereof plant the Withey, and leave out the Oak.

This Plot of Land then will take up or require, there being but one single seed or plant planted at the distance aforesaid, of the Chesnut 854401 seed or plants: Of the Ash 854400 seed or plants; and of the Withey 854400 plants; for this kind of wood is not planted by seed. The Total of seed or plants to be

be set or planted amounts to 2563201. Now it is to be supposed, as was said before, that all these Plants grow and thrive, and then about 11 or 12 years after their planting they may all be felled or cut down: And in felling you must be careful to cut off the Rod or Pole sloping smooth and close, leaving the Stem or Body of the Plant about 3 inches above the earth and not more, according to former directions; Out of the Chesnut may be chosen 600000 Hop-poles, of which, allowing 5 score to the hundred, arise 6000 hundred, worth in the place where they are felled, if they grow within 4 or 5 miles from any great quantity of ground where there are many hops planted, 14 shillings the hundred, and amount to 4200 pounds; from the Ash and Withey may also be chosen 954000 Poles, which arise to 9540 hundred, worth where they are felled, 12 shillings the hundred, and amount to 5724 pound.

The totall sum for Hop-poles amounts to 9924 pound.

From the Remainder of the Chesnut, which are 254401 Stocks may be chosen 63600 Rods for bark or ryne hoops, of the size from 10 to 13 foot long, they will make 127200 hoops, and counting six score to the hundred, arise to 1060 hundred, worth to be delivered at London 15 shillings the hundred, and amount to 795 pound. There may likewise be chosen from the Chesnut 190801 Rods of the size from 6 to 10 foot, which will make 381602 hoops, worth at the place aforesaid 10 shillings the hundred, there being 3180 hundred and 2 Hoops, amount to 1590 pound 4 pence.

The totall sum for both sizes of Chesnut hoops amounts to 2385 pound 4 pence.

From the Ash and Withey may also be chosen 24800 Rods of the size from 10 to 13 foot, which will make 49600 bark hoops, which arise by tale to 413 hundred and 40 hoops, worth 10 shillings the hundred, they amount to 206 pound 13 shillings 4 pence; From the Ash and Withey may also be chosen 730000 Rods of the shorter size from 6 to 10 foot, they will make 1460000 hoops, that is 12166 hundred and 80 hoops, and be-

ing worth 8 shillings the hundred amount to 4866 pound 13 shillings 4 pence.

The total sum for Ash and Withey bark hoops amounts to 5073 pound 6 shillings 8 pence.

The total sum for all the sorts and sizes of bark hoops amounts to 7458 pound 7 shillings.

The Shredding and Offal of Hop-poles and Hoops, with the rest of the Stuff cut down, will make 67280 shred Fagots, and allowing five score to the hundred, there will be of them 672 hundred and 80 Fagots, worth in the Wood 8 shillings the hundred, and amount to 269 pound 2 shillings 4 pence 3 farthings.

Now at this Distance the Land may be sowed with Corn between the Plants for the term of 3 or 4 years and not rest; but you must be careful that after the 3 or 4 years Crops received, the Land be made good again by laying on it great store of Soil or Dung; for if you weaken the heart of the Land by often plowing or delving, the Plants cannot thrive or grow to raise any profit: Also by making the ground poor, you will indanger the life of the Plants, and thereby lose all your charges. It is my opinion, that Corn sowed among or between the Plants the first three or four years after planting, will much help the thriving and growth of them, so that neither Corn or Grass grow nearer the Plants than one foot; for if you take a good and early Seed season, the Corn will be grown to a great head or height before the coldest of Winter, and by that means keep the ground mellow, warm, and moist; and in the Summer will shelter and shade the young tender shoots, which the Plants will put forth from the scorching Sun.

Now the most proper seed for the ground considering the season of the year when the Timber seeds are to be set or sowed, is Wheat; and because Woodland measure makes a large Acre, which contains 920 square yards of Land more than the Statute Acre, or Land measure; therefore we cannot allow less than 3 Bushels of Wheat to be sowed on every Acre; yet because

cause at this Distance the Plants will take up a great part of the Land, we shall therefore allow but 2 Bushels to an Acre, which comes to 2000 Bushels; the encrease thereof may arise to 20000 Bushels yearly, during such time the Land is sowed, as before mentioned: And for that the price of Wheat is very uncertain, differing more or less almost every Market day, we shall therefore value it to be worth one year with another 5 shillings the Bushel, which amounts, for the 20000 Bushels, to 5000 pound: From the yearly Crop of Wheat there will arise 1000 Load of Straw worth 5 shillings the Load, and 16000 Bushels of Chaff or Hulls, worth 3 pence the Bushel heap and thrust: the total sum for Straw and Hulls amounts to 450 pound.

The total sum of the whole Improvement at this first felling, and three years Crops of Wheat amounts to 34001 pound 9 shillings 4 pence 3 farthings.

About the same time or term of years the last stuff was allowed to grow, this Wood maybe cut again, and every Stock then will yield you 3 or 4 Poles or Rods, because these Stocks are almost twice the age of those which were cut for smart hoops, and therefore by consequence are greater, and have more abundance of sap.

Eight or nine years after the second Felling you may receive a third Crop, which, if well husbanded, will yield or return into your Purse above three times so much as the first did.

4. *Cut.* Now at the next or fourth Cutting, which may be about eight or nine years after the last, the Stocks being grown great and full, and in pride of sap, you will find 10, 11, or 12 Shoots on each Stock; we shall reckon upon 10, then there will be in the whole ground 25632010 Shoots or Rods. And because the Chesnut is of more worth than either of the other, we shall therefore subtract and count the value of them particularly.

The number of Chesnut amounts to 8544010 Shoots or Rods. We shall suppose that each or every Stock one with

the other will afford us two very good Hop-poles, there will then be of them 1708802, which arise to 17088 hundred and 2 Poles, and are worth at 14 shillings the hundred 11961 pound 12 shillings 3 pence farthing.

We shall also take from the Ash and Withey of each Stock 2 Poles, which will make 3417600 single Poles, or reckoned by the hundred 34176 hundred, worth at 12 shillings the hundred 20505 pounds 12 shillings.

The totall sum for Hop-poles amounts to 32467 pound 4 shillings 3 pence farthing.

From each Stock of Chesnut, which are 854401, there may be taken 2 Rods for Bark hoops of the longer size formerly mentioned; they will amount to 1708802 Rods, and make 3417604 hoops, which allowing six score to the hundred, will be found to be 28480 hundred and 4 hoops, worth at 15 shillings the hundred 21360 pound 6 pence: Of the said Chesnut Stocks may be taken 3 Rods from each Stock of the shorter size, from 6 to 10 foot long, and of them there will be 2563203 Rods; they will make 5126406 hoops, that is 42720 hundred and 6 hoops worth at 10 shillings the hundred 21360 pound 6 pence.

The totall sum for Chesnut hoops amounts to 42720 pound 1 shilling.

From each Stock of the Ash and Withey may likewise be taken 2 Rods of the longer size from 10 to 13 foot, viz. from the whole Plantation 3417600 Rods, which will make 6835200 single hoops, or accounted by the hundred 56960 hundred, worth at 10 shillings the hundred 28480 pound. From the said Ash and Withey may also be chosen from each Stock 2 Rods of the shorter size, and there will be found of that size 3417600 Rods, which will make 6835200 hoops, arising to 56960 hundred, and worth at 8 shillings the hundred 22784 pound.

The Total for Ash and Withey Bark-hoops amounts to 51264 pound.

The totall sum for all the sorts and sizes of Bark-hoops amount to 93984 pound 1 shilling.

Of the Remainder of Shoots or Rods, which are 9398403, and the Shredding of the 16233607 Hop-poles & Hoops, there may be made 2000000 of shred Fagots 4 foot long, worth in the place where they are cut 8 shillings the hundred, and counting 5 score to the hundred, they arise to 20000 hundred, which amounts to 8000 pound. Of the other Offal or remainder of stuff may be made 264800 Brush Fagots worth in the Wood 6 shillings the hundred, and there being of them 2848 hundred, they amount to 794 pound 8 shillings.

The totall Improvement by Hop-poles, Bark-hoops and Fagots at the fourth Felling amounts to 135245 pound 13 shillings 3 pence farthing.

Now because in some Countries there may be good Land for planting these sorts of Wood, which yet being far remote from Markets have no vent for the Production, as Hop-poles, Hoops, &c. And the transportation being so chargeable, that like many good staple and vendible Commodities in other parts of the World for want of that convenience they happen to be but of little profit to the Owners: We shall therefore count what the profit of Woods planted in this Thousand Acres will be, converting it only to Firing, and other Necessaries useful in all Countries; for Timber and Under-woods are so generally wasted and destroyed every where, especially in this Nation, that it is hard to judge where there is no want.

5. *Fell.* At the next or fifth Felling of this great Wood, which because we would have it grow to a good scantling or substance, may be about 14 years after the last Cutting, the Stocks being by that time more increased, and the sap having put forth at least 15 or 16 Shoots, using our former method, we shall take the least number, then there will be by reason of the increase from the 2563201 Stocks 38448015 Shoots or young Trees cut down, out of which number there may be made choice of 200000 of the greater and straightest, the lower or but end of which being cut off from 8 to 11 or 12 foot long.

there

there may be made 2 white hoops from each end, containing about 3 inches broad, & in thickness 3 quarters of an inch on the back or sap edge, & a quarter of an inch on the heart edge, commonly called Bastard hoops; the number of them will be 400000, which arise to 333 hundred and 40 hoops; they will be worth 500 pound: From the said Butt ends may likewise be made 333 hundred and 40 hoops of the narrower size, about 2 inches broad, which may be worth 20 shillings the hundred, and amount to 333 pound 6 shillings 8 pence. There may also be chosen from the wood felled 500000 Butt ends of a shorter size from 5 to 8 foot, of the breadth and thickness of the former, each end will make of both sorts 4 hoops, the number then is 2000000; these are worth both sizes one with the other 10 shillings the hundred, and there being 16666 hundred and 80 hoops of them, they amount to 8333 pound six shillings 8 pence.

The total sum for White hoops amounts to 9166 pound 13 shillings 4 pence.

Out of this Fall of wood may also be chosen from each stock of the Chesnut 2 Rods, which will make Bark hoops of all the sizes from 6 to 13 foot; then there will be made of the 1708802 Rods 28480 hundred and 4 hoops, they being most of the longest size, and all of the best sort of Bark hoops; are worth one with the other 13 shillings the hundred, which amounts to 18512 pound 5 pence.

The Ash and Withey may likewise yield from each Stock 4 hopes of the size aforesaid, there will then be of them 56960 hundred hoops worth 8 shillings the hundred, and amounts to 22784 pound.

The total sum for all sort of hoops amounts to 50462 pound 13 shillings 9 pence.

These White and Bark hoops are commonly used by Country Coopers about small brewing Vessels, also for hooping all sorts of set work: As for those best sorts of White hoops that are five or six inches broad, and worth nine or ten pound the hundred

hundred; they are made of greater grown Timber than these Woods will afford at so few years: But we shall have occasion to speak of them hereafter, and therefore forbear further mentioning of them in this place. There remaineth to be felled or cut down besides, or more then those used about hoops 32621613 Shoots or young Trees: Out of them may be chosen from each Stock 12 single Billets, or so many as contain 12 notches; for according to the Statute every Billet should be 3 foot long, and 7 inches and a half in compass; and if the stick be great to bear 2 notches, the compass must be 10 inches, and if 3 notches, then the compass must be 14 inches; and so increasing as the Billets are in greatness. The number of Billets chosen is 30758412: there goeth to one Load of these 500 notches or single Billets, then there will be 61516 Load three quarters and 37 single Billets, worth in the Wood or place of felling ten shilling the Load, which amounts to 30758 pound 8 shillings and 1 penny 3 farthings. There may also be made from each Stock 6 Ostra Fagots which would be 3 foot long, and in compass 24 inches; they ought to be round and not flat, for so they are much less, though all one compass. Of these Fagots there will be 15379206, and counting five score to the hundred, they arise to 153792 hundred and 6 Fagots, worth in the place where they are made 5 shillings the hundred, in the whole 38448 pound 3 pence half penny. From the remainder of Shoots, and the offal of the Hoops and Billets may be made 2000000 of shread Fagots 4 foot long, worth 8 shillings the hundred, there being 20000 hundred, amounts to 8000 pound: from the Offal of the shread Fagots, and the other Brush stuff, may be made 225400 Bavins or Brush Fagots, worth 6 shillings the hundred, and there being 2254 hundred of them, their sum amounts to 676 pound 4 shillings.

The total Improvement at this fifth season of felling amounts to 126992 pound 10 shillings 2 pence farthing.

At all the after Fellings the growth of this Wood will be every time greater, and the Shoots more in number than the last.

last; for these Stocks will grow and thrive above an hundred years.

Now at the next or seventh season of felling; the Product of this Wood being converted to the best advantage, may return or be worth 20000 pound. Let no man think this to be strange; for when Seed or Plants are planted at such a distance as the roots may have room and liberty to spread and enlarge themselves, and that the Shoots or young growth have Air and Sun, also all incumbrances removed and taken away, such Underwoods or Woodland shall be of more worth by the Acre than 12 Acres of ordinary Coppices, Groves, or Under-woods; therefore I have not set too high a rate on the Stuff or worth of Wood, prized as aforesaid; neither counted the utmost Production or Increase of growth. We have many examples in Fruits and Herbs, that are planted in Orchards and Gardens, how far they exceed others of the same kind both in largeness and goodness, as well as in taste, smell, colour, &c. that grow wild; so called because they proceed from the earth without the help of Man.

Now although Nature is before, and to be laid as a foundation to Arts, yet Nature is the better perfected by Art, because Art doth nothing but by the strength of Nature; and to confirm your faith we shall give an account what this Land amounts to by the year for each or every Acre: You are to take notice the Wood is allotted to grow 14 years, the profit then made when those years are expired amounts to 20000 pound, which is 14 pound 5 shillings 8 pence half penny yearly profit for every Acre of the thousand Acres. In *Holland* there is Land hath been sowed with Flax seed, and the Crop thereof hath been worth fifty pound the Acre; but we shall come nearer home: There is Land in *England* sowed with Wheat, that has yielded at Harvest 2 Load upon an Acre, which is 80 Bushels. Now this Wheat, if sold at the price Markets have given for 3 or 4 years past, which was 8 shillings the Bushell, then the profit of the Acre by the year comes to 32 pound, which is above double the

the profit of the Woodland: Suppose this Corn-Land yield but the one half of the former Increase, which is 40 Bushels of Wheat upon one Acre, then it comes to 16 pound. Again, if the Land should yield the first Increase, and Wheat sold for 4 shillings the bushel; for commonly great Crops or a plentiful Harvest cause low Markets: yet then this Acre of Land is worth 16 pound yearly. This may be sufficient to satisfy any reasonable man: We shall return to our Work. Now because it is a general Custome in *England* at the felling of under-Woods, to reserve young Ears or Standils to grow for Timber-Trees; therefore in such Woods you are not to leave them at a nearer distance than 4 Pearch, which is 72 foot; for if you leave them nearer, the said Trees will destroy and much hinder the growth and thriving of the under-Woods, as hath been formerly declared. Thus much may serve to have here spoken for the first, second, and third Distance of ground between Plants, also planting under-woods.

IV. Dist. The next or fourth Distance is one Pearch or 18 foot; At this distance there may be digged or delved a Plot of ground either square or round, the quantity to contain 4 foot square, or 16 foot of ground: At each point or corner, or in the middle of the square sides, must a Seed or Plant be planted either of Chesnut, Ash, Beech, or Elme; and if you plant of all these kinds an equal number, there will then be 160801 square Plots, and 160801 Plants of each kind, which amount in the whole ground to 643204 plants; these may all grow 30 or 40 years more or less time as there may be use for them, or so long as every Man may please who shall be the Owner. At so near a distance the Trees will not grow great in body as when they have more room, but straight, slender, and tall; also they will have very few and small boughs grow on the insides that are opposite each to other. To make these Trees grow in bulk or greatness; when they are grown to that height which is best for your occasions, then nip or cut off their heads or tops.

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Now about 30 years after planting, the three fourth parts of these Trees would be grubbed or cut down, that the remainder reserved for greater Timber may have the more room, air, and sun on all parts: (And in felling) the former distance must be observed between them that are left standing: those Trees that are felled may be converted to their several uses as followeth. The Butt or lower end of the streightest Ash and Chesnuts that are best to slit, must be made choice of for white hoops, the size from 9 to 13 or 14 foot long: These hoops being of the best sort are to be made 5, 6, 7 inches broad, one inch thick on the back or sap edge, and about half an inch thick on the other or heart edge; they are worth, if delivered at *London* 9 pound the hundred. One end or length of the said young trees may make 10 good hoops, and 12 trees or ends will make one hundred, allowing six score to the hundred: Now the remainder of the said trees and the Offal of them which were felled for hoops, may be converted to several uses. The Chesnut is good Timber for building Houses, also for Quarters much used by Joyners and Frame-makers about Stools and Chairs, Chests, Boxes, Bedsteds, and such like: both the Chesnut and Ash are very good to make Wagons, Carts, and many other necessaries of Husbandry: But it would spend much time in speaking to every particular; we shall therefore value the Chesnut and Ash, one with the other, to be worth 10 shillings the Tree, there being 241202 Trees, they amount to 120601 pound. The Elme and Beech being slow growers, will not be in so short a time of a sufficient greatness for extraordinary uses; Out of the Beech may be made Fellows, Axes, and Spokes for Cart-wheels, Quarters for Joyners, and Building, used as the Chesnut; also Bowls, Traves, Dishes, Trenchers, and such like. The Elme will not be of that greatness to serve about building Ships of any considerable burden, but for small Vessels, as Hyes, Ketches, and such like; as also Pipes to lay under ground for the conveying of water, much used in and about *London*; they may likewise be serviceable to Mill-wrights for making and repairing Water-mills.

mills; also to other necessary uses may both these sorts of wood be employed, so that they may be worth one with the other six shillings the Tree, and there being 241201 Trees, and being sold at the price, they amount to 72360 pound 6 shillings.

The total sum for all the foresaid Trees amount to 192961 pound 6 shillings.

The Trees that were left standing are in number 160801; now if they be carefully proyned and lookt unto, about 70 years growth, the Ash and Chesnut may be worth 30 shillings the Tree one with the other, and there being of them 80401, they amount to 120601 pound 10 shillings.

The Elm and Beech about that time may grow to be worth 20 shillings the Tree, the Elme being of substance to be used about the Hulls and Keels of small Ships; also for Naves for Wagons, and Cart-wheels; many other uses may likewise be made of them: The number of both sorts is 80400 Trees, and they amount to 80400 pound.

The total of all the 4 sorts of Trees amounts to 201001 pound 10 shillings.

The 3 years Crop of Wheat with the Hulls and Straw, according to our former reckoning do come to 16350 pound.

The Total of the whole Improvement by this way of planting at the fourth Distance, amounts to 410312 pound sixteen shillings.

Now all men do not approve of planting Under-woods with or among Timber Trees, nor that Trees should grow so near together, as in this last planting; neither is it convenient that all Woodland should be so planted; for at so near a distance they do not only hinder the growth of each other, but also take up much land, which may otherwise be employed for the benefit of Corn and Cattel; and therefore this Distance of one Pearch is too near for great Trees; yet in planting Seed or Plants there must be care taken that the distance of them be such, that every Tree be not a noyance but a help to his fellows, as not to hurt one another by any touch either of bough

or roots, and yet not so far asunder but that they may shroud each other from the cold and winds; therefore at this distance you may set your Plants, and when they are grown great, or come so near as to hurt by any touch, then may you cut, fell, or grub up the middle Tree; and you will have the greater profit of the Land either to plow, mow, or for pasture.

We shall now proceed and treat only of planting the Oak at one Rod distance: Then may be digged or delved a Plot of ground 2 foot square; in the middle of the said Plot you are to plant 3 Seed or young Plants a foot distance one from the other, and about 2 years after the planting one of the best Plants is to be reserved as a Standil or Storer, and the other 2 must be pulled or drawn up, and disposed of either to plant other grounds, or bestowed on your poor Neighbours if you have not sale for them: In this Thousand Acres of Land there will be 160801 square Plots; in each of the said Plots is reserved to grow for Timber 1 Oak Plant: Now you may plow or delve the ground between the Plants, and sow with such Grain as will produce the best Crop; yet it must not be plowed above 3 or 4 years for fear of hurting the roots of the young Trees, but may be kept for Pasture or Meadow, and benefit made many years, if that you help the Land by soyling it with good Dung. These trees may all grow till the twigs of each tree touch their Neighbour; then must you grub up every middle tree, which will be the second, fourth, sixth, and so reckoning throughout the whole Wood, alwaies observing to leave standing the outmost Row of trees about the ground for several reasons, but for brevity sake we shall mention but three: First those Trees being accustomed to the cold will the better endure; Secondly they generally are the best growing Trees, because they have most room, therefore receive more nourishment from the earth to encrease their sap, and so consequently their growth: Thirdly they shelter and succour the inmost Trees from droughth, cold, and winds; and the inmost Trees will shelter them on three sides. Now to proceed, these middle Trees must not be cut down

down or felled, as we taught before, because after the Trees are gone or removed, the Land may be plowed and sowed with Corn between the Trees, remaining as at the first planting, and for many more years, therefore they must be very well grubbed or stockt up that the roots may not grow again. The number of Trees that are to be stockt up is 79600: This Timber may serve for ordinary building, and out of it may be chosen small Ship-Timber, also Tree-nails of all lengths and sizes, which are commonly used about all Ships. There may likewise be made from these Trees Slip-boards, which must be of the Butt ends cut off 8 foot long, the said boards would be 8 or 9 inches broad, and between 2 or 3 inches thick on the sap edge, and one inch thick on the other or heart edge: These boards are to make hoops by joyning 4 or 5 more or less; they are commonly used about the greatest size of Brewing Vessels. Such boards are worth, delivered at London, ten pound the hundred. Out of this Timber may also be made Lathes of all sorts, and many other useful Implements of Husbandry. Now considering all these Improvements from the Oak, we shall value them to be worth one with the other 15 shillings the Tree, which amounts to 59700 pound: the rest or remainder of trees, which are in number 81201, may be worth at 150 years growth five pound the Tree, which amounts to 406005 pound.

The Land may be sowed with Wheat at or after the first planting three years together, and every Acre will take up, the trees being thus planted at this distance, 2 Bushel and a half, which amounts to, for the thousand Acres, 7500 Bushels; the product or increase of the said Wheat according to our former account, which is 10 bushels for one, comes to, for the 3 years Crops, 75000 bushels, and at 5 shillings the bushel, amounts to 18750 pound.

The Straw and Hulls or Chaff, which will arise from the said Wheat, allowing for every Load or 40 Bushels of Wheat 2 Load of Straw, worth 5 shilling the Load, and 32 bushel of Hulls worth 3 pence the bushel heap and thrust, they both come to 1875 pound. The

The total summ for the first Fall of Timber, and the 3 years Crop of Wheat Straw and Hulls, amounts to 80325 pound.

The total summ of the whole Improvement, besides the 147 years Profit of the Land by Corn, Pasture, or Hay, amounts to 486330 pounds.

An Oak well planted, drest, or proyned, and the Land well soyled with good fat Dung, will be greater and of more value at one hundred years, than those planted with or among Underwoods will amount to at 300 years.

V. Dist. A fifth or the next Distance in planting the Oak is 2 Pearch, which is 36 foot : there will now be in the thousand Acres of Land at this distance 40401 trees, and you may make as much benefit of the ground either by Corn, Meadow, or Pasture within a small matter as if there were not a tree there growing. But at 150 years growth this Distance will be too near; for the distance of ground between trees must be so far as two trees doth overspread. Now a tree that does thrive will spread about the time aforesaid 12 or 13 yards, which being added to 12 allotted to the opposite tree, makes 24 yards, therefore about that time you must grub up the middle trees, as before directed : they may be worth 5 pound the tree, there being 19800 of the said trees, amounts to 99000 pound : the rest or remainder of trees being in number 20601, at 220 years growth may be worth 8 pound the tree, which come to 164888 pound.

Now at this distance there may be sowed between the Plants 3000 Bushels of seed Wheat, and that is 3 bushels allowed for every Acre, the increase of the said Wheat, according to our former reckoning amounts to 30000 Bushels, and the 3 years Crops after the same rate comes to 90000 Bushels, which at 5 shillings the Bushel is worth 22500 pound.

The Chaff and Straw that will arise from the 3 years Crop of Wheat, counting 2 Load of Straw and 32 Bushels of Chaff from every Load of Wheat, and at five shillings the Load for the

the Straw, and three pence a Bushel the Chaff, comes to 2025 pound.

The total summ for Wheat, Chaff, and Straw, amounts to 24525 pound.

The Total of this Improvement, besides the 217 years profit arising from Corn and Cattel, amounts to 288333 pound.

Now trees thus planted, which have indured cold and droughth in the tenderness of their age, must of necessity grow and thrive the best, or better than those growing thick; so that such Oaks may grow in a short time, compared with the years those trees do live, to be worth 20 pound the Oak valued one with the other. Then the 20601 Oaks last valued or prized, if they grow to this price, amount to 412020 pound : And the Total Improvement of the thousand Acres, besides the profit arising from Corn and Cattel, amounts to 675833 pound.

Also at this last Distance there will be more room for the Plow, likewise the Pasture for Meadow and feeding will be sweeter and more wholesome for Cattel, the shade and dropping of trees being an Enemy to Corn and Grass.

And thus shall you have healthful and long lasting trees, whose tops will be great, the boal or body smooth, clean, and free from boyles, great and well coloured Timber, being well drest may grow 30 foot high, free and clear without knob or bough, bearing 2 foot diameter at the top or heighth aforesaid, within or about 150 years after planted; such Oaks will grow to an incredible price or value. Now if there were in England 20000 Acres of Land thus planted, they would be worth according to the last account of the thousand Acres 13516660 pound. This would be a good improvement for so many Acres of Land, which may well be spared without any damage either to the Gentry or Commons : And the poorer sort of People which depend on his Majesties Forrests, as Commoners, should have much help thereby, as hath been sufficiently declared.

Now although this quantity of Land make a great sound, and seemeth to be too great for such a use, and may in the opinions

of some be better imployed for Corn and Cattel, yet if we had no Wood in *England*, which every day sensibly decays with us, Corn and Cattel could neither protect nor warm us. Also this quantity of Land is but a small proportion to the many Woods that have been, and now are in *England*, but utterly wasted and decayed, being over-grown with Shrubs, Dwarf-trees, Bushes, and such rubbish, which will not well serve for good Firing, and is of little worth or profit either to Rich or Poor, as hath been said : Therefore those Lands would be cleansed of all Incumbrances and new planted, But if Woodlands cannot be spared because of the scarcity of Firing, there are other Lands that may; for by the General Maps of *England* it is found to contain 29568000 Acres of Land, besides that which is allowed for the High-waies : Out of this sum deduct 20 thousand Acres, their remain 29548000 Acres. Now that which is subtracted is so small a Proportion to so great a Quantity, that it may with much safety be allowed; And to answer all Objections which may be made against this Plantation, there are very sufficient Gentlemen who will undertake to carry on and finish the Work, without putting either his Majesty or the Nation to any charge. We have formerly made mention of a Statute of the 35 Hen. 8. for the Preservation of Timber-trees, wherein it was provided, That 12 Stovers or Standils should be left upon an Acre at every Fall; whereby we may understand that in those daies they were sensible of the decay of Timber : Now if at that time there had been the same care taken, and provision made for planting Timber-trees, according to the manner and way which we have now declared, or for preserving the young then growing, there would have been a sufficient supply, not only for present use, but what might have continued for many hundred years to come, whereby his Majesty might be readily furnished with Timber for building a far greater number of Ships than now he has, and have for the annual profit of what might be sold, a considerable sum paid into his Exchequer.

We have considered the Benefit and Profit which doth arise

out

out of the whole thousand Acres of Land planted with Timber-trees; I shall now give you an account what loss there will be of Ground, and so consequently of Plants and Trees, by reason of the fence; for the generality of inclosed Land doth not hold or contain the exact measure as they are set down in ancient Deeds before they were inclosed; as for example, If you lay out or measure 100 Acres of Land to be divided or inclosed into 5 several parts or Inclosures with a Ditch or Hedge, every Plot of ground will not contain 20 Acres within the Fence, but the Fence must be likewise measured and included : This being so easie to understand, it doth not require farther demonstration.

Now in the account of loss of ground we shall mention but 2 Distances, and they are 4 foot and a half, and 18 foot or one Pearch. The Fence appointed to enclose the thousand Acres of Land to be planted is a Ditch with a quick or White-thorn Hedge, the Ditch to contain in breadth 6 foot, and 5 foot in depth. Now the Bank or earth that is thrown out of the Ditch must lye within the Inclosure, which Bank although it be laid or cast round and handsome, yet will it take up or cover about three foot of ground, so that we must allow for Ditch and Bank at least 9 foot, which is half a Pearch, and so much less land we have to plant, which amounts in the whole Inclosure to 799 square Pearch : Also the ground within the Fence, containing 399 Pearch square, will now require or take up at 4 foot 6 inches distance but 2544025 Plants, there being 19176 fewer Plants than the thousand Acres will require, planted at the uttermost extent without a Fence; therefore so much of the profit as the Plants deducted do amount to, must be subtracted out of monies received for Under-woods, which I have forme ly given an account of; then will you have the full profit of the Land planted within such a Fence. Now at the next or second Distance, which is 18 foot, the Land will tak up but 158404 Plants, so that the loss by the Fence at this distance does arise to 2397 Plants, and consequently so many Trees,

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which

which must be deducted also out of the account of Profit for Timber-trees. This last Distance is too near the Fence, and will more hinder the Quick hedge from thriving than the former Distance, although those Plants are much nearer, because they were planted for under-Woods, and to be felled or cut down every ninth or tenth year, so that the Thorn Plants will have the benefit of the Sun untill the other Plants be grown great and over-top them, and by that time they will be ready to cut again : But the Plants preserved to grow for Timber-trees, after they are grown great will by much shading and often dropping on the Hedge, decay the same; and the older these trees grow, the more ground they will require, and therefore prove greater enemies unto the Fence.

By this which hath been spoken concerning the loss of ground by reason of the Fence, may be understood my meaning in a former Section, where it is said, that what distance of ground is left between the uttermost Row of Plants and the Fence, according to the distance of Plants, there must be so many Seeds or Plants deducted from the number planted in the whole extent of land without the Fence. But this may be sufficient to shew the loss of land by reason of the Fence; and wherein by the way take notice, that it is not profitable to make small Inclosures, except for drayning of land, or some other special occasion.

I have endeavoured to give a true account of the Profit, or best way of Improvement of Land by planting Trees for Timber and Wood. Now if this little Address of mine towards the publick find a sutable success to that of the poor Widows, it is the Product of a good heart; and he that gives his all, may hope for acceptance with all. The want of fortune is a Remora to my will, in the service of my King and Country; therefore while I do what I may, 'tis agreeable to charity to accept the Will for the Deed; and that you may the better know to what advantage the Land is improved, we shall give an account of the Charges in planting; the particulars of some part thereof have

have been formerly cast up and brought to account, the general summs are as followeth.

The Fence about this Great Wood, containing 1600 Pearch Wood measure, (which is 18 foot to the Pearch, for by that Rod, Pole, or Pearch are all the Hedges and Ditches measured) will require 86466 Plants, which at 4 pence the hundred amount to 14 pound 8 shillings 1 farthing: The Workmanship, in which is to be considered making the Ditch, setting the Plants, cutting and shriping the Stakes, drawing the Bushes, and making the dead Hedge, amounts to 225 pound 11 shillings 11 pence 3 farthings.

The total Charge of the Fence besides, or not counting for Bushes and Stakes, amounts to 240 pound.

Now if you intend to plow this Plot of land, or sow and set the same with seed for Timber-trees and under-Wood, if the ground be Pasture or Meadow, and not in Tillage, it will require 3 times plowing and harrowing; but in case the Land have been lately plowed and sowed, as at the last Seed Season, then twice plowing may be sufficient: And because we treat of planting Forrests and Wast land, they are supposed to be Pasture or feeding land; also strong stiff Soils, either Clays, Sands, or Compounded; then will it require twice plowing and harrowing, and once hacking.

Having formerly spoken of the manner and way how to perform this part of Husbandry, we shall now compute the Charges of the first years expence in the whole Plantation, which is as followeth: Twice plowing, harrowing, and sowing, to have it well done, will cost 10 shillings the Acre; A lusty Labouring man will hack a quarter of an Acre of the said plowed Land in a day, and deserve 12 pence for his dayes work, which is 4 shillings the Acre hacking.

The total Charges for plowing, sowing, hacking and harrowing a thousand Acres comes to 700 pound.

The First Distance.

The Seed which this Land will take up to be set or planted with Acorns at one foot distance, the whole extent of the Land being planted, and not counting the loss of ground by the Fence, amounts to 51854401 single Acorns, or 8102 Bushels 1 Peck and 1 Acorn, according to my former account of 800 Acorns to every Gallon, and at 2 shillings the Bushel they come to 810 pound 4 shillings 6 pence : Now if you sow the Land with the same seed, then there must be 2 Bushels allowed for every Acre more than there was for setting, and the quantity to be is 10102 Bushels 1 Peck and 1 Acorn; they amount to 1010 pound 4 shillings 6 pence.

The Charges for setting the Acorns, being formerly allowed at 4 shillings the Acre, come to 200 pound.

The Charges for weeding the Plants, being also allowed at 10 shillings the Acre, come to 500 pound.

The total Charge for Seed, also plowing, hacking, harrowing, setting and weeding, amounts to 2210 pound 4 shillings 6 pence.

The total Charge for seed, also plowing, hacking, harrowing, sowing, and weeding, amounts to 2210 pound 4 shillings 6 pence.

But if the Land be planted by setting Ashen Keys, of this seed there go 96000 into one Bushel, and will cost 12 pence the Bushel, and the Land will take up 540 Bushel 1 Gallon, 1 pine and a half and 151 single seeds, amounting to 27 pound 7 farthings.

The Charges for plowing, sowing, setting, and weeding is the same allowed for the Acorns.

The total Charge for seed also, plowing, hacking, setting, harrowing, and weeding amounts to 1327 pound 7 farthings.

And if you sow the Land with Ashen Keys, there must be half a Bushel allowed for every Acre more than was for setting; the

the quantity to be provided comes to 1040 bushels 9 pints a half and 151 single seed, and they come to 52 pound 7 farthings.

The total for seed, also plowing, hacking, harrowing, and weeding amounts to 1152 pound 7 farthings.

This Land to be planted with Chestnuts will take up 51854401 single Nuts, and they will cost 2 pence the hundred, there being 518544 hundred and 1 Nut, come to 4321 pound 4 shillings.

But if the Land be sowed with the said Nuts, then every Acre will require 1500 more than was allowed for setting : The whole number will arise to 533544 and one single Nut, and at 2 pence the hundred do amount to 4446 pound 4 shillings.

The total Charge for setting or planting a thousand Acres of Land at a foot distance with Chestnuts, amounts to 5721 pound 4 shillings.

The total Charge of Land to be sowed with the said seed comes to 5646 pound 4 shillings.

To plant by setting a thousand Acres at a foot distance with Beech seed, called Beech Mast, there going 76800 single seed into one Bushel, the Land will take up 675 bushels 6 quarts and 1 seed, and at 3 shillings the bushel, according to a former allowance, they amount to 101 pound 5 shillings 6 pence 3 farthings.

If the Land be sowed with the said seed, then there should be 2 pecks allowed for every Acre more than was for setting, and the total number will arise to 1175 bushels 6 quarts and 1 seed, which at 3 shillings the bushel comes to 176 pound 5 shillings 6 pence 3 farthings.

The total Charge of the Land to be set with Beech-mast amounts to 1501 pound 5 shillings 3 farthings.

The total Charge of the Beech seed to be sowed on the said Land amounts to 1376 pound 5 shillings 3 farthings.

All sorts or kind of trees, the charges for planting them by seed may be computed according to the rules we have set down.

Now

Now if any man will be so indiscreet as to plant at this distance with Sets, the thousand Acres will then take up 51854401 single Sets or Plants: I cannot give you an exact account what they may cost by the hundred, because several Countries have different Prices according to the goodness, plenty, or scarcity of them; for in some places good Plants of Oak, Ash, Beech and Elme are sold for 12 pence the hundred, and in other Countries such Sets are worth 18 pence or 2 shillings the hundred; to have them no greater than a mans little finger, we shall estimate them at 18 pence the hundred, and there being 518544 hundred, that the Land will take up the same, amount to 38890 pound 16 shillings.

The Setting these Plants is worth 10 shillings the Acre, and comes to 500 pound.

The Weeding of them is worth 10 shillings the Acre, which likewise comes to 500 pound.

The total Charge for Plants, also Plowing, Hacking, Harrowing, Setting, and Weeding amounts to 40590 pound 16 shillings.

But if you will plant with Chesnut Sets, these Plants may cost 2 shillings 6 pence the hundred, there being 518544 hundred and 1 Plant, and they come to 64768 pound 1 farthing.

The total Charge for Chesnut Plants, also Plowing Hacking, Harrowing and Weeding amounts to 66468 pound 1 farthing.

We shall not here set down Wages or Sallary allowed the Keeper or Dresser of this great Wood, but shall leave the same to the will of the Owner thereof. He that undertaketh this so great a Charge ought to be an honest, laborious and industrious Person. Thus have we considered and given a true Account of all the Charges needfull for plowing, sowing and planting Seed or Sets at one foot distance.

By these total sums you may take notice, that it is cheaper to plant with Seeds than Sets; also the great charge to plant at so near a distance as one foot, which is only in use for Nurseries and transplanting other grounds, as hath been said.

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The Second Distance.

IN the next place we shall consider of the Charges for plowing and planting at 3 foot distance; for you are to take notice, that we allow not of the sowing of any kind of seed above or more than one foot distance; a thousand Acres of Land then, allowing 18 foot to the Pearch Woodland measure, contains 5760000 square yards, and will take up (there being 3 Seeds set or planted a foot wide from each other triangular, and at the end of each or every yard distance, as hath been directed) if Acorns, 17294403 or 2702 bushels one peck and 3 acorns, and at the price formerly allowed, which is 2 shillings the bushel, they come to 270 pound 4 shillings 6 pence. The setting the seed at this distance, and the Land harrowed, is worth 2 shillings 6 pence the Acre, and come to 125 pound.

The weeding one foot round and between the Plants, at 7 shillings the Acre, comes to 350 pound.

The Total for seed, also plowing and all other charges, amounts to 1445 pound 4 shillings 6 pence.

If you set or plant Ashen-keys, the Land will take up of that seed 180 bushels 9 pints a half and 153 single seed, which at 12 pence the bushel, come to 9 pound 3 half pence.

The Charges of setting and weeding is the same with the Acorns, and do come to 475 pound.

The total Charge to plant with the seed of Ash amounts to 1184 pound 3 half pence.

And if you plant Beech-mast, the Land will take up of that seed 225 bushels, 6 quarts, and 3 seed, which amounts to 33 pound, 15 shillings 6 pence 3 farthings.

The total Charge to plant with seed of Beech amounts to 1208 pound 15 shillings 6 pence 3 farthings.

To plant the said Land with Chesnuts will take up 17294403 Nuts, which come to 172944 hundred and 3 Nuts, at 2 pence the hundred they amount to 1441 pound 4 shillings.

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The total Charge to plant with Chesnuts amounts to 2616 pound 4 shillings.

Now if this Land be planted equally with all the 4 several sorts of seed before mentioned, that is of each sort alike number, then the Land will take up as followeth.

Of Acorns 675 bushels a half and 2 quarts, at 2 shillings the bushel, they come to 67 pound 11 shillings 3 half pence.

Of Ashen-keys 45 bushels 1 quart and 601 single seed, at 12 pence the bushel, comes to 2 pound 5 shillings 1 farthing.

Of Beech-mast 56 bushels 1 peck 3 pints and 1 seed, at three shillings the bushel, come to 7 pound 8 shillings 10 pence half penny.

Of Chesnuts 4323601 single Nuts, or reckoned by the hundred, 43236 hundred and one Nut, at 2 pence the hundred, amount to 360 pound 6 shillings.

The total Charge of plowing, hacking, harrowing, and planting the Land equally with all the aforesaid several sorts of seeds, amounts to 1612 pound 11 shillings 1 farthing.

Now if the Land be planted at the same distance with Sets, it will take up 17294403 single Sets, arising in the whole to 172944 hundred and 3 Sets, which being either Oak, Ash, Beech, or Elme, and rated at 18 pence the hundred, come to 12970 pound 16 shillings 2 farthings.

The total Charge to plant with Oak, Ash, Beech and Elme Sets amounts to 14420 pound 16 shillings 2 farthings.

But if you plant Chesnut Sets, they are rated to cost 2 shillings 6 pence the hundred, and amounts to 21618 pound 3 farthings.

And if the Land be equally planted with all the 5 several sorts of Sets before mentioned, that is of each sort a like number, then the Land will take up as followeth; Of Oak, Ash, Beech and Elme Sets 138355 hundred and 22 single Sets, and at 18 pence the hundred, they amount to 10376 pound 12 shillings 10 pence.

Of Chesnut Sets 34588 hundred and 18 single Sets at, 2 shillings

lings 6 pence the hundred, they come to 4273 pound 12 shillings.

The Charges for setting or planting the aforesaid Plants at this distance is worth 8 shillings the Acre, which comes to 400 pound.

The Charges for weeding of them, at 7 shillings the Acre, comes to 350 pound.

The Total to plant with Chesnut Sets amounts to 23068 pound 3 farthings.

The Total to plant the Land equally with all the 5 several sorts of Sets amounts to 16100 pound 4 shillings 10 pence.

The Third Distance.

THe next or third Distance is 4 foot 6 inches, or the fourth part of a Pearch Woodland measure. Now if the Land be planted as was the 3 foot Distance, that is 3 seeds set triangular about 2 foot from each other; then the Land will take up 7689603 single seeds, And

Of the Acorns, they will arise to 1201 bushel, 2 pecks, and 3 Acorns, which at 2 shillings the bushel are worth 120 pound 3 shillings.

Of the Ash seed or Ashen-keys the Land will take up 80 bushels 3 quarts and 603 single seeds, which at 12 pence the bushel comes to 4 pound 5 farthings.

Of Beech-mast, or seed of the Beech tree, the Land will take up 100 Bushels one Gallon and 3 seeds, which at 3 shillings the bushel amount to 15 pound 4 pence half penny.

Of Chesnuts the Land will require 76896 hundred and 3 Nuts, which at 2 pence the hundred amount to 640 pound 16 shillings.

The Charges for setting these seeds at this Distance is worth 2 shillings the Acre, and comes to 100 pound.

A Labouring man skilfull in such employments may Hack or Hoe the Weeds or Grass a foot round the Plants, also weed the

ground clean near unto them, and dispatch one acre in 4 dayes; he will deserve for his labour 12 pence the day, which amounts to 200 pound.

Of Sets or Plants the Land will take up, there being but one single Set planted at this distance, 25632 hundred and 1 Plant; they are valued if of Oak, Ash, Beech, or Elme, at 18 pence the hundred, and amount to 1922 pound 8 shillings.

But Chesnut Plants are rated at 2 shillings 6 pence the hundred, and amount to 3204 pound 1 farthing.

The Charges for setting or planting all the said Plants that were transplanted, worth 4 shillings the acre, comes to 200 pound.

The Weeding of them is worth 4 shillings the acre, which amounts to 200 pound.

The total Charge to plant at this distance with the Oak seed, also plowing, hacking, harrowing, setting and weeding amounts to 1120 pound 3 shillings.

The total to plant with Ash seed amounts to 1004 pound 5 farthings.

The total to plant with the Beech seed amounts to 1015 pound 4 pence half penny.

The total to plant with Chesnuts amounts to 1640 pound 16 shillings.

The total to plant with Oak, Ash, Beech, or Elme Sets amounts to 2922 pound 8 shillings.

The total to plant with Chesnut Sets amounts to 4204 pound 1 farthing.

Now if this Land be equally planted with all the kinds of seed before mentioned, then it will take up 7689603 single seeds, as we have formerly declared.

Of Acorns 1922401, or 300 bushels 3 gallons & 1 Acorn, they come to 30 pound 9 pence, at the rate of 2 shillings the Bushel.

Of Ashen-keys 20 Bushels 1 pint and 900 single seed, which at 12 pence the Bushel, come to 1 pound 1 farthing.

Of Beech-mast 25 Bushels 1 quart, and 1 seed, and at 3 shillings the Bushel, they come to 3 pound 15 shillings 1 penny.

Of

Of Chesnuts 19224 hundred and 1 Nut, and at 2 pence the hundred, they come to 160 pound 4 shillings 1 farthing.

The total Charge thus to plant a thousand Acres of Land with the aforesaid 4 several sorts of seeds, amounts to 1194 pound 19 shillings 10 pence half penny.

And if the Land be equally planted with all the several kinds or sorts of Plants before mentioned, it will then take up to plant them single 2563201 single Plants.

Of the Oak, Ash, Beech, and Elm, of each of them 512640 single Sets, or 5126 hundred and 40 single Sets, and they arise in the whole to 20505 hundred and 60 single Sets, and at 18 pence the hundred, they amount to 1537 pound 18 shillings 4 pence 3 farthings.

Of Chesnut Plants 5126 hundred and 41 single Plants, at 2 shillings 6 pence the hundred, they come to 639 pound 16 shillings 1 farthing.

The Charges for Setting and Weeding all these Plants amount to 400 pound.

Wheat.

We shall now in this next place give you an account of the charges that will arise by sowing Wheat at this distance between the Plants, and is as followeth.

The Quantity of Wheat allowed to be sowed is 2 Bushels on every Acre, then the thousand Acres will take up 2000 Bushels, and at 5 shillings the Bushel, as it hath formerly been valued, amounts to 500 pound.

The Charges for Weeding the Wheat, valued at 4 pence the Acre, comes to 16 pound 13 shillings 4 pence.

The Charges for Reaping the Wheat, Gathering Gripes, Binding the Sheafs, and carrying the Corn into the Barn, is valued at 6 shillings the Acre, and come to 300 pound.

The Charges for Thrashing and Winnowing the Wheat, valued at 10 shillings the Load, containing 40 Bushels, and reckoning 20 bushels to grow on every Acre of Land, comes to 250 pound.

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The Charges in Transplanting the said Wheat to Markets, valued at 5 shillings the Load, and comes to 125 pound.

The total Charge for Sowing the Land between the Plants at this distance with Wheat amounts to 1191 pound 13 shillings 4 pence.

The total Charge equally to Plant a thousand Acres of Land with single Sets, at 4 foot 6 inches distance; also Plowing, Hacking, Harrowing, and Sowing Wheat between the Plants, with all other Charges about Plants and Corn, amounts to 4469 pound 7 shillings 9 pence.

But if the Land be planted at this distance, allowing the same number of Sets as you did Seeds, then it will take up 7689603 single Sets.

Of the Oak, Ash, Beech, or Elme 76896 hundred and 3 single Plants, and at 18 pence the hundred, they come to 5767 pound 4 shillings 2 farthings.

Of Chesnut Plants, the Land will require the same number, and at 2 shillings 6 pence the hundred, they come to 9612 pound 3 farthings.

The Charges for Setting or Planting these Plants is worth 5 shillings 6 pence the Acre, and comes to 275 pound.

The Charges for weeding them has been valued worth 4 shillings the Acre, and comes to 200 pound.

The total Charge for Plowing, Hacking, Harrowing, Setting, and Weeding at this distance; and this way of planting either Oak, Ash, Beech, or Elm Sets amounts to 6943 pound 4 shillings 2 farthings.

The Total: this way to plant Chesnut Sets amounts to 10787 pound 3 farthings.

And if you equally plant all the 5 kinds of Sets in the same quantity of Land, and the same number of Plants planted as was in the last Plantation, then the Land will take up of Oak, Ash, Beech and Elm 6151682 single Plants, and they arise to 61516 hundred and 82 single Plants, and at 18 pence the hundred, amount to 4613 pound 15 shillings 2 pence 2 farthings.

Of

Of Chesnut Plants 15379 hundred and 21 single Plants, and at 2 shillings 6 pence the hundred, they come to 1922 pound 8 shillings 1 farthing.

The Charges for Planting and Weeding, as they have been valued, amounts to 475 pound.

The total Charge equally to Plant with the aforesaid Sets or Plants of Oak, Ash, Beech, Elms and Chesnut, amounts to 7661 pound 3 shillings 2 pence 3 farthings.

The Fourth Distance.

The next or fourth Distance, to plant by plowing the Land; and there planting Seed and Plants, is one Pearch, containing 6 yards or 18 foot.

At this distance we have given directions to plant 4 Seeds, and they to be set 4 foot distant, making a square figure: thus performed, the Land will take up of single Seeds or Plants 643204.

If you plant Acorns they will arise to 100 bushels, 2 pecks, and 4 single seeds, and at 2 shillings the bushel, they come to ten pound one shilling.

Of the Ash Seed the Land will take up 6 Bushels 5 Gallons 2 Quarts half a Pint and 454 single Seeds, and they come at 12 pence the bushel to 6 shillings 8 pence.

Of the Beech-tree Seed, there will be necessary 8 Bushels 3 Gallons half a Pint and 204 single Seeds, and at 3 shillings the bushel they come to 1 pound 5 shillings 1 penny 2 farthings.

Of Chesnuts the Land will take up 6432 hundred and 4 Nuts, and at 2 pence the hundred they come to 53 pound 12 shillings.

Now if the Land be planted with Sets as it was with Seed, or to the number of Seed, then it will take up, Of Oak, Ash, Beech, and Elm, or either of them 6432 hundred and 4 Plants, and at 18 pence the hundred they amount to 482 pound 8 s. 3 q.

Of Chesnut Plants the same number, and at 2 shillings 6 pence the hundred, they come to 804 pound 1 penny.

The Charges of setting or planting these Sets at this distance, at 4 shillings the Acre, come to 200 pound.

The

The Charges for planting the seed at 12 pence the Acre come to 50 pound

The weeding of all the said Plants for Seed and Sets is worth 2 shillings the Acre, and comes to 100 pound.

The total Charge of Plowing, Hacking, Harrowing, and all other Charges in planting the Oak-seed, amounts to 860 pound 1 shilling.

The Total to plant with the Ash-tree seed amounts to 850 pound 6 shillings 8 pence farthing.

The Total to plant with the Beech seed amounts to 851 pound 5 shillings 3 half pence.

The Total to plant with Chesnuts amounts to 903 pound 12 shillings.

The Total to plant with Sets of Oak, Ash, Beech, and Elm amounts to 1482 pound 8 shillings 2 farthings.

The Total to plant with Chesnut Sets amounts to 1804 pound 1 penny.

And if at this distance the Land be planted with single Sets, then it will take up of Oak, Ash, Beech and Elm, or any one of them, but 160801 Plants, and they being in the whole 1608 hundred and one Plant, at 18 pence the hundred, comes to 120 pound 12 shillings.

Of Chesnut Sets the Land will likewise take up 1608 hundred and one Plant, and at 2 shillings 6 pence the hundred, they come to 201 pound 1 farthing.

The Charges for setting these Plants at 18 pence the Acre come to 75 pound.

The weeding of them is worth 12 pence the Acre, and comes to 50 pound.

The total Charge to plant at this distance with single Sets of Oak, Ash, Beech and Elm amounts to 845 pound 12 shillings.

The Total to plant with Chesnut Sets amounts to 1026 pound 1 farthing.

Now if all these seeds before mentioned be equally planted at this distance, the Land will then take up 643204 seeds.

Of

Of Acorns 160801, and they arising to 25 Bushels 1 Gallon and 1 Acorn, at 2 shillings the bushel, come to 2 pound 10 shillings 3 pence.

Of Ashen-keys, 1 bushel 5 gallons 3 pints and 301 single seeds, and at 12 pence the bushel, come to 1 shilling 8 pence.

Of Beech mast 2 bushels 3 quarts and 1 seed, and at 3 shillings the bushel, they come to 6 shillings 3 pence 3 farthings.

Of Chesnuts 160801 single seeds, and arising in the tale to 1608 hundred and 1 Nut, at 2 pence the hundred, come to 13 pound 8 shillings.

The Charges of setting the Seed, and weeding the Plants have been valued, and do come to 150 pound.

The total Charge thus to plant with Seed amounts to 841 pound 6 shillings 2 pence 3 farthings.

And if the Land be equally planted with the several kind or sorts of Sets before mentioned, according to the number of seed it will take up

Of the Oak, Ash, Beech, and Elm 514563 single Sets, which arise to 5145 hundred and 63 Sets, and at 18 pence the hundred come to 385 pound 18 shillings 5 pence farthing.

Of the Chesnut 128641 single Sets, or 1286 hundred and 41 Sets, and at 2 shilling 6 pence the hundred, they come to 160 pound 16 shillings 1 farthing.

The Charges of Planting and Weeding the Sets, as they have been valued before, is 300 pound.

The total Charge to plant a thousand Acres of Land equally with Sets or Plants at a Pearch distance, amounts to 1546 pound 14 shillings 5 pence half penny.

But if the said several sorts of Plants be equally planted, allowing only one single Plant at this last distance before mentioned, the Land then will take up

Of Oak, Ash, Beech, or Elm 32160 single Plants of each sort, which amounts in the whole for the 4 several kinds to 128640 single Plants, or 1286 hundred and 40 Plants, and at 18 pence the hundred, they come to 96 pound 9 shillings 7 pence farthing.

Of

Of Chesnut Plants 32161, or 321 hundred and 61 Plants, and at 2 shillings 6 pence the hundred, they come to 40 pound 4 shillings 2 farthings.

The Charges for setting and weeding these single Plants have before been valued at 125 pound.

Wheat.

Now at this distance there may be 2 bushels and a half of Wheat sowed between the Plants on every Acre of Land, then the thousand Acres will take up 2500 bushels, and at 5 shillings the bushel, come to 625 pound.

The Charges for Weeding the Wheat, at 4 pence the Acre, comes to 16 pound 13 shillings 4 pence.

The Charges of Reaping the Wheat, Gathering the Gripes, Binding the Sheafs, and Carrying the Corn into the Barn, is valued (because this Crop or Increase is more than that sowed in the last or third Distance) at 7 shillings the Acre, and come to 350 pound.

The Charges of Thrashing and Winnowing the Wheat, valued at 10 shillings the Load, containing 40 bushels, and reckoning 25 bushels the Increase, or to grow on every Acre of Land, comes to 312 pound 10 shillings.

The Charges in Transporting the said Wheat to Markets, at 5 shillings the Load, comes to 156 pound 5 shillings.

The total Charge of sowing the Land with Wheat between the Plants at this distance amounts to 1460 pound 8 shillings 4 pence.

The total Charge equally to plant with single Sets of Oak, Ash, Beech, Elm, and Chesnut at 18 foot distance; also plowing, hacking, harrowing, and sowing the Land between the Plants with Wheat, and all other charges about Plants and Corn, amounts to 2422 pound 1 shilling 11 pence 3 farthings.

You are to take notice that where we speak of planting for Under-wood, or sowing Corn, the whole Inclosure of Land is to be plowed, and the charges of plowing, hacking, sowing and harrowing,

harrowing is charged in every total account of planting Seed or Sets for Trees or Under-wood.

The Fifth Distance.

THe fifth and last distance, which we intend to treat of concerning plowing and planting Seed and Plants, is two Perch, containing 12 yards or 36 foot: Seed and Sets thus planted will not have only the benefit of air and sun and much earth for the sap to put forth their roots in, but save labour and cost, and prevent many casualties in transplanting.

A thousand Acres planted according to former directions, that is, in a Plot of ground 4 foot square at this distance, you may set 4 Seed, the Land will then take up

Of Acorns 161604 or 25 bushel 1 peck and 4 acorns, and at 2 shillings the bushel they come to 2 pound 10 shillings.

Of Ashen-keys 1 bushel 5 gallons 3 pints and a half, and 354 single seeds, and at 12 pence the bushel, they come to 1 shilling 8 pence.

Of Beech-mast 2 bushels 3 quarts half a pint and 204 single seeds, and at 3 shillings the bushel, they come to 6 shillings 1 penny 3 farthings.

Of Chesnuts 1616 hundred and 4 Nuts, and at 2 pence the hundred, they come 13 pound 9 shillings 4 pence.

The Charges of setting the seed at this distance may reasonably amount to 6 pence the Acre, and in the whole comes to 25 pound.

The Weeding of the Plants is worth 12 pence the Acre, and comes to 50 pound.

The total Charge to plant with Acorns at this distance amounts to 777 pound 10 shillings.

The total Charge to plant with Ashen-keys amounts to 775 pound 1 shilling 8 pence.

The Total to plant with the Beech seed amounts to 773 pound 6 shillings 1 penny 3 farthings.

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The Total to plant with Chesnuts amounts to 788 pound 9 shillings 4 pence.

And if all these several sorts of seed be equally planted, the Land will take up of Acorns 40401 or 6 bushels 1 peck 2 quarts and 1 Acorn, and at 2 shillings the bushel, come to 12 shillings 7 pence half penny.

Of Beech-mast 5 gallons and 401 single seeds, and at 3 shillings the bushel, they come to 1 shilling 10 pence 2 farthings.

Of Ashen-keys 3 gallons 1 quart 3 quarters of a pint and 276 single seeds, and at 12 pence the bushel, they come to 5 pence.

Of Chesnuts 404 hundred and 1 Nut, and at 2 pence the hundred, they come to 3 pound 7 shillings 4 pence.

The total Charge to plant with the 4 several sorts of seed equally planted, amounts to 779 pound 2 shillings 3 pence.

Now if this Land be planted with Sets according to the number of seeds, then it will take up

Of Oak, Ash, Beech, and Elm Plants of each or either of them 161604 single Sets, or 1616 hundred and 4 Sets, and at 18 pence the hundred, they come to 121 pound 4 shillings 2 farthings.

Of Chesnut Sets 1616 hundred and 4 Sets, and at 2 shillings 6 pence the hundred, come to 202 pound 1 penny.

The Planting all the said Sets at this distance is worth 12 pence the Acre, and comes to 50 pound.

The Weeding these Plants is also worth 12 pence the Acre, and comes to 50 pound.

The total to plant at this distance with Oak, Ash, Beech, and Elm Sets amounts to 921 pound 4 shillings 2 farthings.

The Total to plant with Chesnut Sets amounts to 1002 pound 1 penny.

And if all these several sorts of Plants be equally planted in the said quantity of Acres, then the Land will take up

Of Oak, Ash, Beech or Elm of each sort 32321 single Sets, of them altogether 129284 single Sets, or 1292 hundred and

84 Sets, and at 18 pence the hundred, they come to 96 pound 19 shillings 2 pence.

Of Chesnut Sets 32320 single sets, or 323 hundred and 20 Sets, and at 2 shillings 6 pence the hundred, comes to 40 pound 8 shillings.

The Charges for Planting and Weeding, as above, comes to 100 pound.

The total Charge equally to Plant the 5 several sorts of plants amounts to 937 pound 7 shillings 2 pence.

But if at this distance you plant only 1 single set, then the Land will take up either of Oak, Ash, Beech, or Elm 40401 single Sets, or 404 hundred and 1 Set, and at 18 pence the hundred, they come to 30 pound 6 shillings.

Of the Chesnut 40401 single Sets, or 404 hundred and 1 Set, and at 2 shillings 6 pence the hundred, they come to 50 pound 10 shillings 1 farthing.

The Charges for planting these Sets at 6 pence the Acre come to 25 pound.

The Weeding of them is worth 4 pence the Acre, and comes to 16 pound 13 shillings 4 pence.

The total Charge to plant at this distance with one single Set of Oak, Ash, Beech, or Elm amounts to 771 pound 19 shillings 4 pence.

The total to plant with Chesnut Sets amounts to 792 pound 3 shillings 4 pence farthing.

Now if these single Sets be equally planted, the Land will then take up of Oak, Ash, Beech, and Elm of each sort 8080 single Sets, of them all together 32320 single Sets, or 323 hundred and 20 Sets, and at 18 pence the hundred, they come to 24 pound 4 shillings 9 pence 2 farthings.

Of Chesnut Sets 8081, or reckoning them by the hundred, they arise to 80 hundred and 81 single Sets, and at 2 shillings 6 pence the hundred, they come to 10 pound 2 shillings 1 farthing.

The Charges for Planting and Weeding, as afore, 41 pound 13 shillings 4 pence.

The total equally to plant with single Sets amounts to 776 pound 1 penny 3 farthings.

And if you sow the Land between the Plants with Wheat at this distance, there will be 3 bushels allowed to be sowed on each or every Acre, in the whole 300 bushels, and at 5 shillings the bushel, it comes to 750 pound.

The Charges for Weeding the Wheat at 4 pence the Acre comes to 16 pound 13 shillings 4 pence.

The Charges of Reaping the Wheat, gathering Gripes, binding the Sheafs, and carrying the Corn into the Barn, is valued at 8 shillings the Acre, and comes to 400 pound.

The Charges of Thrashing and Winnowing the Wheat at 10 shillings the Load, containing 40 bushels, and reckoning 30 bushels the Increase, or to grow on every Acre of Land, comes to 375 pound.

The charges in transporting the said Wheat to Markets, at 5 shillings the Load, comes to 187 pound 5 shillings.

The total Charge of sowing the Land between the Plants with Wheat amounts to 1728 pound 18 shillings 4 pence.

The total Charge equally to plant with single Sets of Oak, Ash, Beech, Elm, and Chesnut at this distance, which is 36 foot; also Plowing, Hacking, Harrowing, Sowing the Land between the Plants with Wheat, and all other Charges belonging to Plants and Corn, amounts to 2504 pound 18 shillings 5 pence 3 farthings.

We might give you an account of the charges for Seed-wheat in every total Sum, and apportion the quantity of Corn to the quantity of Land between the Plants; for where the greater number of Plants grow, in that ground must the less quantity of Corn be sowed; the difference is but small, and I am unwilling to blot paper with more particulars than are needful, therefore at 3 distances only you have a particular and total account of the Charges for sowing Wheat.

Thus

Thus have we endeavoured to give a sufficient account of the first years Charges by plowing, sowing, setting, or planting seed or Plants in this Plot of good Land, being a rich Clay and moist Earth: But this must not be a Rule of Charges to plant all Lands by; for several Countries have several Prices in all Materials belonging to Husbandry; and as is the lightness and goodness, stiffness and badness of the Earth, so are the Prices more or less: In rich moist Sands or mixed Earths, which is likewise good ground to plant such plants in, 2 Yoak of Oxen in such ground will plow more in one day than 4 Yoak in a stiffe heavy Clay or such kind of Earth. There are many wealthy Husbandmen in *Hartfordshire* that plow the greater part of their Land with one Man and two Horses, who both holds the Plow and drives the Cattel; and in other places one Man and three Horses will plow an Acre and a half in a day, when in the same Parish two Men and six Horses cannot plow so much: It has been my observation, that in Common Fields some Plows with 4 Horses make a better dayes work than others of a far greater strength, when yet there has been only the breadth of a lay Bank between them, and from no other reason but the several kinds of Earth.

Now as we have given an account of the Charges in Planting by Plowing, Sowing, and Setting Seed and Plants for Timber-trees and Under-woods, I shall likewise give an account of the Charges in planting the same quantity of Land by Digging or Delving; as the labour of Man and Cattel in Plowing is more or less, according to the goodness or badness of the Earth; so is it likewise in Delving, a man will earn more by delving some Land for a penny the Rod, than other at 3 pence, yet both grounds alike plain and level, and without incumbrances: Also it is to be considered, that to delve for sowing Corn or ordinary feed, requires but one Spades graft in depth, but extraordinarily where the upper part of the earth hath been worn out, and that there is good earth deeper: also to cleanse the ground from stones, or strong weeds which have long roots and deep, or such

like

like annoyances, then it will require two Spades depth. There is no Plant that doth usually grow in *England* requires a deeper Mould than these we treat of; but because we suppose the Land that is made choice of to be a well qualified earth, we shall therefore adventure at one Spades depth to plant as aforesaid; and because it hath not been plowed or delved for many years past, or it may be never: also Woodland measure being very large, it is worth delving four pence the Square, Rod, Pole, or Pearch, allowing 18 foot to the Pearch, and one Pearch square contains 324 foot of ground. Having considered the charges in planting seed and plants by Plowing, and also given an account of every particular charge as was thought needfull; we shall therefore in this following Account of Charges in planting by digging or delving not trouble you with many particulars, but as briefly as may be, speak to all those several Distances mentioned in our last Accounts.

The First Distance.

This Distance is one foot; the Seed and Plants to be set at this thickness will require the whole Plot of Land to be delved, and at 4 pence the Pearch, it comes to 2666 pound 13 shillings 4 pence, the Land containing 16000 square pearch, or 51840000 foot.

Now the same quant or number of Seeds or Plants this Parcel of delved ground will require as that Land which was plowed; also the charges of setting and weeding will be the same, and likewise all other charges except plowing and hacking.

The Charges for Sowing the seed, valued at 4 pence the Acre, comes to 16 pound 13 shillings 4 pence.

For Harrowing the Land, valued at 8 pence the Acre, comes to 33 pound 6 shillings 8 pence.

And to save the labour of looking back into the former accounts you shall have the particulars as followeth.

If

If the Land be sowed with Acorns the Account stands thus.
One foot distance. The Land delved.

	li.	s.	d.
For Digging or Delving the Land at 4 pence the Pearch amounts to	2666	13	04
For seed Acorns containing 10102 bushels 1 peck 1 Acorn, at 2 shillings the bushel	1010	04	06
For Sowing and Harrowing at 12 pence the Acre.	0050	00	00
For Weeding the whole Plot of Ground at 10s. the Acre	0500	00	00
The total Charge amounts to	4226	17	10

But if the Land be set with Acorns, then the Account will be as followeth.

For Delving the Land at 4 pence the Pearch	2666	13	04
For seed Acorns, 8102 bushels 1 peck 1 Acorn, at 2 s. the bushel	0810	04	06
For Harrowing the Land at 8 pence the Acre	0033	06	08
For Weeding the whole Plot of ground	0500	00	00
For Setting the seed at 4 shillings the Acre.	0100	00	00
The total Charge amounts to	4210	04	06

By these two former Accounts of Acorns you may take notice, that the Charges of sowing the Seed comes to 16 pound 13 shillings 4 pence more than the Account of Charges for setting: Now those Plants that grow from the seed that was set will thrive and grow much better and more certain than those from the seed sowed; therefore whether the Land be delved or plowed it will be greater profit to set the seeds than to sow them.

An Account of Charges if the Land be sowed with Ashen-keys.

For Delving the Land at 4 pence the Pearch	2666	13	04
For Ashen-keys 1040 bushels 1 gallon 1 pint and 901 single seed, at 12 pence the bushel	0052	00	01 ³ / ₄
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	li.	s.	d.
For Sowing the seed and Harrowing the land, at 12 pence the Acre	00	50	00
For Weeding the Land at 10 shillings the Acre.	05	00	00
The total Charge amounts to	32	68	13 05 1/4

An Account of Charges the Land to be set with Ashen-keys.

For Delving the Land at 4 pence the Perch	2666	13	04
For 540 bushels 1 gallon 1 pint and 901 single seeds of Ashen-keys	00	27	00 01 3/4
For Setting the seed at 4 shillings the Acre	02	00	00 00
For Harrowing the Land, so covering the seed, at 8 pence the Acre	00	33	06 08
For Weeding the Land at 10 shillings the Acre	05	00	00 00
The total Charge amounts to	34	27	00 01 3/4

An Account of Charges the Land sowed with the seed of Beech.

For Delving the Land at 4 pence the Perch	2666	13	04
For 1175 bushels 6 quarts and 1 seed of Beech-mast at 3 shillings the bushel	01	76	05 06 3/4
For sowing the seed and harrowing the land at 12 pence the Acre	00	50	00 00
For Weeding at 10 shillings the Acre	05	00	00 00
The total Charge amounts to	33	92	18 10 3/4

An Account of Charges the Land to be set with the seed of Beech.

For Delving the Land at 4 pence the Perch	2666	13	04
For 675 bushels 6 quarts 1 seed, at 3 shillings the bushel	01	01	05 06 3/4
For Setting the seed at 4 shillings the Acre	02	00	00 00
For Harrowing the Land at 8 pence the Acre	00	33	06 08
For Weeding the Land or plants at 10 shillings the Acre	05	00	00 00
The total Charge amounts to	35	01	05 06 3/4

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An Account of Charges the Land sowed with Chesnuts.

	li.	s.	d.
For Delving the Land at 4 pence the Perch	2666	13	04
For 533544 hundred and 1 Nut at 2 pence the hundred	44	46	04 00
For Sowing the seed and Harrowing the land, at 12 pence the Acre	00	50	00 00
For Weeding the Land or Plants at 10 shillings the Acre	05	00	00 00
The total Charge amounts to	76	62	17 04

An Account of Charges the Land set with Chesnuts.

For 518544 hundred and 1 Chesnut at 2 d. the hundred	43	21	04 00
For Delving the Land at 4 pence the Perch	2666	13	04
For Setting the seed and Harrowing the Land	02	33	06 08
For Weeding the Plants at 10 shillings the Acre	05	00	00 00
The total Charge amounts to	77	21	04 00

Now if this Land be planted equally with all the 4 several sorts of seed before mentioned, that is of each sort a like number, the Account will then stand as followeth.

An Account of Charges the Land to be equally set with the 4 several sorts of seed.

For Delving the Land at 4 pence the Perch	2666	13	04
For 2025 bushels and a half and 2 quarts of Acorns at 2 shillings the bushel	02	02	11 01 1/2
For 135 bushels 1 quart and 600 single seed of the Ash-tree at 12 pence the bushel	00	06	15 00 3/4
For 168 bushel 3 pecks and 3 pints of Beech-mast at 3 s. the bushel	00	25	06 04 3/4
For 129636 hundred of Chesnuts and one Nut at 2 pence the hundred	10	80	06 00
For setting the seed, harrowing the land, and weeding	07	33	06 08

The total Charge amounts to 4714 18 06 3/4

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An Account of Charges the Seed to be equally sowed on the said Land.

	l.	s.	d.
For Delving the Land at 4 pence the Perch	2666	13	04
For 2525 bushels and a half and 2 quarts of Acorns at 2 s. the bushel	0252	11	01 1/2
For 260 bushels 1 quart and 600 single seeds of Ashen-keys, at 1 s. the bushel	0013	00	00 3/4
For 293 bushels 3 pecks and 3 pints of Beech-mast, at 3 s. the bushel	0044	01	01 1/2
For 1333386 hundred of Chesnuts and 1 single Nut, at 2 d. the hundred	1111	11	00
For sowing the Seed, harrowing the Land, and weeding the Plants	0550	00	00
The total Charge amounts to	4637	16	07 3/4

And if the said Land be planted with Plants or Sets at the same distance, it will take up 51854401 single Sets, and the account is as followeth.

An Account of Charges the Land to be planted with Sets of Oak, Ash, Beech, or Elm

For Delving the Land at 4 pence the Perch	2666	13	04
For 518544 hundred and one Plant either of Oak, Ash, Beech, or Elme, at 18 pence the hundred	38890	16	00
For setting or planting the Sets at 10s. the Acre	00500	00	00
For weeding the said Plants at 10s. the Acre	00500	00	00
The total Charge amounts to	42557	09	04

An Account of Charges the said Land planted with Chesnut Sets.

For Delving the Land	02666	13	04
For 518544 hundred of Chesnut Sets and one single Set, at 2 s. 6 d. the hundred	64818	00	00 3/4
For setting and weeding all these said Plants	01000	00	00
The total Charge amounts to	68484	13	04 3/4

But

But if all the foresaid several Sets be equally planted, then the Account stands thus.

An Account of Charges the said Land to be planted with all the Sets equally.

	l.	s.	d.
For Delving the Land	02666	13	04
For 414835 hundred and 20 Sets of Oak, Ash, Beech, and Elm, at 18 d. the hundred	31112	12	09 1/2
For 103708 hundred and 81 Chesnut Sets, at 2 s. 6 d. the hundred	12963	12	00 3/4
For setting and weeding the said Plants	01000	00	00
The total Charge amounts to	47742	18	01 3/4

Now that you may the more readily peruse all the foresaid totall accounts belonging to this first planting in digged or delved Land, I shall here set them down by themselves, and they are as followeth.

The total Accounts of all the seed set or sowed at one foot distance.

Seed sowed,			
Acorns, the Total amounts to	4226	17	10
Ashen-keys, the Total amounts to	3268	13	05 3/4
Beech-mast, the Total amounts to	3392	18	10 3/4
Chesnuts, the Total amounts to	7662	17	04
All these feeds equally sowed, the Total amounts to	4637	16	07 1/2
Seed set.			
Acorns, the Total amounts to	4210	04	06
Ashen-keys, the Total amounts to	3427	00	01 3/4
Beech-mast, the Total amounts to	3501	05	06 3/4
Chesnuts, the Total amounts to	7721	04	00 3/4
All these feeds equally set, the Total amounts to	4714	18	06 3/4
The total Accounts of Plants planted			
Oak, Ash, Beech, or Elm, the Total amounts to	42557	09	04
Chesnut Plants, the Total amounts to	68484	13	04 3/4
All these Sets equally planted, the Total amounts to	47742	18	01 3/4

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The next Distance is 3 Foot.

At this Distance if you do not sow the Land between the Plants with Corn, then there may be delved 2 foot square of ground at the ends of every yard or 3 foot, and therein set 3 seeds, as hath been formerly declared. This performed, there will be delved 5764801 square Plots, and they are worth delving 30 shillings the Acre. The thousand Acres thus planted will take up 17294403 single feeds, and the account will stand as followeth.

	li.	s.	d.
For Delving the Land at 30 shillings the Acre	1500	00	00
For 2702 bushels 1 peck and 3 single feeds of Acorns at 2 shillings the bushel	0270	04	06
For setting or planting the Seed, and the Land raked, at 2 shillings 6 pence the Acre	0125	00	00
For weeding the Plants, valued at 7 s. the Acre	0350	00	00
The total Charge amounts to	2245	04	06

An Account of Charges the Land planted with Ashen-keys;

For Delving the Land at 30 s. the Acre	1500	00	00
For setting the seed, and raking the land at 2 s. 6 d. the acre	0125	00	00
For 180 bushel 1 gallon 1 pint and 153 single feeds of the Ash-tree at 1 s. the bushel	0009	00	01 1/2
For weeding the Plants at 7 s. the Acre	0350	00	00
The total Charge amounts to	1984	00	01 1/2

An Account of Charges the Land planted with the Beech-tree seed.

For Delving the Land at 30 shillings the Acre	1500	00	00
For 225 bushel 6 quarts and 3 single feed of the Beech, at 3 shillings the bushel	0033	15	06 1/2
For setting the seed and raking the land at 2 s. 6 d. the acre	0125	00	00
For weeding the Plants at 7 s. the Acre	0350	00	00
The total Charge amounts to	2008	15	06 1/2

An Account of Charges the Land planted with Chestnuts.

	l.	s.	d.
For Delving the Land	1500	00	00
For 172944 hundred and single Chestnuts at 2 d. the hund.	1441	04	00
For Setting the Seed, Raking the Land, and Weeding the Plants	0475	00	00
The total Charge amounts to	3416	04	00

An Account of Charges equally to plant the 4 several sorts of Seeds.

For Delving the Land	1500	00	00
For 675 bushels a half and 2 quarts of Acorns at 2 s. the bushel	0067	11	01 1/2
For 45 bushels 1 quart and 601 single feeds of Ashen-keys at 1 s. the bushel	0002	05	00 1/2
For 56 bushels 1 peck 3 pints and 1 seed of Beech-mast at 3 shillings the bushel	0007	08	10 1/2
For 43236 hundred and 1 Chestnut at 2 d. the hundred	0360	06	00
For Setting the Seed, Raking the Land, and Weeding the Plants	0475	00	00
The total Charge amounts to	2412	11	00 1/2

Now if the Land be planted with Plants or Sets at this distance as the seed was planted, and the same number, then it will take up 17294403 Plants.

An Account of Charges the Land planted with Sets of Oak, Ash, Beech and Elm.

For Delving the Land	1500	00	00
For 172944 hundred and 3 Plants, either of Oak, Ash, Beech or Elm, at 18 pence the hundred	1290	14	01 1/2
For setting or planting these Plants, valued at 8 s. the acre	00400	00	00
For Weeding the Plants at 7 shillings the acre	00350	00	00
The total Charge amounts to	15220	14	01 1/2

An Account of Charges the Land planted with Chestnuts Sets.

	li.	s.	d.
For Delving the Land	01	500	00 00
For 172944 hundred and 3 Plants of Chestnut, at 2 s. 6d. the hundred	216	18	00 00 1/4
For setting and weeding the Plants	00	750	00 00
The Total Charge amounts to	238	68	00 00 1/4

But if all the foresaid 5 several sorts of Sets be equally planted in the said Land, the Accounts will be made up as followeth.

An Account of Charges the 5 several sorts of Sets equally planted.

For Delving the Land at 30 s. the Acre	01	500	00 00
For 138355 hundred and 22 Sets of Oak, Ash, Beech and Elm, at 18 pence the hundred	103	76	12 10
For 34588 hundred and 81 single Chestnut Sets, at 2 s. 6d. the hundred	04	273	12 00
For setting and weeding the Plants	00	750	00 00
The total Charge amounts to	169	00	04 10

The Totals of the several Accounts of Charges for Seed and Plants set or planted at 3 foot distance, and is as followeth.

Acorns, the Total amounts to	22	45	04 06
Ashen-keys, the Total amounts to	19	84	00 01 1/2
Beech-mast, the Total amounts to	20	08	15 06 3/4
Chestnuts, the Total amounts to	34	16	04 00
All the foresaid Seeds equally planted, the Total amounts to	24	12	11 00 1/4

The Totals of the several Accounts for Plants planted.

Oak, Ash, Beech, and Elm Sets, the Total amounts to	15	220	14 01
Chestnut Sets, the Total amounts to	23	868	00 00 1/4
All the 5 several sorts of Sets equally planted, the Total amounts to	16	900	04 10

The

The Third Distance.

This next or third Distance of ground between Plants or Seeds is 4 foot and an half, which is the fourth part of a Pearch Woodland measure. Now if the Thousand Acres of Land be planted the same way and order as was the last, or 3 foot distance, then at the ends of 4 foot 6 inches of Land in length must be delved a Plot of Land 2 foot square, with a small Trench about the square Plot, and therein set or plant 3 seeds: To perform this the Land will take up 7689603 single seeds; and the Plots be worth delving 14 shillings the Acre.

An Account of Charges, the Land set with Acorns.

	l.	s.	d.
For Delving 2563201 square Plots of Land, each Plot containing 4 square foot of ground; the whole Plot worth delving 14 shillings the acre	07	00	00 00
For 1201 bushels a half and 3 acorns, at 2 s. the bushel	01	20	03 00
For setting the Seed, and raking the Land 2 s. the acre, and weeding the Plants 4 s. the acre	03	00	00 00
The total Charge amounts to	11	20	03 00

An Account of Charges the Land planted with the Ash-feed.

For Delving the Land at 14 s. the acre	07	00	00 00
For 80 bushels 3 quarts and 603 single seeds of the Ash, at 12 d. the bushel	00	04	00 01 1/4
or setting the Seed, and raking the Land at 2 s. the acre	01	00	00 00
or weeding the plants at 4 s. the acre	02	00	00 00
The total Charge amounts to	10	04	00 01 1/4

A

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An Account of Charges the Land planted with Beech seed.

	li.	s.	d.
For 100 bushel 1 gallon and 3 seeds of Beech-mast at 3 s. the bushel	0015	00	04 1/2
For Delving the Land	0700	00	00
For setting the Seed, raking the Land, and weeding the Plants	0300	00	00
The total Charge amounts to	1015	00	04 1/2

An Account of Charges the Land planted with Chesnuts.

For Delving the Land	0700	00	00
For 76896 hundred and 3 single Chesnuts at 2 d. the hund.	0640	16	00
For setting the Seed, raking the Land, and weeding the Plants	0300	00	00
The total Charge amounts to	1640	16	00

An Account of Charges all the 4 sorts of seed equally planted.

For Delving the Land	0700	00	00
For 100 bushels 1 gallon of Acorns at 2 s. the bushel	0010	00	03
For 6 bushels 5 gallons 5 pints and 300 single Ashen-keys at 12 pence the bushel	0020	06	10
For 8 bushel 3 gallons and 800 Seeds of Beech-mast at 3 s. the bushel	0001	05	01 1/2
For 6408 hundred and 1 Chesnut at 2 pence the hundred	0053	08	00
For setting the Seed, raking the Land, and weeding the Plants	0300	00	00
The Total Charge amounts to	1065	00	02 1/2

And if the Land be planted with Sets at this distance, as was the seed, and to the number of seed, then it will take up 7689603 single Sets or Plants, and the account is as followeth.

An

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An account of Charges the Land planted with Oak, Ash, Beech or Elm Sets.

	li.	s.	d.
For Delving the Land	0700	00	00
For 76896 hundred and 3 sets either of Oak, Ash, Beech or Elm at 18 pence the hundred	5767	04	00 1/2
For planting and weeding the said Sets at 4 s. 6 d. the acre	0425	00	00
The total Charge amounts to	6892	04	00 1/2

An Account of Charges the Land planted with Chesnut Sets.

For Delving the Land at 14 shillings the Acre	0700	00	00
For 76896 hundred and 3 Sets of Chesnuts at 2 s. 6 d. the hundred	9612	00	00 3/4
For setting and weeding the said Sets	0425	00	00
The total Charge amounts to	10737	00	00 3/4

An Account of Charges equally to plant the 5 sorts of Sets.

For Delving the Land	00700	00	00
For 61516 hundred and 82 single Sets of Oak, Ash, Beech and Elm at 18 d. the hundred	04613	15	01 1/2
For 15379 hundred and 21 single Sets of Chesnuts at 2 s. 6 d. the hundred	01922	08	00 1/4
For Planting and Weeding all the said Sets	00425	00	00
The total Charge amounts to	07661	03	01 3/4

An Account of Charges to plant only a single Set in every Plot of ground at this distance, there being delved 2563201 square Plots.

For Delving the Land	0700	00	00
For 25632 hundred and 1 Plant either of Oak, Ash, Beech or Elm at 18 pence the hundred	1922	08	00
For Planting the Sets at 4 shillings the Acre	0200	00	00
For weeding the land a foot round the Sets at 2s. the Acre	0100	00	00
The total Charge amounts to	2922	08	00

S

At

An Account of Charges the Land planted with Chesnut Sets.

	l.	s.	d.
For Delving the Land	07	00	00
For 25632 hundred and 1 Plant of Chesnut at 2 s. 6 d. the hundred	3204	00	00 ¹ / ₂
For planting and weeding the said Sets	03	00	00
The total Charge amounts to	4204	00	00 ¹ / ₂

An Account of Charges, the foresaid 5 sorts of Sets equally planted.

For Delving the Land	07	00	00
For 20505 hundred and 60 Sets of Oak, Ash, Beech and Elm at 18 d. the hundred	1537	18	04 ¹ / ₂
For 5126 hundred and 41 Sets of Chesnut at 2 s. 6 d. the hundred	0641	01	03 ¹ / ₂
For setting and weeding the plants	03	00	00
The total Charge amounts to	3178	19	07 ³ / ₄

The reason why we allow a greater price by the perch for delving these square Plots mentioned in the last two Distances, than was at first when the whole Inclosure of Land was delved, is because these several parcels of Land require much more care and time than the other.

Now if you intend to sow or plant Corn among the Plants at this last Distance, then the whole Inclosure of Land must be delved, for the Plow will not have room to turn between the Plants. In our former accounts of Charges for plowing the Land, the seed we made choice of, as the best Corn to grow among the Plants is Wheat, the quantity to be sowed upon one Acre was 3 Bushel: but because a great part of the Land is taken up for the Plants to grow in, there is but 2 Bushels allowed for an Acre where the Plants are planted at this distance. I shall give you only one Account of charges for Corn at this time, and likewise in each of the other two Distances we are to speak of.

An

An Account of Charges the Land planted with one single Set in each Plot of Land delved, either of Chesnut, Ash, or Withey, they being equally planted, that is as many of one sort as of the other; and the Land sowed between the Plants with Wheat.

	l.	s.	d.
For Delving the Land at 4 pence the perch	2666	13	04
For 17088 hundred of Ash and Withey Sets at 18 pence the hundred	1281	12	00
For 8544 hundred and one Set of Chesnut at 2 shillings 6 pence the hundred	1068	00	00 ¹ / ₂
For planting the Sets and weeding them	03	00	00
For 2000 Bushels of seed-Wheat at 5 s. the bushel	05	00	00
For sowing the Wheat and harrowing the Land at 2 shillings the acre	01	00	00
For weeding the Wheat at 4 pence the acre	00	16	04
For reaping, gathering Gripes, binding the Sheafs, and carrying the Corn into the Barn at 6 s. the acre	03	00	00
For thrashing and winowing the Wheat at 10 s. the load, containing 40 bushels, and reckoning 20 bushels the Increase to grow on every Acre of Land, and counting the number of Acres in the Inclosure.	02	50	00
For transporting the said Wheat to Market, if not above 7 miles from the Barn or place of lading, 5 s. the load,	01	25	00
The total Charge amounts to	6607	18	08 ¹ / ₂

Now because this Woodland measure is larger than the Statute Acre or Land in Tillage, and the labour in sowing the Corn, Harrowing, Raking, Weeding, Reaping, Gathering, Binding and Loading will require much care and time by reason of the Plants growing so near together, therefore to make good the time and answer the care, in our accounts of Charges, we reckon the whole Inclosure of Land by the Acre, as if no Plants were growing therein.

And you may please to take notice that this account of Charges by Corn is not a Rule for all Countries, because the Wages

of Men and Cattel, and the prices of Corn do much differ, as was said before; yet we have gone as near the most usual rates as possibly could be; and which may serve for most Shires and Counties in *England, Scotland, Ireland, and Wales*, being not within our List. Also the account of charges about Corn may be considered in, or added to any other account of charges, my meaning is, That if the Land be planted with seed of Trees, as Acorns, Beech-mast, or any other kind, the account of charges for Wheat may be added in the Total, thereby to know the charges of planting Wheat with the Seed of Trees. Secondly, where the Land is plowed and planted with Sets or Seed of Trees at any distance the account for Wheat may likewise be added to the Total; and you will know the charges to plant Wheat when the Land is plowed, as where the Land is delved. This being easie to understand does not require farther demonstration; I shall now according to my former method give you all the Totals by themselves for Sets, Seed, and Corn planted at this distance.

The Totals of several Accounts for 3 seed of one kind planted in each Plot of Land delved at 4 foot 6 inches distance.

	li.	s.	d.
Acorns, the Total amounts to	1120	03	00
Ash-feed, the Total amounts to	1004	00	01 ¹ / ₄
Beech-feed, the Total amounts to	1015	00	04 ¹ / ₂
Chestnuts, the Total amounts to	1640	16	00
All the 4 sorts of seed equally planted, the Total amounts to	1065	00	02 ¹ / ₂
The Totals of several Accounts for 3 Sets planted in each Plot.			
Oak, Ash, Beech, or Elm, the Total amounts to	6892	04	00 ¹ / ₂
Chestnut Sets, the Total amounts to	10737	00	00 ¹ / ₂
All the five sorts of Sets equally planted, the Total amounts to	17629	04	00 ¹ / ₂

The

The Totals of several Accounts for 1 Set planted at the same distance.

	li.	s.	d.
Oak, Ash, Beech, or Elm Sets, the Total amounts to	2922	08	00
Chestnut Sets, the Total amounts to	4204	00	00 ¹ / ₄
All the 5 sorts of single Sets equally planted, the Total amounts to	3178	19	07 ³ / ₄
All the 4 sorts of seed equally planted, and the land sowed between the Plants with Wheat the Total amounts to	7672	18	10 ³ / ₄
One single Set either of Oak, Ash, Beech, or Elm in each Plot, and the Land sowed with Wheat, the Total amounts to	9530	06	08 ¹ / ₄
One Set of Chestnut planted, and the Land sowed with Wheat, amounts to	10811	18	08 ¹ / ₄
All the several sorts of Sets equally planted in each Plot one, and the Land sowed with Wheat between the Plants, the Total amounts to	9786	18	04

This Account of Charges by sowing Wheat among the Plants does rise to so great a sum, that it may discourage a young Planter; but if his patience would guide him to the account of profit or improvement, there may be hopes of encouragement again: And that no miscarriage may happen in so good a work, I shall in this place state the Account of Charges and Profit by planting Sets and Wheat in a Thousand Acres of Land, and the Plants planted 4 foot 6 inches distant one from the other.

In Page 89 and 90 the total sum of Improvement by Ash, Withey and Chestnut Plants planted at this distance last mentioned, and allowing 10 or 11 years growth, amounts to the sum of 17651 pound 9 s. 4 d. 3 farthings. Also the Land sowed with Wheat 3 years together, and the yearly increase arising to 20 Bushels growing on every Acre, and being sold for 5 shillings the Bushel does come to 15000 pound; these two sums added together,

together, the Total amounts to 3265 1 pound 9 shillings 4 pence 3 farthings.

Now there will arise from every Load of Wheat, which is five Quarters or 40 Bushels, 32 Bushels of Chaffe or Hulls; Then the 1500 Load of Wheat will yield 48000 Bushels of Chaff, worth in the Barn or place of thrashing 3 pence the bushel heap and thrust, which comes to 600 pound. Also every Load of Wheat will yield 2 Load of Straw, worth in the thrashing place 5 shillings the Load, and comes to 750 pound: Add all these sums together, and they amount to 3400 1 pound 9 shillings 4 pence 3 farthings.

The first years charges in planting the single Sets of Ash, Withey and Chesnuts; also Wheat sowed as by the account in page 106 doth come to 6607 pound 18 shillings 8 pence farthing.

The land between the Plants must be twice delved, and may be as often sowed with Wheat, after the first years planting; whereupon all the former charges about the wheat also will continue 2 years more; and the land to be delved for the Wheat, there being 128355 perch a half and 14 foot, at 4 pence the perch, comes to 2139 pound 5 shillings 2 pence; and the next or third years delving amounts to the same summ, they both come to 4278 pound 10 shillings 4 pence farthing. The Remainder of land which is 31644 perch a quarter and 67 foot, is the land allotted for the Plants to grow in.

The two years charge for seed-Wheat, also sowing, raking, weeding, reaping, gathering, binding and carting come to 2583 pound 6 shillings 8 pence.

Now at 10 or 11 years growth all the foresaid plants must be cut down; the charges for cutting and converting them to their several uses, as shreading the Hop-poles, making the Fagots, and such like, the workmanship may be worth 10 shillings the Acre, which comes to 500 pound. We shall also allow for making the hoops, and transportation of them, 12 shillings the thousand, and there being 1282 thousand and 2 hoops, comes

comes to 1009 pound 4 shillings. We shall also allow for the Rent of the Land, and Interest for the forbearance of the Rent 7 years, there being no Interest allowed for the Rent during the 3 years time the land was sowed with Wheat, because of the profit of the Increase.

Now the land is valued to be worth 20 shillings the Acre yearly rent, then the 10 years Rent for the thousand Acres comes to 10000 pound the 7 years Interest for the said Land, after the rate of 6 pound per Cent. comes to 503 pound 12 shillings 6 pence 2 farthings.

We shall also allow Interest for the moneys disbursed in planting, and is as followeth.

The Charges for Delving the Land which the Plants grow in, there being 31644 perch a quarter and 67 foot, at 4 pence the perch, comes to 527 pound 8 s. 1 d. 1/2.

The 10 years Interest for this last Sum of Charges after the rate of 6 pound per Cent. comes to 369 l. 15 s. 10 d. 1/2.

The Moneys disbursed for Sets or Plants comes to 2649 l. 12 s. 1 farthing.

The 10 years Interest for the Moneys paid for the said Sets, comes to 1896 l. 1 s. 5 d. 1/2.

Now the Land between the Plants containing 128356 square perch is worth 10 shillings the Acre to ly for Meadow after the 3 years Crops of Wheat is off the Land, and there being 802 Acres and 36 Perch, comes to 401 l. 2 s. 5 d. yearly, then the 7 years Rent of the said Land, which is about the time of the first Curting of the Plants, comes to 2807 l. 16 s. 11 d. This Sum is to be added to the account of Profit of Improvement; and the total Improvement then amounts to 36809 l. 6 s. 3 d. 3 farthings.

The total Interest Money comes to 2769 l. 9 s. 10 d. 1/2.

Now all these Sums of Charges before and last mentioned, being added to the total Sum for the first years Charges, then the Total of all Charges for the thousand Acres of Land, planted as aforesaid, amounts to 27748 l. 9 s. 6 d. 1/2.

And

And if you subtract this last total Sum of Charges out of the total Sum of Profit or Improvement, then the Product or Remainder of the Sum subtracted comes to which Sum is so much gained out of the thousand Acres of Land in 10 or 11 years, the Land planted as we have formerly declared.

I know not of any other Accounts of Profit or Charges worth the bringing or charging to an account in this place: But you may please to take notice that this Account of Gain or Profit is for the first Cutting of the Plants, they being single Shoots, Poles, or Rods produced from Seed. The next Cutting, or second Growth, every Stock may put forth 4 or 5 Shoots; and then the profit will be double. Also this way of planting by Sets, and delving the land is much more chargeable than plowing and planting Seed; for the total charge in planting at this distance with the Ash and Chesnut Seed, and Withey Sets, the Land plowed, and the Seed and Sets planted the way and manner as we have set down in Page 114 comes but to 1897 pound 9 s. 1/4. But the total charge, the Land being delved, and single Sets, and the Seed of Ash and Chesnuts, with Withey Sets, as was said before, planted at the same distance, Page 136 and 137, amounts to 5316 pound 7 s. 4 d. 1 farthing; subtract the Sum of Charges for plowing and planting out of the Sum for delving and planting, the rest or remainder amounts to 3418 pound 18 shillings 4 pence; and being so much charges saved by plowing and planting seed, may be added to the Account of profit as so much gained.

Now it may be objected, that planting by Sets every Stock will produce 2 or 3 Shoots, and to plant with Seed there will be but one Shoot, and so consequently one Pole or Rod; and at the time or season of cutting the Sets will produce double the quantity of stuff more than the Seed: For answer we grant the increase; but say that the Sets which should be planted being small, the many Shoots may by hindering the growth of the Roots

Roots, and indanger the Stock, and also hinder the growth of each other; for the Root must have time to grow and enlarge it self within the earth; therefore there will not be a sufficient supply of sap to maintain more shoots than one in so short a time as is allowed to the first Cutting: Also for young Stocks to have many boughes will not only hinder the thriving of the root by spending much sap, but as a poor Ewe which may bring forth 2 or 3 Lambs, both iterves her self and those she brought forth: We shall therefore advise to proyn or cut off all shoots but one from every Stock, until after the first Felling or Cutting; for one good streight shoot is worth 5 or 6 small straggled ones. These particulars being premised, you shall have the account in brief; and it is as followeth.

An Account of Charges and Grain by a thousand Acres of Land equally planted with single Sets of Chesnut, Ash and Withey, and Wheat sowed between the Plants at 4 foot 6 inches distance.

An Account of Charges.

	l.	s.	d.
Paid the first years Charges for planting 1000 Acres of Land with plants of Chesnut, Ash, and Withey; also Wheat sowed between the plants	6607	18	08 1/4
For Delving at two severall times 2567 1/2 perch 28 foot of Land	4278	10	04 1/4
For 4000 Bushels of seed-Wheat; also sowing, raking, weeding, reaping, and all charges about the Wheat for 2 years season in sowing	2583	06	08
For cutting the Plants, and converting them to severall uses	1509	04	00
For 10 years Rent for 1000 acres of Land at 20 s the acre yearly	10000	00	00
For Interest money	02769	09	10 3/4
The total Charge amounts to	27748	09	07 1/4

An Account of Profit or Improvement.

	li.	s.	d.
Received for Hop-poles, Hoops, Fagots, and other Necessaries for Husbandry	1765	09	04 ³ / ₄
Received 3 years Crops of Wheat, containing 60000 Bushels, at 5 s. the Bushel	15000	00	00
Received for 48000 Bushels of Wheat Chaff at 3 d. the Bushel	00600	00	00
Received for 3000 Load of Wheat Straw at 5 shillings the bushel	00750	00	00
Received 7 years Rent for 802 acres 36 perch of land at 10 s. the acre yearly	02807	16	11
<hr/>			
The total Improvement amounts to	36809	06	03 ³ / ₄
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The total Charge amounts to	27748	09	07 ¹ / ₄
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Rest in Cash	09060	16	08 ³ / ₄

This last Summ, rest in Cash, is so much gained by planting a thousand Acres of Land with Sets or Plants for Under-wood, and Wheat sowed on the Land.

Thus to state and ballance all the Accounts in this Book will require more time than is allowed, and the work is made so plain and easie, that every mean Accountant may perform the same, and save me the labour, we shall therefore proceed to the next Distance, and that is 18 foot in length.

The Fourth Distance or 18 Foot.

At this Distance you have been advised to delve a Plot of ground 4 foot square, and therein to set or plant 4 seed: To perform this the Land will take up, there being 16080 square Plots, 643204 single seed, and is worth delving 4 pence the perch, and there being 7940 ¹/₄ and 13 foot, comes to 132 l. 7 s. 1 d. An

An Account of Charges the Land set with Acorns.

	l.	s.	d.
For Delving 7940 perch ¹ / ₄ and 13 foot of Land at 4 d. the perch	132	07	01
For 100 bushels 2 pecks and 4 single seeds of Acorns at 2 s. the bushel	010	01	00
For planting the Seed, raking the Land, and weeding the Plants at 3 s. the acre	150	00	00
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The total Charge amounts to	292	08	01

An Account of Charges the Land planted with the Ash-feed.

For Delving the Land at 4 d. the perch	132	07	01
For 6 bushels ¹ / ₂ of a pint and 279 single seeds of Ash at 1 s. the bushel	000	06	08 ³ / ₄
For setting the Seed, raking the Land, and weeding the Plants	150	00	00
<hr/>			
The total Charge amounts to	282	13	09 ³ / ₄

An Account of Charges the Land planted with Beech-feed.

For Delving 7940 perch ¹ / ₄ and 13 foot of Land at 4 d. the perch	132	07	01
For 8 bushels 3 gallons and 4 single seeds of the Beech at 3 s. the bushel	001	05	01 ¹ / ₂
For setting the Seed, raking the Land, and weeding at 3 s. the acre	150	00	00
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The total Charge amounts to	283	12	02 ¹ / ₂

An Account of Charges the Land planted with Chestnuts.

For Delysng the Land	132	07	01
For 6432 hundred and 4 Nuts at 2 pence the hundred	053	12	01
For Setting the Seed, Raking and Weeding	150	00	00
<hr/>			
The total Charge amounts to	335	19	02

An Account of Charges the 4 sorts of feed equally planted.

	l.	s.	d.
For Delving the Land	132	07	01
For 25 bushels a gallon and 1 Acorn at 2 s. the bushel	002	10	03
For 6 pecks 7 pints and 301 single seed of the Ash at 1 s. the bushel	000	01	08
For 2 bushels 3 quarts and 1 seed of Beech-mast at 3 s. the bushel	000	06	03 ³ / ₄
For 1608 hundred and 1 seed of Chesnut at 2 d. the hund.	013	03	00
For Setting the seed, Raking and Weeding at 3 s. the acre	150	00	00
The total Charge amounts to	298	13	03 ³ / ₄

But if the Land be planted with Sets as it was with Seed, or to the number of Seed, then it will take up at this distance 643204 single Sets; and the accounts are as followeth;

An Account of Charges the Land planted with Oak, Ash, Beech, or Elm Sets.

For Delving the Land	0132	07	01
For 6432 hundred and 4 Sets, either of Oak, Ash, Beech, or Elm at 1 s. 6 d. the hundred	0482	08	00 ³ / ₄
For Planting and Weeding the Plants at 6 s. the acre	0300	00	00
The total Charge amounts to	0914	15	01 ³ / ₄

An Account of Charges the Land planted with Chesnut Sets:

For Delving the Land	0132	07	01
For 6432 hundred and 4 Chesnut Plants at 2 s. 6 d. the hundred	0784	00	01 ³ / ₄
For Planting and Weeding the Sets	0300	00	00
The total Charge amounts to	1216	07	02 ³ / ₄

An

An Account of Charges the 5 sorts of Sets equally planted.

	li.	s.	d.
For Delving 7940 perch ³ / ₄ and 13 foot of land at 4 d. the perch	132	07	01
For 5145 hundred and 64 of Oak, Ash, Beech and Elm Sets at 18 pence the hundred.	385	17	06 ³ / ₄
For 1286 hundred and 40 Chesnut Sets at 2 s. 6 d. the hundred	160	16	00
For Planting and Weeding the Sets	300	00	00
The total Charge amounts to	979	00	07 ³ / ₄

Now if at this distance in each Plot of ground you reserve to grow for Timber only one Plant, and pluck or draw up the other three, as has been directed; or that you plant one single Set at this distance, making use of the Plots by planting Corn therein; then the Land between the Plants may be plowed, and if sowed with Wheat, the quantity allowed for every Acre, counting as formerly, will be two bushels and a half; the Land then will take up, there being 950 Acres 59 perch and 68 foot, 2375 bushels 2 pecks, & at 5 s. the bushel amounts to 593 pound 17 shillings 6 pence. The Plowing of this Land according to our former accounts of Charges by plowing after the rate of 12 shillings the Acre comes to 570 pound 4 shillings 5 pence. At this distance we shall allow the Increase of Wheat to be 25 bushels growing on every Acre of Land.

The Charges of Weeding the Wheat, also Reaping, Gathering, Binding, Housing, Threshing, Winowing, Transporting to Markets, &c. allowing the same we did in the Account stated, comes to 835 pound 8 shillings 4 pence; the particulars are as followeth.

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An Account of Charges by a thousand Acres of Land planted with single Sets either of Oak, Ash, Beech or Elm, and sowed with Wheat between the Plants. li. s. d.

For Delving 7940 perch $\frac{1}{4}$ and 13 foot of Land at 4 d. } the perch	0132 07 01
For Plowing, Hacking, Sowing and Harrowing 950 acres } 1 quarter 19 perch and 68 foot of Land with Wheat } at 12 s. the Acre	0570 04 05
For 1608 hundred and 1 of Oak, Ash, Beech, or Elm Sets } at 18 pence the hundred	0120 12 00
For 2500 Bushels of Seed-wheat at 5 shillings the bushel	06 5 00 00
For setting and weeding the Plants as they have been valued	0125 00 00
For Weeding the Wheat at 4 d. the acre	00 6 13 04
For Reaping, Gathering, Binding the Sheafs, and Carrying } the Corn into the Barn, there being more Corn than } the last distance, 7 s. the ace	0350 00 00
For Thrashing and Winowing the Wheat at 10 s. the Load } containing 40 bushels, and reckoning the Increase 25 } bushels to grow on every Acre, and counting the num- } bers of Acres that is sowed	0312 10 00
For Carrying the said Wheat to Market at 5 s. the Load } or 40 bushels	0156 05 00

The total Charge amounts to — 2408 11 10

An Account of Charges the Land planted with single Chestnut Sets and Wheat sowed between the Plants

For Delving 7940 perch $\frac{1}{4}$ and 13 foot of Land at 4 d. } the perch	0132 07 01
For Plowing, Sowing, Hacking, and Harrowing 950 acres } $\frac{1}{4}$ 19 perch 68 foot	0570 04 05
For 1608 hundred and one of Chestnut Plants at 2 s. 6 d. } the hundred	0201 00 00 $\frac{1}{4}$
For planting & weeding the said Plants at 2 s. 6 d. the acre	0125 00 00
For 2500 bushels of seed at 5 s. the bushel	0625 00 00
For Weeding the Wheat	0016 13 04
For Reaping, Binding, and all Charges till brought into } the Barn	0350 00 00
For Thrashing, Winowing, and all Charges to the Mar- } ket, as by the last account	0468 15 00

The total Charge amounts to — 2488 19 10 $\frac{1}{4}$

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An Account of Charges the foreaid 5 several sorts of single Plants equally planted, and Wheat sowed between the Plants.

	li.	s.	d.
For Delving the Land cont. 7940 perch $\frac{1}{4}$ and 13 foot	0132	07	01
For Plowing, and Sowing with Wheat the other part of } the Land	0570	04	05
For 1286 hundred and 40 single Sets of Oak, Ash, Beech } and Elm	0096	09	07
For 3216 hundred and 1 Plant of Chestnut at 2 s. 6 d. the } hundred	0040	04	00 $\frac{1}{4}$
For Setting and Weeding the said Plants	0125	00	00
For 2500 bushels of Seed-wheat at 5 s. the bushel	0625	00	00
For Weeding the Wheat	0016	13	04
For Reaping, Binding, and all Charges till brought into } the Barn	0350	00	00
For Thrashing, and all Charges to the Markets	0468	15	00
The total Charge amounts to — 2424 13 05 $\frac{1}{4}$			

Using my accustomed Method, all the Total Sums will appear to your present view, and they are as followeth.

The Totals of the several Accounts for Seed set or planted at 18 foot distance.

Acorns, the Total amounts to	0292	08	1
Ash-seed, the Total amounts to	0282	13	9 $\frac{1}{4}$
Beech-seed, the Total amounts to	0283	12	2 $\frac{1}{2}$
Chestnuts, the Total amounts to	0335	19	2
All the 4 several sorts of } Seed equally planted } the Total amounts to	0298	12	3 $\frac{1}{4}$

The Totals for 4 Plants planted in each Plot of Land delved.

Oak, Ash, Beech, or Elm, the Total amounts to	0914	15	1 $\frac{3}{4}$
Chestnut Sets, the Total amounts to	1216	07	2 $\frac{1}{4}$
All the 5 several sorts of } Sets equally planted } the Total amounts to	0979	00	7 $\frac{3}{4}$

One

	li.	s.	d.
One single Plant either of Oak, Ash, Beech or Elm plant- ed in each Plot, and the Land sowed with Wheat, the	} 2408	11	10
Total amounts to			
One single Chesnut Plant planted in each Plot, and the Land sowed with Wheat, the Total amounts to	} 2488	19	10 ³ / ₄
All the 5 sorts of single Sets equally planted in each Plot one, and the Land sowed with Wheat, the Total a- mounts to			

You may please to take notice at the second season of Plow-
ing, That that part of Land that the Plow cannot reach or
compass must be digged or delved.

The Fifth Distance.

THe next or last Distance of Land between the Plants we
intend to treat of in this Book, and at this time, is two
pearch or 36 foot.

Well grown and thriving Timber-trees planted in a thou-
sand Acres of Land at this distance will not only be profitable
(as on every Acre of Land, there growing 40 Timber-trees
worth 10 pound a Tree, and amount to four hundred thousand
pound) but make a gallant shew; and Corn growing on the
Land, Cattel and Deer feeding thereon were very pleasant
to behold.

We have formerly advised to delve a Plot of ground 4 foot
square at the end of every 36 foot in length, and therein to set
or plant 4 Seed or Plants; this performed there will be suffici-
ent room for the Plow to turn between the square Plots, ma-
king good and quick work, not hurting either Plants or Trees;
And the Land planted according to former Directions, the Ac-
counts will stand as followeth:

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An Account of Charges the Land planted with Chesnuts at this last
Distance, and sowed with Wheat,

	li.	s.	d.
For Delving 40401 square plots of Land containing 646416 foot, or 1995 pearch and 36 foot at 4 d. the pearch	} 033	05	0 ¹ / ₄
For Plowing, Hacking, Sowing the Wheat, and Harrowing 987 acres and 3 quarters of Land at 12 s. the acre			
For 161604 Chesnut Seed, or 1616 hundred and 4 Nuts at 2 d. the hundred	} 013	09	4
For Seed-wheat, allowing at this distance 3 bushels to be sowed on every acre, at 5 s. the bushel			
For Setting the Chesnuts, and Weeding the Plants at 18 d. the acre	} 075	00	0
For Weeding the Wheat at 4 pence the acre			
For Reaping, Binding, and Carrying the Corn into the Barn at 8 s. the acre	} 395	02	0
For Thrashing and Winnowing the Wheat at 10 s. the load or 40 bushels, and reckoning the increase 30 bushels to grow on every acre			
For Carriage of the said Wheat to Markets, if within 7 miles of the Barn, at 5 s. the load or 40 bushels	} 185	03	9
The total Charge amounts to			

An Account of Charges the Land planted with Acorns and sowed with
Wheat.

For Delving 1995 pearch and 36 foot of Land at 4 d. the pearch	} 033	05	0 ¹ / ₄
For Plowing 987 acres ³ / ₄ of Land, and sowing the said Land with Wheat			
For 25 bushels 1 peck and 4 Acorns at 2 s. the bushel	} 002	1	6
For Seed-Wheat the Land requiring 2963 bushels ¹ / ₄ at 5 s. the bushel			
For Setting the Acorns, and Weeding the Plants	} 075	00	0
For Weeding the Wheat			
For Reaping, Gathering, Binding, and Carting the Corn in- to the Barn	} 395	02	0
For Thrashing and Winowing the Wheat at 10 s. the load			
For Carriage of the said Wheat to Markets at 5 s. the load	} 185	03	9
The total Charge amounts to			

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An Account of Charges the Land planted with the Beech Seed, and sowed with Wheat.

For Delving and Plowing the Land	625	18	0 1/4
For 2 bushels 3 quarts and 804 single Seeds at 3 s. the bushel	000	06	3 3/4
For 2963 bushels 1/4 of Seed-Wheat at 5 s. the bushel	740	16	3
For Setting the Beech Seed, and Weeding the Plants	075	00	0
For Weeding the Wheat, and all Charges of bringing it into the Barn	411	15	4
For Thrashing the said Wheat, and all Charges to the Markets	555	11	3
The total Charge amounts to			

An Account of Charges the Land planted with Ash-feed, and sowed with Wheat.

For Delving and Plowing the Land	625	18	0 1/4
For one Bushel and a half 11 pints and 1104 single seeds of the Ash at 12 pence the bushel	000	01	8
For 2963 bushels 1/4 of Seed-Wheat at 5 s. the bushel	740	16	3
For Setting the Ash-feed and Weeding the Plants	075	00	0
For Weeding the Wheat and all Charges of bringing it into the Barn	411	15	4
For Thrashing the said Wheat and all Charges to the Markets	555	11	3
The total Charge amounts to			

An Account of Charges all the 4 sorts of Seed equally planted, and the Land sowed with Wheat.

For Delving and Plowing the Land	625	18	0 1/4
For 404 hundred of Chestnuts & 1 single Nut at 2 d. the hund.	003	07	4
For 6 bushels 5 pottles and 1 seed of Acorns at 2 s. the bushel	000	12	7 1/2
For 2 pecks 1 pint and 801 single seed of the Beech at 3 s. the bushel	000	01	7
For 3 gallons 1 quart and 1401 single seeds of the Ash at 12 d. the bushel	000	00	5
For Setting these Seeds and Weeding the Plants	075	00	0
For Seed-Wheat containing 2963 bushels 1/4 at 5 s. the bushel	740	16	3
For Weeding the Wheat and all Charges of bringing it into the Barn	411	15	4
For thrashing the said Wheat and all charges to the Markets	555	11	3
The total Charge amounts to			

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An Account of Charges the Land planted with Sets, as it was with Seed, and Wheat sowed between the Plants.

For Delving and Plowing, as by the particulars in former Accounts	625	18	0 1/4
For 161604 either of Oak, Ash, Beech or Elm Sets at 18 d. the hundred	121	04	0
For Planting the Sets and Weeding them	100	00	0
For 2963 bushels 1/4 of Seed-wheat at 5 s. the bushel	740	16	3
For Weeding the Wheat and all Charges into the Barn	411	15	4
For Thrashing the said Wheat and all Charges to the Markets	555	11	3
The total Charge amounts to			

An Account of Charges the same quantity of Land planted with Chestnut Sets and Wheat sowed.

For Delving and Plowing the Land	625	18	0 1/4
For 1616 hundred of Chestnut Sets at 2 s. 6 d. the hundred	202	00	1
For Planting the Sets and Weeding them	100	00	0
For 2963 bushels 1/4 of Seed-Wheat at 5 s. the bushel	740	16	3
For Weeding the said Wheat and all Charges bringing it into the Barn	411	15	4
For Thrashing the said Wheat, and all Charges to the Markets	555	11	3
The total Charge amounts to			

An Account of Charges all the 5 sorts of Sets equally planted, and Wheat sowed between them.

For Delving and Plowing the Land	625	18	0 1/4
For 129284 of Oak, Ash, Beech, and Elm single Plants	096	19	2
For 32320 Chestnut Plants	040	08	0
For Planting and Weeding all the said Sets	100	00	0
For Seed-Wheat	740	16	3
For Weeding the said Wheat and all Charges into the Barn	411	15	4
For Thrashing the said Wheat and all Charges to the Markets	555	11	3
The total Charge amounts to			

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Now

Now if you plant a thousand Acres of Land with single Sets at the last distance before mentioned, that is to say 36 foot space of ground left between each single Plant, and 2 foot square of land delved for each Plant to grow in. The Accounts are as followeth.

An Account of Charges the Land planted with single Sets either of Oak, Ash, Beech, or Elm, and sowed with Wheat.

	li.	s.	d.
For Delving 498 square perch 3 quarters and 9 foot of Land	0008	06	03
For Plowing 996 Acres $\frac{1}{2}$ 21 perch and 72 foot of Land	0598	02	06
For 40401 single Sets either of Oak, Ash, Beech, or Elm	0020	04	00
For Planting and Weeding the said Plants at 10 d. the acre	0041	13	04
For Seed-Wheat and all Charges bringing it into the Barn	1152	11	07
For Thrashing the said Wheat and all Charges to the Markets	0555	11	03

The total Charge amounts to 2376 08 11

An Account of Charges the Land planted with Chesnut Sets?

For Delving, Plowing, Sowing, Hacking, and Harrowing	0606	08	09
For 40401 single Plants of Chesnut at 2 s. 6 d. the hundred	0050	10	00
For Planting and Weeding the said Sets	0041	13	04
For Seed-Wheat, also Weeding the Wheat, and all Charges into the Barn	1152	11	07
For Thrashing, and all Charges to the Markets	0555	11	03

The total Charge amounts to 2406 14 11

An Account of Charges all the 5 sorts of Sets equally planted, and Wheat sowed on the said Land.

	li.	s.	d.
For Delving and Plowing the Land	0606	08	09
For 323 hundred and 20 single Sets of Oak, Ash, Beech and Elm	0024	04	09
For 80 hundred and 81 single Sets of Chesnut	0010	02	00
For Planting and Weeding the said Sets at 10 d. the acre	0041	13	04
For Seed-Wheat	0740	16	03
For Weeding the said Wheat, and all Charges bringing it into the Barn	0411	15	04
For Thrashing the said Wheat, and all Charges to the Markets	0555	11	03

The total Charge amounts to 2390 11 8 $\frac{3}{4}$

It may be objected that on those Lands where there is planted the least number of Sets, there ought to be a greater quantity of Corn sowed than where the Plants are set thicker, and consequently a greater Crop or Increase of Wheat expected; also an account given thereof, which is not performed or mentioned in the accounts: For answer we say, That on those Lands where Corn is ordered to be sowed, there is but one Plant allowed to grow for Timber, and at the ends of each or every Distance of Land proportioned between the Plants: All the rest are appointed for planting other Lands, and to be pulled or drawn up at or about three years after the first planting. Secondly, in that short time or term of years the Plants will be but of small growth, therefore not much prejudice or hinder the growth of Corn; neither will the Corn hurt them if ordered as has been directed. Thirdly, the difference is so small, that I shall not blot paper by taking notice thereof; and to answer every Objection, nice Scruple, or Question, is more fit for such that delight rather in Disputation than Improvement: we shall therefore proceed, and according to our former custome give you

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you the Totals of the several Accounts mentioned by planting at this fifth or last Distance, and they are as followeth.

The Totals of several Accounts for Seed of Trees planted, and the said Land sowed with Wheat.

		l.	s.	d.
Chestnuts,	the Total amounts to	2422	10	02 ¹ / ₄
Acorns,	the Total amounts to	2411	11	04 ¹ / ₄
Beech-feed,	the Total amounts to	2409	07	02 ¹ / ₄
Ash-feed,	the Total amounts to	2409	02	06 ¹ / ₄
All the 4 sorts of Seed } equally planted — } }	the Total amounts to	2413	02	09 ³ / ₄

The Totals of 4 Sets planted in each Plot of Land.

Oak, Ash, Beech, or Elm,	the Total amounts to	2555	04	10 ¹ / ₄
Chestnut Sets,	the Total amounts to	2636	00	11 ¹ / ₄
All the 5 sorts of Sets } equally planted — } }	the Total amounts to	2571	08	00 ¹ / ₄

The Totals of one single Set planted in each Plot of Land and Wheat sowed between the Plants.

Oak, Ash, Beech, or Elm,	the Total amounts to	2376	08	11 ¹ / ₄
Chestnut Sets,	the Total amounts to	2406	14	11 ¹ / ₄
All the 5 sorts of Sets } equally planted — } }	the Total amounts to	2390	11	08 ³ / ₄

We have not set down in all the Distance every particular Account of Charges or Expence, being unwilling to repeat the same thing over and over again, but refer the Reader to the Account stated in the third Distance, and Planting for Underwoods.

All that hath been spoken of Planting; Also the Accounts of Charges and Profit are to be Understood as meant of the whole Land, or Utmost of the Plot, containing a thousand Acres, the square whereof is 400 perch.

We

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We might also here give an account of the Charges and Profit that may arise by Planting the said Land inclosed with the Fence before mentioned; the ground allowed for breadth of the Ditch and the Bank, or earth cast out for the thorns to grow in, was 9 foot, which is half a perch; then the square of the Land within the Fence to be planted contains 399 perch, and ariseth in the whole Plot by the acre to 995 acres one perch: The loss of land by reason of the Fence, or the Land taken up by the Fence, being 4 acres 3 quarters and 39 perch.

Now the way and manner how this Plot or quantity of Land is to be planted, we have already declared, and by the computation of one single Acre and a thousand Acres, which I have demonstrated at large, may be known, the Charges and Profit arising by planting 5, 10, 100, 10000, or any number of Acres whatsoever.

I should here have concluded this most delightful Subject of Profit, acceptable, if not to all, yet to the greatest part of the World; notwithstanding to follow the advice of the Poet, who is willing that Pleasure also have a share in all discourses of this Nature, and to render my labour, if possible, agreeable to such one whom the first has no influence, unless accompanied with the latter: I shall endeavour by joyning both here, to make the Desert you have already past only appear as a rugged Entrance into the Pleasant Land; and by the Delights which I have reserved in my Garden of Pleasure, hope to make you forget all the troubles and unevenness of your former passage.

ENG.

ENGLAND'S IMPROVEMENT REVIVED.

THE FIFTH BOOK.

The Argument.

In this Book are Directions set down how to plant 200 Acres of Land as well for Pleasure as Profit, wherein there shall be pleasant Walks with Timber-trees and Groves of Under-woods, and several Orchards and Gardens, with Fruit, Flowers and Herbs both for Food and Physick, variety of Fowl, Bees, Silk-worms, Bucks, Does, Hares, and other Creatures of several kinds: And a short account of the Charges and Profit of keeping a thousand Doe-Conies in Hutches, the profit amounting to 1450 pounds per annum; Also, Fish-ponds and Streams of water stocked with many kinds of Fish, and stocked with Decoy-Ducks; And the Use and Vertues of all the Plants growing in this Garden of Pleasure.

THe Figure of this Garden, or profitable and delightful Place, is a Quadrat, the 4 Angles or square sides lying South-east, North-west, South-west, and North-east, the length of one side or Angle containing 178 Perch 15 foot 11 inches: The whole Plot is to be inclosed with a Ditch and Quick hedge of White-thorn, as hath been directed, to fence in the great Wood: In the middle of this Garden containing 200 Acres Woodland Measure, that is 18 foot to the Perch in length, shall be erected a convenient Dwelling-house, and other usefull Buildings for Corn and Cattel; the Front of the said House to stand South-

east

east, and the Scite thereof to be inclosed for Yards, Gardens and Orchards, we allow to take up 20 Acres.

On the North-east side of this our Garden, and 36 foot from the Fence or outmost bounds, is to be planted a Row of Oaks extending to the ends of the said Angles or square Sides; but observing to keep the same distance of 36 foot from the Fence of the other Angles, or North-west and South-east Sides. This first Row of Oak being set or planted, allowing 21 foot of land between each Plant, there is to be planted another or second Row of Oaks 36 foot distance from the first, and keeping the distance of 21 foot between every Plant in the said Row: This performed, then 36 foot from the last Row of Oaks is to be planted 2 Rows of Chesnut Plants, all of them keeping the same distance one from the other, as the Oaks; and 36 foot from the last Row of Chesnuts must be planted 2 Rows of Beech Plants; also 36 foot from the last outmost Row of Beech may be planted 2 Rows of Walnut Plants, the said Beech and Walnuts are to be planted at the same distance as was the Chesnuts; 4 pearch or 72 foot from the last Row of Walnuts you may plant a Grove or Thicket of White Thorn, the breadth to be one pearch, and the length extending as far as the Walnuts.

From the Thorns, the space of land between being 9 foot, is to be planted a Coppice or Thicket of Ash and Withey Sets equally mixed; the breadth of the said Plot of Ash and Withey Plants must be 4 pearch, and the length 81 foot shorter at each end than the Thorn Thicket.

Half a pearch or 9 foot from the Ash Coppice shall be planted 4 pearch of Land in breadth with Hazel-nut Sets, and the length to be the same as that of the Ash. Leaving 1 pearch or 18 foot space of ground from the Hazel Coppice, there must be planted the breadth of 4 pearch in breadth with Raspberry, Blackberry, Barberry, Goosberry and Currant Bushes; All these are to be planted equally in several Beds, and the edges of the said Beds planted with Strawberries.

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The whole Plot being planted, and equally mixed with all the several sorts and colours of Berries, with convenient Walks between each Bed, and containing the same length with the Nut-wood.

One perch distant from the said Plot of Berries is to be planted the same length and breadth of land with Philberd Nut Sets.

Keeping the distance of 9 foot from the last Plot planted, the next to be planted are Withey and Ash Sets, the length and breadth of the said Plot to be the same as was last planted with Philberds.

Now as an Architect will lay a good foundation before he build, we have advised first to plant; and as the first Plot planted of this our Grove was a Thorn Thicket, so likewise must the last, or that opposite to the first; and also both ends of this entire Inclosure, observing to keep the distances with length and breadth of this last Thicket as that first planted; and also the Thorns planted at the two ends of the Grove must be of the same breadth, and joyn to the ends of the first and last Thorns planted.

About the middle of the last or South-west side of the Grove, and opposite to the Dwelling-house must be left unplanted a space of Land or Ground, on which to build or set up a fair Gate for entrance into the Wood or Grove aforesaid; also there must be left unplanted 72 foot of Land in breadth, beginning at the said Gate or middle of the Thorn Thicket, and extending overthwart or cross, dividing the Grove, which will make a Pleasant Walk, there being erected a Fountain in the middle of the said Walk, whose streams dividing the Grove into 4 parts, will be of great use for the refreshing all things, as well Vegetatives and Sensitives as Rationals; and at each end of the said Walk is to be planted a Mulberry-tree.

These Directions being observed and performed, on the South-west side of the House is to be planted the same quantity of Land with all the several sorts of Plants aforesaid, keeping

keeping the same distance of 36 foot from the Fence, and likewise the same distance of Plants according to the manner and way of the first or North-east part of the Land planted.

These two Groves and Timber-trees in them are not planted only for Pleasant Walkes, but Harbor and feeding places for wild Peacocks, Turkeys, Pheasants, Blackbirds, Thrushes, Fel-fares, and all other useful Birds that live on such food as there grows.

The Land disposed of as to the scite of the House, Groves, and Woods planted for Timber-trees arises to 120 Acres and a half, out of the remainder of Land which is 80 Acres, on the North-east side of the Dwelling-House, and flanking the North point of the Kitchen Garden, and about the middle distance of Land between the said point, and South-west side of the North-east Grove shall be inclosed a square Plot of Land containing 10 Acres, with a Mote or Water-course 18 foot broad.

About the middle of the ground thus inclosed shall be built a Shed or low roof House 4 square, answering the Figure of the Land inclosed, the walls or sides of the said Shed should be 7 foot high built with brick.

The length of every square side must be 80 foot, and the breadth 10 foot between the walls within the House; then the 4 square sides or whole House contains 320 foot round: and the Plot of ground or Yard within the House, allowing 18 inches for the thickness of the Wall, will contain 54 foot square.

Within this House we shall place 240 Conie-Hutches or Boxes, each of them containing 5 Rooms one above the other, or 5 stories high; in which Rooms must be kept 1000 breeding Doe Conies, and 100 Bucks, every one of them in a several Room; the remainder of Boxes are to be reserved to keep Weaned Rabbits. These Hutches are so well known, that I shall not describe them; but in the way of placing these Hutches within the Shed must be observed, that the back-sides stand close to the wall on the top or upper Room, and the bottom, lower part or foot to stand at least 6 inches from the said wall, and thus

standing sloping, the urin that falls from the Conies will pass or run sooner and cleaner away. Now these Hutches thus placed on both sides the House, and set close one to the other, will make 2 Rows round the House: The Floor of the said Cony-house should be paved with Brick or Pible-stones, and under every Hutch must stand an earthen Pan to save the urin that cometh from them; for if it be spilt on the Floor it will taint the Conies, and do much hurt both to young and old.

There must likewise be provided 4 wooden Vessels of Firkin size, each of them must stand on 4 wheels; these Tubs being filled with Bran and Grains, with a small strength may be driven or drawed throughout the 4 quarters of the House twice every day to feed the Conies, and by the use of wheels the work may be dispatched in a short time with much ease.

In the middle of the Court or Yard within the Cony-house should be built a small House 3 stories high, to lay in Provision for the Conies, as Hay, Grains, Bran and Oats; also a Lodging Room for the Warrener.

Now whereas Tame Conies will usually breed 7 or 8, and sometimes more Rabits at one Litter, and 8 or 9 moneths or times in one year, we shall breed but 6 moneths, and shall preserve or keep but 5 Rabits of every Doe, and if she bring above that number, the overplus shall be destroyed within 3 dayes after she hath littered; but they shall not be cast to the dunghil as of little worth, for they will be a very good change of food for Musk or Civet Cats, or else being thrown into the Mote will feed the Fish: And if any of the Does bring not the number of 5 Rabbits at one litter, then from those Does that bring above that number shall be taken so many as will make up the number of 5 for every Doe.

Now if these Conies be of a large kind, and that you keep them sound, and they breed their Rabbits fat: also if you breed to kill in season, before the Field Rabbits are or can be fit to serve the Markets, then every one of these House Rabbits will yield 7 pence at 4 weeks old; for they will be twice as large,
and

and much fatter than any field Rabbet: Also the latter season when the field Rabbits are spent, then every one of these house Rabbits will yield 9 or 10 pence to be sold at 3 months old. And if you give the weaned Rabbits Oats, Hay, and Water, likewise Chalk with their meat, a better Rabbet cannot be bred either for colour, taste, or wholesomeness.

But if any shall question the sale or vent of these Rabbits kill'd at the seasons beforementioned, I can assure him it hath been my care both to treat with Warreners and Poulterers in *London* about the same, and they all condescend to my Propositions, and also say that *London* Markets will take off or vent five times more in one or both seasons, than can be bred of a thousand Does. We shall in the next place give an account of the yearly Charges and Profit by keeping a thousand breeding Doe Conies and a hundred Bucks; also the breeding and maintaining fit for Market 5 Rabbits of every Doe, and so to breed six times in one year, the account is as followeth.

One Doe breeding and bringing up fit for the Market five Rabbits six times in one year, that is 30 Rabbits in the whole at six pence the Rabbet; it being an indifferent price as to both seasons of killing, they come to 15 shillings yearly; then the Profit of a thousand Does, according to the same rate, amounts to 750 pound the year.

There are other Profits arising from these Conies.

First, the Excrement which cometh from them, with the Offal of the Hay, which being well husbanded, will make special good Dung or Soil for Land, and may be worth 40 shillings the year.

Secondly, the Garbidge or Cuts of the Rabbits sold every year, there being killed from a thousand Does thirty thousand Rabbits; the said Garbidge being cast into the Mote, the water although little above the quantity of an Acre, yet will keep and feed more Fish, especially the Carp, then 4 Acres of other water without the same helps.

Thirdly, in this Mote may be kept a hundred Spruce Ducks;
with

with the Offal of Bran and Grains from the Conies. I have kept of the said Ducks, and they have laid each Duck 50 Eggs in 50 dayes, every day an Egg; and resting 2 or 3 weeks they have layd again; so that one Duck will lay 200 Eggs in a year; and they being better for the use of Confectioners than Hen-Eggs, will yield at London 4 shillings the hundred; then the profit of one Duck yearly is 8 shillings, and the yearly profit of a hundred Ducks amounts to 40 pound.

Now for the yearly profit by Fish, we shall stock the Mote with 400 Fry or young small Carp, and at 5 years growth, the said Carp will be worth 12 pence a piece, then the 400 Carps come to 20 pound, which is 4 pound yearly gains or profit from the Mote or Water-course, containing 171 square perch 8 foot $\frac{1}{2}$ or 36 inches.

Fourthly, upon the Land inclosed by water, as aforesaid, may be fed a considerable number of Rabbits, which shall not be kept there so long as to be of strength to dig or make holes or Burrows in the earth, nor living only on the Grass or Pasture, but shall have several Racks for Hay, and Troughs or Mangers for Bran and Oats made and set up in the Court Yard within the Cony-house, where there must be several holes or passage wayes made through the walls for the Rabbits to go in and out at, from their day food, to feed, sport, and air themselves in the Grass or Pasture: And because we shall not keep a constant Stock of Rabbits on the Pasture; therefore at those several times and seasons of the year, when the Land is not stockt with Rabbits, it may be stockt with Sheep, to keep the Grass short and sweet; for Conies will not thrive in long or sower Pasture: The keeping of Sheep is worth 3 pound yearly. This way of keeping and feeding Rabbits with Bran, Hay, and Oats will not only keep them sound, but the Land will keep ten times more Conies than the Pasture would do of it self.

We shall now give you all the Accounts of Profit or Gain in one total sum, and is as followeth.

An

An Account of the yearly Profit by keeping a thousand Doe Conies and a hundred Bucks on 10 Acres of Land inclosed by Water 18 foot wide.

	li.	s.	d.
Received for 30000 Rabbits at 6 pence the Rabbit	750	0	0
For soyl or dung made by the whole Stock of Conies	002	0	0
For 20000 Duck Eggs at 4 shillings the hundred	040	0	0
For the yearly profit by Carps	004	0	0
For Sheep Pasture in the Warren	003	0	0
The total sum of Profit amounts to	799	0	0

I should have first set down and given an account of the Charge or Expence by keeping the foresaid Conies, Ducks, and Fish: but because it is wisdom in Man to know the end of his Journey before he set forth; also a Merchant would not venture his Ship and Goods at Sea, did he not know the Markets would yield him a profitable return; neither would the Husbandman be at charges in plowing and sowing his Land, if he did not hope for a plentiful Harvest; and most men covet to know the profit and gain of their undertakings before they will be at charges or expence; therefore to please all men if possible, I have first set down the Profit, and shall now in the next place give you an account of the yearly Charges of keeping the Conies as aforesaid, and that is as followeth.

As for the Charges of making the Mote, building the Houses, making the Hutches, or buying the first Stock of Conies, and such like, they being all as one intire Stock, which may last many years without repair; we shall not therefore charge them to an account in this place.

The Inclosed Land for the Conie Warren being 10 Acres, we shall value at 20 shillings the Acre yearly Rent, which comes to 10 pound the year.

Two

Two Maids will sufficiently tend and keep all the Conies, as making clean the several rooms in the Hutches, and feeding the Conies twice every day, and will deserve for their yearly wages each Maid 50 shillings besides their Diets.

The Warrener or Man that buyes in the Provision, and ordereth the Does and Bucks at the several seasons for breeding, also to sell and dispose of the Rabbits, and such like employments, may deserve besides his Diet 10 pound yearly wages. Now these three Servants may be serviceable about other Employments some certain time every day: we shall reckon the Diet and Wages of these Servants to be worth 45 pound yearly.

In the next place we shall consider what Provision will be needfull for these Conies, as also the weekly Expences and total Summ.

The best food for them are Oats, Bran, Hay, and Water; but because Oats and Bran are costly feeding, we shall therefore add unto them Grains, especially in breeding time; for when the Does give suck they will require the moistest food, but not any kind of Grass or Herb, for green food will not only rot them, but also make them forsake their dry meat, which is most wholesom; and instead of Grains you may give them Water in a little earthen Pot made for the same use to stand in every Room one Pot, with fresh water every day.

Now whereas these tame Conies breed but 6 times or months in the year, those Months they do not breed there will not be so great a quantity of food spent as when they do, because the young Rabbits after they are two weeks old will feed with their Dams, and that charge or expence of food may continue a week or two as the Markets will take them off.

We shall compute the Expence of the whole Stock, old and young every week one with the other throughout the year, and that is 100 Bushels of Grains, 30 Bushels of Bran, 20 Bushels of Oats, and 15 Hundred of Hay: This is the weekly allowance which will sufficiently keep and maintain the whole Stock as aforesaid.

And

And that we may bring all the particular Charges to one total account, we shall reckon or value the Grains at 3 pence the Bushel, Wheat Bran at 12 pence heap and thrust or double Bushel, the Oats at 16 pence the Bushel, 15 Hundred of Hay at 2 shillings the Hundred: All these summs being added, the weekly Expence for Food arises to 5 pound 11 shillings 8 pence; and the yearly Charge according to the same rate comes to 289 pound 14 shillings 8 pence. Chalk mixed with the Conies meat will keep them sound; there may be spent in one year 3 Cartload of the same, and is valued at 20 shillings the 3 load.

We shall now add or bring all the several Sums into one total Sum for the whole year, not knowing of any more Charges considerable or worth the mentioning in this place.

An Account of the yearly Expence by keeping a thousand Does and a hundred Buck Conies on 10 Acres of Land inclosed.

	l.	s.	d.
Paid for the yearly Rent of 10 Acres of Land at 20 s. the Acre	0	10	0
For 3 Servants Wages and Diet	0	45	0
For a years Expence by Grains, Bran, Oats, and Hay	2	89	14
For 3 Cart load of Chalk	0	01	0
To total Charge amounts to	3	45	14

The Ballance of our account is as followeth.

The total Summ of Profit amounts to	799	00	0
The total Summ of Charges amounts to	345	14	8
Remaining in Cash so much gained	453	05	4

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There is no Creature in *England* or *Ireland* living or feeding on Grass more profitable than Sheep; for to my own knowledg there are several Gentlemen that have kept, some of them 5 thousand, others 10, 15, 18 thousand Sheep alive all at one time in several Flocks, and those Gentlemen have gained great Estates thereby.

Yet there is no Creature more subject to loss, for they are incident to very many Diseases, by reason of bad and unsound soyl, land, or grass which they feed on; also idle unskilful Shepherds, so that I have known lost in one years time 15 hundred, nay sometimes 2 or 3 thousand out of the several Stocks of Sheep, as aforesaid, which have dyed of the Rot, and many hundred more yearly lost by other Diseases: And because most Shepherds are very ignorant of the several Diseases, therefore come they short in the Cure. To prevent mistakes we shall here give a Catalogue of those that are most dangerous and mortal; First, there are 3 kinds of Rot in Sheep, the one is taken when they feed on Spear-wort, Penny-wort, Knot-grass, or any Weed that grows from Inundations of water. The second is a hungry Rot, and that Disease is most incident to Field Sheep or those kept on Commons. A third is the Pelt Rot, which cometh by great store of rain immediately after Sheep are new shorn. There is another cause of Rot, and that is when Sheep in their feeding lick up little white snails. Besides these several Rots, Sheep are incident to the Staggers and Study, also Worms in the Guts, loss of the Cudd, Loose teeth that they cannot feed, Cramp, Looseness, Pox, Water in the Belly, tough Fleam, or Stopping; Overflowing of the Gall, which causeth Choler, and produceth the Jaundice, and such like; Lung-sick, Maggots, Redwater, Fever, Scab or Itch, Wildfire, which is a very infectious sickness, and will endanger whole Flocks. I might here set down or prescribe several Antidotes against all the former Diseases, but it is not my Task at this time. Now as Sheep are very profitable Cattel, and yet incident to many Diseases, and therefore subject to loss; so are Conies, yet by the prudent care

care of the Shepherd and Warrener, all these losses in both may be prevented; for in Conies there are but 3 adherent Diseases, which are Fevers, Madness, and the Rot; but they have many Enemies, as Tumblers, Lurchers, Greyhounds, Mungrels, Foxes, Polecats, Stotes, Weasels, Wild-cats, House-cats, and such like; also other Vermin, as Hawks, Buzards, Ringtails, Kites, Oules, Ravens, Crows, and many more; yet a greater than any of these is Man with all his Engins, as Guns, Bows, Snares, Ferrets, Hayes, Pursnetts, and the like. Now considering all these, a Warrener may charge to his account of profit and loss at least the one third part of every years Breed of Rabbits; and if he save two parts of three it will sufficiently pay the Rent of the Land, and return good profit into his Purse.

We should here have set down the several Receipts to Cure and prevent the Diseases in Conies, with the manner and way of keeping and feeding them; but especially designing the Improvement of this little Plot by other ways as well as that, I proceed,

On the South-west side of the Dwelling-house, and flanking the South Point of the Kitchen Garden, and about the middle Distance between the said Point and North-east side of the South-west Grove, just opposite to the Warren, shall be made the quantity of 10 Acres of Land or 40 Perch square of ground into a Fish-pond; this Water shall be kept in the nature of a Decoy, but not absolutely so, because it is an improper place, being among Woods, or the Wood growing so near unto it; for the best decoy Ponds are in Champion Fenn Countries.

In the middle of this our Decoy Pond shall be made an Oval or round Island containing one Acre of Land, and in the middle of this Island shall be built a round house 30 foot over or 90 foot about: This House shall be one intire Room, 20 foot high, built with heart of Oak; the Roof of the said House would be covered with the best sort of Slat: The other part of the House being built thick with Timber, then the space between the said Timber shall be made up or inclosed with strong Wyer

in the manner of a Bird-cage; and the use of the said Cage or Aviary is to keep all kinds of singing and whistling Birds.

Through the middle of the Floor of the said House shall run a small stream of Water which may pass in and out through a leaden Pipe: This water is not only for the Birds to drink, but also to wash and bath themselves in. There must be made likewise in this Aviary several Tables and convenient places with troughs to put their several seeds and food in; also Perches or places to roost or perch on, and they must be under the roof of the said House.

In 4 equal parts round the out-side of the Aviary shall be built 4 Seats in the form of an Arbor or half Arbor; the length of the said Seats would be about 6 foot; both ends of two of the Seats must be planted with Holly or Holme Plants, and the other two Seats are to be planted with Ivy, and those Plants are to grow up and cover the top of the Seats, by closing together, and so become an Arbor.

Round the Island, and about 3 foot from the water side must be planted at every 9 foot distance of land, 4 Holly or Holme Plants, and they must be set 4 square, and 18 inches one from the other. These bushes must be kept as shrubs by often cutting of them, and not suffered to grow above 4 foot high; but the 4 Plants are to grow that they may joyn close together on the top, also round the sides to the bottom or ground as one Bush, leaving only one small hole that the Ducks may go in at to lay their Eggs. This performed the bushes will make a gallant show, and are of good use to save the Decoys Eggs from Crows, Magpies, and such like Vermin.

Round the outside of the Pond and Island would be planted with Reed, such as usually grow on the sides of great Rivers, or in the Fenn Countries.

The Stock of decoy Ducks constantly kept in this Pond shall be about 60 pair; the Eggs and Breed of them may be worth 20 pound yearly, besides that which may be gained by other advantages they bring in.

Moreover

Moreover this Pond shall be stored with 2000 young Fish or Fry of Carp, Bream, Tench and Pearch; but I shall advise to put in a greater number of Carps than of all the other 3 kinds: if 100 Eels be cast in, they will not much prejudice the other Fish: There may be likewise cast in good store of Gudgeon, Loch, Dace, and Roch, which are good prey and food for the greater sort of Fish, and will make good sport, and be a profitable Recreation for such as delight in Angling. And because we have not feeding for these Carps as for those about the Warren, therefore all the bottom and banks of the Pond would be paved with flat grass, which naturally grows under water; for it is a great feeder of fish. Now about five years after the Pond is stored, the Fish may be taken, and will yield to be sold, if not above 50 miles from London, 80 pound; also there may be left or reserved a sufficient Stock against the next Fishing season, which may be about 5 years after.

Next to be considered and presented to view is a Dove-house, which would be built in the middle of the Barnyard; this House is not to be stored or stocked with ordinary wild or house Pigeons, but with those called Carriers; for we shall have of our ordinary wild Pigeons breed in the Woods, as Ring-doves, Stock-doves, Turtle Doves, and such like; but those called Carriers, the original of them came first out of Asia, although many hundred, are now kept in and about London; and because they are known but to few people, we shall tell you why they are so called, and declare the use and profit of them.

In several Towns and Harbours bordering on the Seas, and now under the Command of the Turk; to omit particulars we shall mention one for all: In Aleppo several persons keep these Pigeons in Houses built for the same purpose, and do make the same profit of them as is made by Post Horses; of these Pigeons there is of several Colours, as white, black, and blew, as also all these colours mixed, as black and white, blew and white, motley, dunn, and kite-colour.

Such Ships as trade in those parts, when they set sail or go to sea,

sea, the Captain, Merchant, or any of the Company, may hire of these Pigeons one, two, or three, or as many as they may have occasion for, according to their Voyage; and in the Ship there is a Room built to keep them. Now in the Voyage at sea, if the Ship encounter an Enemy; or that by ill weather they are forced ashore on rock or sand, or spend a Mast, or have split a sail, or if any business be forgot that should or may be done, and such like, then they or either of them writing their will or mind in fine paper, provided for the same purpose, and making it up as a Letter, do tie it about the body of the Pigeon under the Wings, and turn her out of the Ship; now by nature these Birds being very strong of flight, immediately make homewards from whence they came; and he that keeps them, taking an account in his book what colour, and the number are delivered to every Ship, does often search his Dove-house, and the Letters he finds about any of them are speedily sent or delivered according to directions.

Now the reasons why we stock our Dove house with these kind of Pigeons, is, first because they have a greater and more plum round body than our English Dove-house Pigeons; Secondly, they are stronger and quicker of flight, therefore will get their food, if to be had in *England*; Thirdly, they are more shy and subtle, and will eschew and free themselves from Snares, Nets, and Guns.

But many men object against Pigeons and say they are great devourers of Corn: Our Answer is, that in *Bedfordshire, Cambridgeshire, Northamptonshire*, and many other Countries where is the greatest Flights of Pigeons; there they have the greatest Crops of Corn: Secondly Pigeons do not feed on Corn covered, except part of it be visible: And though it be the opinion of most Husbandmen for want of better Judgment, that Corn lying on the ground will take root, grow, and thrive, as that under ground; which if so, then why do most Corn Countries, excepting Clays, Marle, or other stiff grounds sow their seed under furrow, or before the Plow, covering the seed by the Plow, as aforesaid;

foresaid; it is not only to prevent Vermin from devouring and carrying the Corn away, which is very good husbandry; but also they have experience, that if the seed ly above ground, and not well covered, although it may grow to blade, stem, and ear, yet shall not kernel or produce seed; for in great drought the Sun will not only scorch the Seed, Stem, and all above ground, but also draw up the moistness of the earth deeper than such roots can extend themselves, because the seed lying above or very shallow under the earth, is subject to all weathers. Much rain will be hurtful by washing the fatness and good of the earth deeper into the ground than the roots will reach unto, and now by reason of the foresaid accidents the spirit of the seed is so much weakned that it cannot prosper as the other Seed.

The great enemies to new sown Corn are Field Rats and Mice, and Rooks, for they will not only devour and carry away all above ground in sight, but scrape and dig after that which is covered; and when the Corn appears in blade, then both Rooks, Stares, Larks, and such like, will follow the blade to the root, and so stock up and spoil many Acres; therefore when these Vermin are destroyed, we shall likewise destroy our Pigeons, if before that time the Judgment of their Enemies be not convinced: And whereas Rooks, Crows and Pigeons may do much hurt when Corn is ripe, at or before Harvest; yet the Charges of one Man with a Gun charged only with powder may keep a thousand Acres untill out of danger. I shall add one thing more in the behalf of Pigeons, they are not only a necessary wholesome food; but ready at all times to be served in at a Gentlemans Table: And the Dung that comes from them is a very rich Soil, which being sowed on Land before or immediately after the seed, will produce a greater quantity of Corn over and above what the Land would have brought forth without it, beside what may have been devoured by the said Pigeons; so that that Corn which lies loose on the ground as a prey unto all Fowl, I do not count wasted if devoured by Pigeons.

We have now disposed of 140 Acres of Land, there does remain 60 Acres: Out of the said remaining Land 40 Acres shall be made choice of for Pasture, which will make of Statute or Land measure, 40 acres a quarter 16 perch and 196 foot.

This Pasture Land shall be made into 4 Inclosures, each of them containing 10 Acres and the odd measure: In these Grounds shall be kept 20 of the largest and best sort of Northern Milch Cows, one of the least of which shall give 2 Gallons of Milk at one Meal, or 4 Gallons every day; and they shall be shifted or changed into fresh Pasture every week.

The Remainder of the 60 Acres, which is 20 Acres 18 perch and 48 foot, shall be made or inclosed into 2 severals, and they shall be plowed and sowed with Corn: Each of these Fields will contain about 10 Acres and the odd measure Statute measure: and because the Land is a strong rich earth, there shall be sowed only Wheat and Pease, except some change of other seed for convenience, which Corn may be continued or sowed 6 years together, and not let the Land rest, that is two years with Wheat, the third year with Pease, the fourth with Wheat again, the fifth with Pease, and the sixth with Wheat. And because the greatness or rankness of the Stubble will hinder the Plow the second seed season, you may burn it standing on the ground, or clear the Land of it otherwise. The seventh year being the year of Jubily, according to the Command of the great Husbandman, our Eternal God, the Land must rest; and in that time there may be a sufficient Stock of Soil or Dung provided to enrich the Land again: And the Land being sowed again the eighth year, may so continue from time to time many hundred years.

Now although our Rules and Directions are very sound and certain, yet we doubt not but to meet with many enemies, as some there are would quarrel with the Sun for his heat and brightness, others with the Moon for being dark and cold. I have not erected or dress'd out this little Theatre of Nature for Disputation, but for Speculation and Contemplation; and if

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for my sincere endeavours to satisfie curious expectation, you will but lend me your acceptance, I will take the confidence to lead you through this pleasant Land, Garden, or Paradise, and give you a view of every part thereof.

At the first Entrance on the South-east side, and opposite unto the Dwelling-house, you may behold a convenient Gate-house, wherein dwels the Woodward: passing through this Gate you may walk between 2 Rowes of Service-trees, through the first 10 Acre Close of Cow-pasture, to the Orchard or Cherry-garden Gate; from this last Gate you shall be directed by 2 Rowes of Mulberry-trees vnto the Garden Gate: On both sides joyning unto the said Gate is to be built a brick Wall 9 foot high, which wall shall extend to the breadth of the Cherry Orchard, and so reach to the Court-yard Wall, and inclose the Garden. The Cherry Orchard is 20 Perch square, but not any of the trees to grow nearer then 18 yards of the Mulberry-trees, that there may be full view of the Dwelling House.

The Apple-Orchard flanks the Cherry-Orchard and Flower-Garden on both sides, and reaches to the Court-Yard Wall: This ground is planted with the best sort of Fruit, as Apples and Pears, also Syder-Apples, as Red-streaks and others, and inclosed with a White-thorn Hedge: Round the said Fence on the out-side runs a small Brook or Water-stream 9 foot broad, which encompasses the whole scite of the House, and is stored with Trouts, Gudgeons, and others the best sort of small Fish.

On the 4 Corners of the Orchard are raised 4 Mounts, each of them 15 foot high, and the way which goes to the top is round the Mount ascending; the outside of the Walks is planted with several sorts of Plum-trees, which shall be kept by pruning to grow not above 6 foot high: The Ladies gathering of these Plums may ascend to the top of the Mounts with ease and pleasure, whereby they shall be received into green Arbors planted with White-thorn, which by often cutting or clipping growes so close and thick, that neither wind, sun, nor aire will

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be offensive to them: Round these Arbors in the inside are Oaken Seats, and Tables of Marble in the middle.

Entering the Garden of Flowers, which Garden also is 20 Perch square, you may behold on the North-east side a Vineyard or Plot of ground answering the length of that side of the Garden, planted with Vine Sets of the best sort of Grapes, that will thrive there; and that they may the better grow and ripen, not only the earth is made by soil very rich, but a Frame made of the heart of Oak Checker-work: the length of the said Frame is 20 perch, which is the length of the North-east side of the Garden, but in breadth not above 9 foot. This Frame is to stand on feet, the lower side, or the outmost legs to be not above 12 inches high from the ground, and the other or highest side about 8 foot: The outmost or shortest legs must stand 5 foot from the Wall, and the innermost or longest about one foot. The whole Frame must stand sloping, and the upper side lean on the Wall. Now the Vine Sets are planted all along against and before the lower part of the Frame, and do spread and grow equally all over the Frame and not farther.

On the South-west side of the Garden, and round the other Quarters, excepting where the Vines are planted, and about 2 foot distant from the Wall, is comely to behold several Trees growing with the best sorts of Wall-fruit, which by dressing or proyning are made to grow broad, and bear the same figure as if they were fastned to the wall; but to support them from being shaken by winds, they have Frames made round the body, and so reach to the boles or first armes of the Tree; and about the body and armes are made great wisps of Hay, and so that resting on the Frames on all sides, they are kept from any harm by winds, as we have said before in transplanting Trees for Timber. These Fruit-trees will receive the heat and reflection of the sun from the wall to ripen the fruit, better than if they were nailed thereunto; also such Trees will live ten times the age, and bear larger and better fruit than those planted close and fastned to the wall; for such Trees as are fastned to any wall are sub-

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ject to many annoyances, as bark-bound, bark-bruised, or peeled, Cankers, and many other evils: and besides these Diseases, there is but one side of the Tree hath the benefit of Air and Sun; therefore they cannot long live or thrive.

On the North-east and South-west corners or sides of the Garden, ranging even with the Dwelling-house, you may behold in each Place a handsome built House, one of them is the Master of the Gardens Study, and the other a private Retiring-place for his Lady.

Opposite, and not far from the 4 Corners of the Garden will appear 4 Oval Grass-Plots handsomely kept; in the middle of each Plot a Wainscote Seat 6 foot in length, covered over with 4 several kinds of Plants, as Ever-green and Privet, Holly, Ivy, and Cypress, growing on the backside, and by proyning brought into the form of an open Arbor, and each Arbor covered over with one kind of Plants.

Now between these comely green Plots there will appear to your view 4 several Knots, wherein grow all sorts of the best Flowers; and because there are as many sorts or figures of Knots as Gardners have Inventions, the Knots here made choice of, although old figures, yet such as are comely in this Garden, and they are thus placed; the Trefoul opposite to the Crossbow, and the Oval Knot to the Fret.

In the middle of the Garden is to be seen a comely Maze well framed, and planted with a Hedge of several sorts of the best kind of Berries; the said Hedge is not allowed to grow above 5 foot high; and in the middle of this Maze doth appear a Fountain built with Marble, whose Chrystal streams are very serviceable in several Rooms of the House, being conveyed in Pipes under ground: On the top of this Fountain you may behold an artificial Sun-Dyall made so plain, that the time or hour of day may be discerned by good eyes without entering into the Maze.

Round the Garden-wall and the Oval green Plots, the square Flower-Knots, before the Wall-fruit, and round without the

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Maze,

Maze, you may walk in very comely large Walks made of fine sifted Gravel and Sand well mixed; from thence we shall lead you through the Dwelling-house into a comely Court Yard, and through that into a Common Yard, being very large and spacious; in which Yard is built several usefull Houses with Barn and Stable: This Yard is so curiously paved with large pible stones, and kept so clean and neat, that neither straw, stick, nor loose stone shall be seen to lie therein. We shall not detain you longer here, but direct you into the Garden of Herbs and Roots, not only for Food but Physick.

This Plot of land lyeth behind the great Yard, and is in length from the Garden Gate to the farther end of the whole Plot 30 perch, and in breadth 20: The Fence is of VWhite-thorn, and the VWater running round, as was said before.

In the middle of this great Plot, which contains two Gardens, is a handsome Bowling-green 60 yards square, and at each corner of the said Green is a Seat made of Oak in the form of an open Arbor, and planted at the back on both sides with Fruit-trees, such as will best cover the said Seats as an Arbor: One Seat contains on each side 3 foot, so that the whole Seat is 6 foot, and every Arbor or Seat faces towards the middle of the Green.

About the middle of the South-east side of the Bowling-green, in the Kitchen Garden, but joyning to the outside of the Fence, or bounds of the said Green, is built a convenient House for the Gardener to dwell or Lodge in: the said House having necessary Rooms to lay or keep his Roots, Herbs and Seed, or such like.

On or at the North-west side of the Physick-garden, and near the Fence, is built a Bee-house to contain 200 Stals, Stools, or Hives of Bees. The manner and way of keeping these Creatures, and the profit arising from them is so well known, that we shall not need farther than to mention them. And in the same end or side is also built a convenient House to keep 10000 Silk-wormes; for we shall have sufficient for them from the Cabages and Mulberry-trees. At

At the Entrance into this Garden on both sides within the Gate grow two Lawrels, which being made to close at the top become an Arbor, having Seats made to sit on; from thence a large Walk of sifted gravel on both sides, planted with Medler-Trees, directs you to the Gardeners House, on each side of whose Door grows a Bay-tree, and if you will know the reason, because nether Witch nor Devil, Thunder nor Lightning hurt a man in the place where that Tree grows.

On both sides of the Gardens, and 6 foot distant from the Fence, you may behold a single Row of several sorts of Plum-trees made grow by cutting or proyning into several shapes or Figures, as a Hart running, Hounds hunting him; other trees of several shapes of Wild beasts. For I formerly declared, that if the work be timely begun as a Tree is young, you may bend; bow, or dress him to any shape; and yet these Plum-trees thus dressed will thrive and bear a sufficient quantity of Plums every fruitfull year; for all Trees do not bear alike every year.

After you are past the Lawrel-trees, on the right hand of the Walk will appear 4 large square Plots of land, they also lying 4 square opposite to each other: In these Plots are to grow Parsnips, Carrots, Turnips, and Muskmelons, in each Plot a several; also in the middle space between the 4 Plots a small Oval Grass-plot; and in the middle of the said Grass-plot shall grow a Tamarisk-tree, and at each corner of the Squares a Goose-berry Bush. On the left hand of the said Gravel Walk shall likewise be 4 square Plots of the same quantity of Land bearing the same figure, and over against those on the right side, wherein do grow Artichokes, Cabbages, Colliflowers, and Garden-Beans; also in the middle space between the 4 Plots a small oval Grass-plot; and in the middle of the said Grass-plot a Tamarisk-tree, and at each corner of the Squares a Currant-bush.

The two Gardens being divided by a comely Border of the best sort of Roses, as Red, Yellow, Damask, Velvet, double Province, and the sweet Musk-Rose; both sides of the Border

is powdered with Strawberries of all sorts, as red, white, green, &c. On the right hand of this second Garden, planted with Physical herbs, will appear to your view 4 large Oval Plots, containing the same quantity of Land as the Plots in the first or Kitchen Garden, and lying likewise in a square figure, also a small square Grass-plot in the middle space between the 4 Oval Plots, and a Tamarisk-tree in the middle of the said Grass-plot: within these Ovals do grow Saffron, Anniseed, Carroway, and Coriander-seed in each Plot a several; they being all very good flowers for Bees. Round each Oval Plot do grow 4 Barberry-bushes at an equal distance one from the other. On the left hand or side of this last Garden are to be likewise 4 Oval Plots of the same bigness, and just opposite to the last, lying also in a square figure, and a small square Grass-plot in the middle space between the 4 Oval Plots, with a Tamarisk-tree in the middle of the said small Grass-plot, and 4 Barberry-bushes growing equally round each Oval; and within these Oval Plots do grow Licorish, Asparagus, Tobacco, and French-Beans, in each Plot a several. From the middle of the North-west side of the Bowling-green to the farther end of the Physick-garden is a large Gravel Walk, where is growing on both sides a single Row of Quince-trees: At the 4 corners of the Kitchen Garden shall be growing 4 Fig-trees at each corner one; and at the 4 corners of the Physick-garden, at each corner a Bay-tree. Round both the Gardens and between all the square, and round the oval Plots is also a fair Gravel Walk.

In both these Gardens there are many Beds and Borders, wherein shall grow several Roots and Herbs, as well physical as for food; but to speak to every particular Plant would spend much time and paper; we shall only name them in an Alphabetical order, and they are as followeth.

Alexander

- | | | |
|-------------------|------------------------|------------------|
| Alexander | Cocks-head | Gromel |
| Angelica | Crowfoot | Winter-Green |
| Archangel | Columbines | Groundsel |
| Asarabacca | Coltsfoot | Hollyhock |
| Avens | Costmary | Harts-tongue |
| Adders-tongue | Comfry | Hawkweed |
| Agrimony | Sciatica Creffes | Henbane |
| Alehoof | Crowwort | Herb Robert |
| Buglofs | Cowslips | Herb Truelove |
| Burrage | Cleavers | Hyfop |
| Balm | Dill | Horehound |
| Bazil | Doves-foot | Horftail |
| Beets | Devils-bit | Houfleeks |
| Ladies Bed-straw | Dandelyon | Hounds-tongue |
| Wood-Betony | Daisies | St. Johns wort |
| Bifoyl | Dodder of time | Julyflowers |
| Bishops-weed | Dogs-grafs | Wall Julyflowers |
| Birdsfoot | Daffadowndillies | Kidneywort |
| Biftort | Darnel | Knapweed |
| One Blade | Down or Cotton-thistle | Knotgrafs |
| Blite | Ellycampane | Leeks |
| Briony | Endive | Lavender |
| Bugle | Dwarf Elder | White Lavender |
| Burnet | Eringo. | Lillies |
| Coucumbers | Eyebright | Ladies Mantle |
| Chives | Fennel | Lettice |
| Carduus | Sow-Fennel | Liverwort |
| Camomile | Figwort | Loose-strife |
| Clarie | Filipendula | Louage |
| Coast Roots | Flowrdeluce | Longwort |
| Callamint. | Flaxweed | Mallows |
| Campions | Flixweed | Marsh Mallows |
| Celandine | Fleawort | Madder |
| Centaury | Fluellin | Maidenhair |
| Winter Cherries | Fumitory | Sweet Marjerom |
| Chervil | Fox-gloves | Marigold |
| Sweet Cicel | Garlick | Masterwort |
| Cich Peas | Germander | Melilot |
| Cinkfoyle | Gout-wort | Dogs Mercury |
| Clowns Woundworth | Goldenrod | Mint |

Money

Money-wort	Radish	Sopewort
Moon-wort	Horfe Radish	Sorrel
Mother-wort	Ragwort	Wood-sorrel
Mous-ear	Rosemary	Sowthistles
Mugwort	Rattle-grass	Southernwood
Mullein	Restharrow	Spiguel
Mustard	Rocket	Spleenwort
Mithridate Mustard.	Winter Rocket	Sweet Sicily
Hedg Mustard	Rosa solis	Succory
Nepor Catmint	Rubarb	Scerots
Nightshade	Monks Rubarb	Time
Onions	Bastard Rubarb	Garden Tanfie
Oneblade	Rupture-wort	Wild Tanfie
Orpine	Garden Rue	Star Thistle
Penyreal	Meadow Rue	Melancholy Thistle
Pumpions	Solomons Seal	Our Ladies Thistle
Parfly	Sage	Thoroughwax
Pellitory of the wall	Wood Sage	Tormentil
Peony	Sanicle	Turnsole
Pepperwort	Sarasens confound	Tutfan or Parkleaves
Perwinckle	Sawce alone	Vervain
Pimpernel	Winter Savory	Garden Valerian
Ground Pine	Summer Savory	Violets
Plantain	Saxifrage white	Vipers Buglofs
Pollipoddy	Burnet Saxifrage	Wold or Dyers Weed
Poppy	Scabious 3 sorts	Woad or Dyers Stuff
Purflane	Scurvey-grass	Wallflowers
Primrose	Self-heal	Wormwood
Queen of the Meadow	Smallage	Yarrow

There are many Plants, Herbs, and Seed brought out of other Kingdoms, which are not here named, because it is well known to such as are studious in the Art Herbarry, that those Plants and Herbs that grow in several Kingdoms are most wholesome and Medicinal to such as live in those Kingdoms; therefore we have not any Plant or Herb in our Garden but such as naturally grow in *England*, as best fitting with our English constitution.

Now all these Plants will not grow and thrive alike in one kind of earth: as Parsnips, Carrots, and such like will require a light,

light, loose, or rich sandy earth; and Cabbage, Turnips, Beans, and such like, a rich clay or a moist rich earth. Again some Plants or Roots having long shanks, will require a deep crust of good earth, as Licorish, Parsnips, &c. Others a shallow crust of good earth, as Onions, Turnips, and all sorts of round or short rooted Plants; also some Plants best thrive in a very rich earth, and to have the benefit of the Sun the whole day; others in meaner or poorer ground, and in the shade; some in moist earth, others in dry; Therefore by the skill of the Gardner several kinds of earth are to be provided, or such a composition of earth as will serve for all kinds of Plants, and so comely and orderly placed in the Beds, Borders, and Squares, and so intermingled, that one looking thereon cannot but wonder to see what Nature, corrected by Art, can do: And that every Country Housewife may improve her own private Garden, I have here set down these few following Observations.

First in cold Countries or Earths, Plants or Seed are not to be set or sowed so soon as in hot, but always observing to set moist and sow dry: Secondly, the roots of Slips set must be twined if they will abide it. Thirdly, all Herbs for Flowers should once in 5 or 6 years be renewed. Fourthly, all Herbs in Drought should be often watered with Puddle water. Fifthly, seeding spoils most Roots by drawing the heart or sap from them. Sixthly, gather all sort of Herbs for use when they are fullest of sap, tender, and green, before they blow; but when they are blown, then the flowers are best and must be gathered in their prime: If you keep the herbs and flowers all Winter, then dry them a little in the Sun, and sew them up in brown paper, and hang them not far from the fire. Seventhly, thin setting and sowing, so the Roots stand not above one foot distance, is profitable; greater herbs would have more distance: Also set and sow herbs in their time of growth, except at Midsummer, and lay no dung to the roots of herbs, for dung not rotten or melted is too hot for trees. I shall also add for our good Housewives Observation a few more Rules of another nature.

A a

First,

First, Angelica and Alexander are renewed with their seed; whereof they bear plenty the second year and so dye.

Annis-seeds make their growth and bear seed the first year and dye.

Garlick, the heads parted into Cloves, and set the latter end of February.

Fetherfew is renewed by seed.

Bugloss and Burrage renew themselves by seed yearly.

Carduus renews its self by Seed, and so dyes.

Hyfop young Roots are good Sets, but Slips better.

Artichoaks are renewed by dividing the Roots into Sets in March every third or fourth year.

Ellycampany feeds yearly the Root may be divided and set.

Endive is renewed by seed, and may be removed as Cabbage.

Coriander renews it self by seed the first year and dyeth.

Cabbage seed the second year : sow them in October, remove them when the Plants are about 8 inches long, set deep and moist before the full of the Moon.

Carrets are sown after January till May; they seed the first year, the second year they dye.

Clary is sown; it feeds the second year and dyes.

Chibals are set every 3 or 4 years, having their Roots parted.

Fennel may be sown or set, by dividing the Roots, in the Spring or Fall; it feeds the second year.

Clove-July flowers may be renewed by seed or roots any time except Frost.

Lettice yeelds seed the first year and dyes : sow betime and remove them to make them cabbage.

Lavender would be removed about 6 years after planted by Slips twined.

Leeks seed the second year unrecovered, then dye.

Onions the seed is sown in February.

Marygolds commonly come of seed; the Plants removed when they are about 3 inches long will make them grow double.

Pennyroyal; divide the Roots, and then set them.

Parsnips;

Parsnips; sow the seed in February; in Drought tread the tops to make the roots bigger.

Parsly, sowed several times in the Spring.

Pumpions, set seed a finger deep late in March, when they are grown up water them often, and in frost cover them.

Rosemary; to set Slips presently after Lammas is the surest way; the seed sown in hot weather may prove well.

Raddish may be sown in the Spring and Summer; steep the seed in milk 24 hours, then set them.

Sage; set Slips in May; let it not seed it will last the longer.

Savory, feeds the first year and dyes.

Strawberries; set Roots in the Spring or at Michael tide.

Saffron; it flowreth at Michael tide and groweth all Winter; every third year the Roots would be removed at Midsummer, for when all other herbs grow most that dyeth.

Skerots; the Roots are first parted, and then set about Michael tide.

Sweet Sicil is renewed either by seed or the roots parted and set severally.

Time; both Seeds, Slips, and Roots are good if it seed not, it will last 3 or 4 years.

Turnips are sown in April, May, or June; in the second year they bear seed.

To speak to every Herb would make my work very tedious, let these suffice.

We shall now give an account of the Land plotted out and allowed for the Scite of the House and is as followeth. The Cherry and Flower Gardens are both of them 40 perch long and 20 perch broad, and contain 5 Acres: The Orchard which flanks, or is planted on both sides of the said Gardens, are each of them 40 perch long and 20 broad; they contain 10 Acres. The Phyfick and Kitchen Gardens are 28 perch long and 20 broad; they both contain 3 Acres; for the Yards and Ground the Houses are built on, is allowed 2 Acres; the Total of Acres, being the Scite of the House as aforesaid is 20 Acres.

Yet there is one Plant very useful and profitable not mentioned among all the Plants, and that is the Hop; we shall therefore make choice of 2 Acres of Land in a convenient place that may ly sheltered from the North, North by West, and North-east winds, and plant the same the manner and way as followeth.

The Hop will not thrive either in too rich a ground, nor yet in too poor, nor in too moist or very dry, but in a middle sort of earth; therefore if the ground be over moist, then the hills must be made bigger and higher than ordinary, about 2 foot high, and of compass answerable to the height, will be a good size for most grounds; neither must the hills be made piked or sharp on the top, nor yet too flat, and so retain or hold any rain or wet which shall fall upon it; but you shall keep a due middle proportion convenient for the Plants and Poles. Now these hills are not to be made intirely all of one Mould, but there may be mixed with the natural earth Sope-ashes, and the earth which lyeth under Dunghils, or very old rotten Dung. These three bodies being equally mixed, the hills are to be placed in an orderly manner, making Allies between them about 4 foot broad; and these hills must not stand all directy behind each other, but the first Row being made, the next must be placed over against the middle distance between the first Row of hills, and so the third over against the second, and the fourth over against the middle distance of the third Row, and so forward till both the Acres be planted, that the Sun may give comfort to every Plant; and the best time to begin this Work is about *October*. This being performed you shall then pare or hack up all the green swarth through all the alleys between the hills about 2 or 3 inches thick, and with the said swarth so pared up, cover all the hills almost to the top, turning the green swarth next unto the earth of the hills, so as it may rot; then when the Alleys are thus censed of the swarth, take good store of Fern, and lay the same of a good thickness quite through all the Alleys, and round the sides of the hills; and the said Fern having all the
Winter

Winter to rot, will not only be a comfort to the hills, and much preserve the Plants from many evils, but also kill both grass and weeds; and being shovelled up together with the earth in the Spring, will be a good Manure to replenish the hills, and make them prosper exceedingly, also will save much charges in providing other Manure.

Now the hills being thus prepared, in *October* next following you may open the hills in the tops, and set in every hill 4 Hop Plants, and they must be set deep in the earth and covered all over at least 3 inches thick; and if with the earth which covereth the Plants you mix Ox blood and lime, it will not only give great comfort and nourishment to the Plants, but defend and save the Roots from Worms, other Vermin and Weeds. In the following Spring about *April*, finding the small Cyons which will issue or grow from the roots of the Plants, you shall then set up the Poles, which would be long and streight, either of Ash, Chesnut, Withey, or Alder-wood; And in putting these Poles into the earth, there ought to be care taken that they do not bruise or hurt the Hop-roots. Secondly, the said Poles must be put a good depth in the earth that the wind do not blow them down. Thirdly your care must be to place the Poles round the hills at a good distance, that one Pole may not shadow the other, but so stand that every Plant may have benefit of the Sun. The number of Poles that every hill will take up or require must be answerable to the Cyons which grow or issue from the Plants, allowing to every Pole one or two Cyons; and if the Plants will thrive, then every hill will take up or require 4 Poles and not above. These Cyons when the hills are poled must be twined about the several Poles with the Sun, and loosely tyed to the said Poles; and if the Plants put forth more Cyons then the number allowed for each Pole, then the rest or overplus must be cut off close to the Stock of the Roots; and if any Cyons do grow afterwards, they must be pulled away, that they may not run up the Poles. Now although the Fern and Soap-Ashes formerly mentioned will by killing and destroying

All manner of Weeds, save much charges in weeding the Garden; yet if any Weeds do grow they must be carefully pulled up, especially from the Plants, or hoed, and with the earth laid up round the hills, and that the Sun may destroy the Weeds, and the earth be a comfort to the Stocks or Plants.

We shall now return again into the great Yard, and view the Malt-house, wherein is built an Artificial Kiln on which to dry the Hops, Ma't, or other Corn with any kind of Fuel or Firing, and give no evil taste or smel either to the Hops or Malt. Here you may also see many other necessary Houses, as to Brew, Bake, the Dairy-house, and several other usefull Houses for keeping Pheasants, Partridges, and other Fowl to be spent in the Family, or sold at Markets: but time will not admit of a longer stay in this place.

If you please to walk through the Court Yard, on the North east side 2 Rows of Chesnut and Walnut-trees equally mixed will direct you to the bounds of the Cony-Warren, where there will be a Draw-bridge let down by which you may pass over the water, and behold those profitable Creatures so little esteemed by most people. Round the Warren, and neer the Water are several small Hutches made of boards for the Spruce Ducks to lay their Eggs in.

Passing over the Mote again, and walking through the pleasant Cow-pasture on the North-east of the Warren, a Gate will be opened to receive you into the Grove, and being entered, a large Walk will lead you to a Fountain in the middle of the said Grove; From thence issue 4 streams of water. On both sides of this large Walk are several pleasant smaller Walks, but of a greater length, where you may chance to see many Pheasants running; and if it be the season of the year, you may delight your self with those several sorts of Nuts and Berries there growing.

Walking through the second Gate, scituate at the North-east end of the large middle Walk, you will enter into the great Wood of Timber-trees, where may be seen 2 Herd of Deer containing 20 Brace of Bucks and Does, 3 Brace of Roe Deer, and two

two Brace of Harts and Hinds; all the Male Dear are gelt except those that serve the Rut: And if you carefully look up into the Trees, you may chance to see several wild Peacocks and Turkies at perch, and on the ground a brace or two of Hares at squot: Also in this Wood is kept a lease of bastard Barbary breeding Mares and a brace of handfom Geldings for present use, and in the Stable a comely bastard Barbary Stone-horse to be a Stallion for the Mares; And if it be the season of the year, and day, you may see 50 good Swine feeding on the Mast that fall from the trees, there being a Swineherd tending on them.

On the South-west side of the Dwelling-House is also a Wood of Timber trees and a Grove inclosed, containing the same number of Plants and Trees, and the same quantity of Land planted as that on the North-east side. Between this South-west Grove and the Dwelling-house, just opposite to the Warren, is the great Fish-pond or Decoy: by Boat you may over into the Island, in the middle of which you may behold a stately Bird-cage or Aviary full of singing and whistling Birds: round this Cage at an equal distance one from the other, are 4 Seats covered over with several Greens: There having rested yourself, and afterwards walking round the Island, you may behold pleasant to your sight several Holley or Hombe Bushes kept very neat and handfom for the Decoys and other wild Ducks to lay their Eggs in; as those in the Warren made of wood for the tame Ducks.

And taking Boat again you may walk into the Arable Land, and behold Gods blessing by the great increase of Corn; and returning through the Pasture Fields into the Dwelling-House, you may rest and be refreshed with such food as this pleasant Land doth afford, and being satisfied, pause with your self and consider; although this be not the Paradise we read of, yet it does much resemble the same; for what was Paradise but a Garden and Orchard of Trees and Herbs full of pleasure, and nothing there but delights; so is there here; for first here is the Nightingale, the pretty Robin-red-breast, and the little Wren, with

with all the musical Birds that both whistle and sing, with a pleasant Consort of Wind musick to usher in the Spring; and refreshing and easing those cares of which we by our offence are all made Heirs.

In the Summer to furnish your Table a fat Buck will be in season, also young Peacocks, Turkies, Pheasants, Partridge, and many other Fowl which are at your command, with variety of Fish and other Flesh, as Hares, Rabbits, and such like: your Orchards and Gardens will afford you several sorts of Fruit and pleasant Flowers both for colours and scent; and in the Groves and Woods most stately Trees and pleasant Walks: What shall I say, a thousand pleasant Delights are attendant in this Pleasant Land: And what is there of all these few that I have reckoned which does not please the eye, the ear, the smell, the taste, yea the other sense may also take great pleasure in handling such rare Fruit and Flowers as are presented. In the Winter there will come in a new supply to furnish your Delights at Table, and that is Felfares, Black-birds, Thrushes, Quail, Rayl, Woodcocks, Snipes, Wildgeese, Duck and Mallard, Widgeon, and Teal, with many more: And the remainder of the Summer Stock now in season, as Turkies, Pheasant, Partridge, Hares, Conies, and such like; and a hot Pasty made of the flesh of a Barren Doe will not be out of season, neither a fat Pig and Gammon of Bacon. The Bees have laboured all the Summer to provide Hony and Wax for your Winter occasions; and the Dairy-Maids have not been idle, but provided Butter and Cheese to serve your Family all Winter and Spring, besides the Monies made at Markets. The Kitchen Garden will also furnish your Table with several sorts of Roots and Herbs, and the Physick Garden with Roots, Herbs, and Seed to preserve your health. Now the pretty Silk-worms are hard at labour, spinning Silk to cloath you; and if the Gardener be an Artist, he hath provided from the Grape both Sack and Claret to chear your spirits: And in the Bowling-green you may by Exercise add unto all these pleasures by refreshing your senses keep your body

body in health. But to sum up all, if you did know the yearly profit that does arise out of this pleasant land, you would find it a sufficient overweight to all your pleasures.

I did intend here to set down the particular and total Charge thus to plant 200 Acres of Land, with the yearly profit that may arise from the same, as I have performed in planting a thousand Acres with Timber-trees and Underwoods: But this already swelling the bulk of my Book beyond my intentions, promise the next opportunity, when I shall have an occasion to speak of something concerning the whole Body of Husbandry, both to do that, and also to polish these rough-hewed lines, laying down the best way of improving all kind of Earths simple and compound, rich and barren. We shall now conclude this Treatise with giving you the Vertues and Use of all Plants growing in this our Paradise: And I shall begin with the first planted, and so in order proceed.

The Hawthorn.

THis Plant being well planted, and liking the ground, makes the best Fence or Hedge that can be made by any Plant: The Seed or Berries are wholsom Winter food for the Deer and spare Swine, also good food for Blackbirds, Felfares, Thrushes and such like.

The Uses Physical.

The seed in the berries beaten to powder, and drunk in Wine, is very good against the Stone and Dropfie; the Distilled water of the Flowers stayeth the Lask, and if Clothes be wet in the Water will wonderfully draw out any thorn or splinters that abide in the flesh, if applyed to the place grieved.

The Blackthorn.

Sloes are very good Winter food for spare Swine, also Deer will feed on them.

The Uses Physical.

All the parts of the Sloe-bush are binding, cooling, and drying; and all effectual to stay bleeding at the Nose and Mouth, or any other place: the Decoction of the Berries either fresh or dried, or the Conserve, which is most familiarly taken, is very good to stay the Lask of the belly or stomach, or the Bloody-flux, and helpeth to ease the pains in the Sides, Bowels, and Guts: but the distilled water of the Flowers, first steeped in Sack for a night and drawn therefrom by the heat of a *Balneum, Anglice* a Bath, is a most certain Remedy tried and approved to ease all manner of gnawings in the Stomach, Sides, and Bowels, or any griping pains in any of them: To drink a small quantity when the extremity of pain is upon them, the simple distilled water of the Flowers or green Berries are good to wash and gargle the mouth and throat, wherein are swellings, sores, or kernels; and to stay the defluxions of Rhume to the eyes or other parts, as also to cool the heat and inflamations in them, and to ease the hot pains of the head to bathe the forehead and temples therewith.

The Oak.

THe Timber of this Tree is the Walls and Bulwark of *England*, being converted to the use of building Ships; also it is found and long-lasting Timber for building Houses, and for many other uses: The seed called Acorns are very good food for the Deer, Swine, and Poultry.

The Uses Physical.

The Acorn-cups, and the Bark and Leaves do bind and dry very much, the Decoction of the inner bark and powder of the Cups stay vomiting or flux of blood in Man or Woman, and the involuntary flux of natural seed: The Acorns in powder taken in Wine provoke Urin, and resist the poyson of venemous Creatures: The distilled Water, or Decoction of the leaves is a special Remedy for the Whites in Women: The Oken Buds are good to be used against pestilential and hot burning Fevers;

it

it cooleth the heat of the liver, and breaketh the stone: The Decoction of Acorns, and the Bark made in Milk and taken resisteth the force of poysonous Herbs and Medicines.

The Beech.

THe Timber of this Tree is used about Keels of Ships, also Quarters for building houses, Fellows and Spokes for Cart-wheels, and all sort of Joynery ware; also many Implements of Husbandry and firing. The seed called Beech-mast is very good feeding for Swine to make them Porkers, and for Bacon; also good food for the Deer, Wild Peacocks, Turkies, Ducks and other Fowl.

The Uses Physical.

The Water found in the hollow places of decaying Beeches will cure both Man and Beast of any Scurff, Scab, or Running Teters, if washed therewith; the Leaves of the Beech are cooling and binding, and therefore good to be laid to hot swellings to discuss them: you may boyl the Leaves into a Poultis, or make an Ointment of them when time of year serves.

The Chesnut-tree.

THis Timber is very serviceable for building, it being of very long lasting, also very good for Hoops and Hop-poles, Turnery ware and Joyners. These Nuts are vendible at Markets, also special food to fat Hogs, and for feeding of Deer, Peacocks, Turkies, and other Fowl; and may be used in the Family being well boyled or roasted in the fire.

The Walnut-tree.

THe Timber is very usefull for Joyners and Turners, &c. These Nuts are vendible in Markets, and will serve to crack in the house, being distributed among the Servants, the overplus may be given to the Swine, for they will make very good Bacon.

The Uses Physical.

The Bark and Leaves of the Tree being taken young do bind and dry, and taken with sweet wine they move the belly downwards; but being old they grieve the stomach in hot Bodies, cause choller and head-ach. The Kernels being taken with Juniper Berries, Rue, Figs, and a little Salt in a Morning fasting is an Antidote against any poison or infection; but when the Kernels grow old they are more oily, and are not fit to be eaten, but are then used to heal wounds of the sinews, Gangrenes, and Carbuncles: the said Kernels being burned are very astringent, and being taken in Red-wine will stay the Hasks and Womens Courses; and being mixed with Oyl and Wine, the head being annointed therewith will stay the falling of the hair. The Kernels being beaten with Rue and VVine helpeth the Quinsie: the Oyl that is pressed out of the Kernels is very profitable taken inward like Oyl of Almonds: To help the Chollick and expel VVind an ounce or two thereof may be taken at a time. The distilled Water of the green husk before they be half ripe, and drunk an ounce or two at a time, is of excellent use to cool the heat of Agues, also to resist the Infection of the Plague, and if some of the said Water be applyed to the Sores, it will work more effectually. The Distilled Water of the green husk being ripe, and when they are shelled from the Nuts and drunk with a little Vinegar, is very good for those that are infected with the Plague, so as before the taking thereof a vein be opened: the said Water is also very good against the Quinsie, being gargled and bathed therewith, and helpeth the deafness and pains in the ears. The Distilled Water of young green leaves in the end of *May* is a singular Cure for foul running Vlcers and Sores, being bathed therewith. The young green Nuts taken before they be half ripe, and preserved with sugar, are very good for those that have weak stomachs or Defluxions thereon. The next that follows are the Plants planted in the Groves.

The

The Ash.

These Plants being young are very useful for making Hoops and Hop-poles, and when they are grown to Timber, they will serve for several sorts of Coopers Ware, and other Necessaries and Firing.

The Uses Physical.

The Distilled Water of the young tender tops and the leaves of the Ash being taken a small quantity every morning, is a singular Medicine for those that are subject to the Dropsie, or to abate the greatness of those that are too gross or fat: The ashes of the Bark made into Lye will cure those heads that are leproous, scabby, or scald, if bathed therewith. The decoction of the leaves in White-wine cureth the Jaundice, and helpeth to break the Stone and expel it: The Kernel within the husks, commonly called Ashen-keys prevaieth against stiches and pains in the Sides, proceeding of Wind, and avoideth away the Stone by provoking urin.

The Withey.

These Plants are very useful for making Hoops and Hop-poles when they are young, and when they are grown great, they will serve for several Implements of Husbandry, also Firing.

The Uses Physical.

The Decoction of the leaves, bark, and seed of the Withey being drunk in Wine helpeth to stay thin, hot, sharp, salt distillations from the head upon the Lungs causing a Consumption: The Leaves bruised with some Pepper and drunk in Wine much helpeth the Wind-Collick: The Water gathered from the Withey when it flowreth, by slitting the Bark, and setting a Vessel to receive it, is very good for dimness of sight, taking away the films that grow over the eyes; it also stays Rhumes that fall into them, and clear the face and skin from spots and discolourings: The Flowers and Bark being boyled in White-

wine,

wine, and drunk a good quantity; for you cannot well drink too much; it being a very cool tree, is a Medicine that hath an admirable faculty in drying up humors: The burnt ashes of the Bark being mixed with Vinegar taketh away Warts, Corns, and superfluous flesh being applyed to the place.

The Hazel Nut and Filbud-trees.

THese Nut Plants at 8 years growth will make very good smart hoops; also there will be besides the hoops many Rods very useful to make hurdles for Sheep-pens, breading walls, and such like. The Nuts and Filbuds are good Marketable Ware, and these Nuts mixed with the Walnuts and Chestnuts will feed Hogs wonderfully, and make better Bacon than that called Westphalia.

The Uses Physical.

The dried husks and shels of the Hazel Nut to the weight of 2 drachmes taken in Red-wine stayeth Lasks and womens Courses: The Milk drawn from the kernels, or the parched kernels made into an Electuary with Mead or Honied water is very good to help an old Cough: The Kernels being parched and a little Pepper put to them, and drunk, digest the distillations of the Rheume from the head: therefore the opinion of those that say that Nuts cause shortness of breath, is most false; for how can that which strengthens the Lungs cause shortness of breath.

The Barberry-bush.

THese Berries are vendible at Markets, also the Syrops, Conserve, and Preserves of the said Berries are of great use in a Family, therefore they ought to be ready in the house upon all occasions.

The Uses Physical.

The Fruit and Rind of the Shrub, with the Flowers of Broom and Heath and Furs cleanse the body of Choller; the Berries get a man

a man a good stomach to his victuals by strengthening the attractive faculty: the inner Rind of the Barberry-tree boyled in White-wine, and a quarter of a pint drunk each morning, doth cleanse the body of Chollerick humors, and free it from such Diseases as choller causeth; such are Scabs, Itches, Tetter, Ring-worms, Yellow-Jaundice, Boils, &c. It is excellent for hot Agues, Burnings, Scaldings, heat of the Blood, heat of the Liver, Bloodiflux; the Berries are as good as the Bark and more pleasing; they may be kept all the year being made into Conserve, Preserves, &c.

The Blackberry Bush.

THese Berries are good for young Turkies, Peacocks, and many other Poultry.

The Uses Physical.

The Berries or the Flowers are a powerful Remedy against the poyson of the most venomous Serpents, as well drunk as outwardly applyed helpeth the Sores of the fundament and the Piles; but the flower and fruit unripe are very-binding, and so profitable for the Bloody-flux or Lask, and are a fit Remedy for spitting of blood: the distilled water of the branches, leaves, and flowers, or of the fruit is very pleasant in taste, and very effectual in Fevers and hot distempers of the Body, Head, Eyes, and other parts; also do cure Ulcers, Sores, Wounds, Bloody-flux, Quinsie: Either the Decoction or Powder of the Root being taken is good to break or drive forth Gravel and the Stone in the Reins and Kidneys, the Leaves and Brambles as well green as dry are excellent good Lotions for Sores in the Mouth or Secret parts: the Juice of the Berries mixed with the Juice of Mulberries do bind more effectually, and help fretting and eating Sores and Ulcers wheresoever: the Powder of the Leaves strewed on cankrous and running Ulcers doth wonderfully help to heal them: the Leaves boiled in Lye, and the head washed therewith healeth the Itch and running sores thereof, and maketh the hair black.

The

The Raspberry-Bush, Vertues and use.

THese Berries do make wholesome VVine, called Raspberry VVine. The Conserves of Raspberries are very good against many distempers of the Body; therefore useful to be kept in house all the year: the Berries are very pleasant to eat with Cream or VVine: the Syrop of the Berries is cooling and good for a sore mouth and throat, and other diseases that come of heat; also they are vendible at Markets, and good food for the young Peacocks, Turkeys, and other Poultry.

The Gooseberry-Bush, Vertues and Use.

Besides the ordinary eating of them they are of good use preserved, also baked in Pies or Tarts; the overplus may be sold or given to the Swine and Poultry.

The Currant-Bush, Vertues and Use.

Besides the ordinary spending of this fruit, there are Syrrups Conserves and Preserves made of them very usefull in a Family; what is not spent in the House or sold, the little Birds will feed on, and in their season you may feed on them, so that it is but converting Currants into flesh, and you may make a sufficient Improvement of them.

Straberries.

THis is a cool Berry, and very wholesome to eat in wine: what is not spent in the Family or sold in Markets the Birds will be glad of.

The Uses Physical.

The Distilled water of the Berries is a soveraign Remedy and Cordial in the panting and beating of the heart, and is good for the yellow Jaundice: The Juice or VVater is singular good for both

hot inflamed eyes if dropped into them: The Leaves and Roots boyled in Wine and Water and drunk, do cool the Liver and Blood, and assuage all Inflammations in the Reins and Bladder, allayeth the heat and sharpness of the Urin, stayeth the Bloody-flux and Womens Courses, and helpeth the swelling of the Spleen. The Berries when they are ripe are cold and moist, therefore excellent to cool the Liver, the Blood, and Spleen, or an hot chollerick Stomach; also to refresh and comfort the fainting spirits, and quench thirst; they are good also for other Inflammations: yet it is not amiss to refrain them in a Fever, lest by their putrefying the Stomach they encrease the Fits. The Juice or Water is of excellent use for all Puffes, Wheals, and other breaking forth of hot and sharp humors in the face and hands, or other parts of the Body, to bath them therewith: Lotions and Gargles for sore Mouths or Vlcers therein, or in the Privy parts or elsewhere, are made with Roots and Leaves.

We shall here add a Receipt or Medicine for Sore-eyes.

Take so many Strawberries as you shall think fitting, and put them into a Distillatory or body of Glasse fit for them, which being well closed, set it in a Bed of horse-dung for twelve or fourteen dayes, and afterwards distill it carefully and keep it for your use. We shall now proceed to the Orchards and Gardens.

The Service-tree.

THese Berries when they are ripe may be spent in the House, and some of them sold, and what is left Birds and Poultry will help you away with.

Uses Physical.

Services when they are mellow are fit to be taken to stay Fluxes, Scowring, and Casting; but if they be dried before they be mellow, and kept all the year, they may be used in Decoctions for the said purpose either to drink or to bath the parts requiring it; and is profitable used in that manner to stay the bleeding of wounds, and at the Mouth and Nose to be applyed to the forehead or nape of the Neck.

The Mulberry-tree.

THe Leaves of this Tree are the chiefest food for the Silk-worms, and about that time the Leaves grow old and begin to fall, then these Worms begin to spin, and will require no more food, and about the time the sap puts forth leaves again, which will be about the next Spring following, the said old Worms, having laid many Eggs, do die, and the said Eggs produce young Worms to feed on the new or young leaves. The Syrup or Conserves of the Berries are very useful in a Family, therefore are to be kept in house all the year. There is Wine also made of the Berries which will cheer and comfort the spirits.

The Uses Physical.

The Berries being ripe and eaten open the Belly, and the unripe bind; being dried they are good to stay Fluxes: The juice or the syrup made of the juice of the ripe Berries helpeth all Inflammations and Sores in the Mouth, Throat and Pallat of the Mouth when it is fallen down: The leaves beaten with vinegar is good to lay on any place that is burnt with fire: A Decoction made of the bark and leaves is good to wash the mouth and teeth when they ake; if the root be a little slit or cut, and a small hole made in the ground next thereunto, in the Harvest time it will give out a certain juice, which being hardened, the next day is of good use to help the Tooth-ach, to dissolve Knots, and purge the Belly: This Berry will also sell at Markets, the overplus will feed the Swine and Poultry.

The Cherry-tree.

Cherries will vent at most Markets, and arise to a considerable profit, if you can keep Crows and other Birds from eating them, there being many thousand Acres of Land in England planted for the same purpose. Cherry Tarts may become a Gentle-

a Gentlemans Table; dried Cherries also preserved are very wholesome, and usefull to be kept all the year in a Family: the ordinary way of eating them I need not tell you, but the best way is from the trees.

The Uses Physical.

Cherries as they are of different tastes, so they are of divers qualities; the tart and sowre are pleasing to a hot stomach, procuring appetite to meat, and help to cut tough flegme and gross humors; but when these are dried they are more binding the belly than when they are fresh, being cooling in hot Diseases, and welcom to the stomach, and provoke Urin: The sweet Cherries pass through the stomach and belly more speedily, but are of little nourishment: The black Cherries bruised with the Stones and distilled, the water thereof is much used to break the Stone, expel Gravel, and break the Wind: The Gum of the Cherry-tree dissolved in Wine is good for a Cold, Cough, and Hoarseness of the throat, mendeth the Colour in the face, sharpeneth the Eye-sight, provoketh Appetite, and helpeth to break and expel the Stone. The Winter-Cherry is of great use in Physick: the distilled Water of the Fruit or the Leaves together with them or the Berries green or dry, distilled with a little Milk, and drunk morning and evening with a little Sugar, which by drawing down the Urin, provoke it to be avoided plentifully when it is stopped or grown hot, sharp, and painfull in the passage; it is good also to expel the Stone and Gravel out of the Reins, Kidnies and Bladder, helping to dissolve the Stone, and avoiding it by Greet or Gravel sent forth into the Urin; It also helpeth much to cleanse inward Imposthumes or Ulcers in the Reins or Bladder, or in those that void a bloody or foul Urin. I shall here add another Receipt or Medicin helpful for the Urin and Stone.

A Receipt for the Urin and Stone.

Take 3 or 4 good handful of Berries or Winter-Cherries, either green and fresh or dried, and having bruised them, put them into so many Gallons of Beer or Ale when it is new tunned up,

this Drink taken daily doth ease the pains, and expel Urin and the Stone, and to cause the Stone not to ingender.

The Apple-tree.

There is unspeakable Pleasure and infinite Commodity in an Orchard, beside the use of the Fruit in House-keeping, there is much profit made by Cyder and Perry; also Apples and Pears are vendible in all Markets: The Fruit or Apples of an Acre of Land may be worth 40 pound one years Crop or Gathering; and the better to inform your judgment, we shall suppose or allow but 40 Trees to be planted in one Acre of Land, and about 50 or 60 years after the first planting, if the Plants like the ground, and by dressing and prouning they well thrive, each tree one with the other may bear or yield 10 bushel of Apples; for there are Apple-trees that have yielded 20 bushels each tree at one season or time of gathering; then the Profit of 40 trees or one Acre of Land thus planted amounts by the year to 40 pound.

The Uses Physical.

Apples have sundry tastes, and thereby they may be distinguished; in the general they are cold and windy: the best sorts before they be thoroughly ripe are to be avoided; then to be roasted or scalded is the best way to take them, and a little Spice or Carrowey seed cast upon them and taken after meat do strengthen both Stomach and Bowels; especially in those that loath or hardly digest their meat: Those that are sour and harsh used in that manner are fittest: Sweet Apples loosen the Belly and drive forth wormes; Sour Apples stop the Belly and provoke Urin: Pippin and Pearmain help to dissolve Melancholly humours, and to procure Mirth, and therefore fittest for *Confectio Alkermes & Syrupus de Pomis*; all Apples loosen the Belly and pleasure the Stomach by their coolness: the Distilled water of good and sound Apples is of special good use to procure Mirth and expel Melancholly: A rotten Apple applied to eyes blood-

blood-shotten or enflamed with heat, or that are black and blue about them by any stroke or fall, and bound to all day and night helpeth them quickly. The Juice of Crabs, either Verjuice or Cyder is of singular good use in the heat and fainting of the stomach, and against Casting, to make a Posset with, or to take some of it alone by it self: The Juice of Crabs or Cyder applied with wet cloaths therein to scabbed or burnt places cooleth, healeth, and draweth forth the fire: The Ointment called Pomatum, if sweet and well made, helpeth the Chops in the lips or hands, and maketh smooth and supple the rough skin of the hands or face parched with wind or other accidents.

The Pear-tree.

Pears are very usefull in a Family either baked, roasted or dried; also they will sell at Market better than any other Fruit; and if the Gardner have the right art in making Perry, it will turn to a considerable profit.

Uses Physical.

Pears boyled with a little Honey helpeth much the oppressed stomach, as all sorts of them do some more some less: All the sweet or luscious sorts, whether manured or wild, do help to move the Belly downward; those that are harsh and sour do on the contrary bind the Belly as much; those that are moist do in some sort cool, but the harsh or wild sorts much more, and are very good in repelling Medicines, as if the wild sorts be boyled with Mushrooms it maketh them the less dangerous: the harsher sort of Pears do most cool and bind, serving well to be bound to green Wounds to cool and stay the blood, and heal up the Wound without further trouble or inflammation.

The Vine.

Grapes are vendible in Markets, and usefull in Housekeeping the Profit being well known to those that make Wines of them.

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Uses Physical.

The droppings of the Vine when it is cut in the Spring being boyled into a Syrup with Sugar and taken inwardly, is excellent to stay Womens Longings after every thing they see, which is a Disease many Women with child are subject to; the Decoction of Vine leaves in White-wine do the like: the Ashes of the burnt branches will make teeth as white as snow, if you do but every morning rub them with it: the leaves being boyled make a good Lotion for sore Mouthes, and being boyled with Barly Meal into a Poultis, it cools inflammations of wounds.

The Plum-tree.

AS there is great diversity of the kinds, so is there in the operation of Plums, and are like Women, some better some worse: the moist and waterish do soonest corrupt in the stomach, but the firm do nourish more and offend less. Apricocks, Peaches and such like Plums may well become a Gentlemans Table, also these and several other sorts being preserved and Syrup made of them, are very useful in a Family. All Plums are vendible in Markets.

Uses Physical.

Plumtree Leaves boyled in Wine is good to wash and gargle the mouth and throat, to dry the flux of Rhume coming to the Pallat, Gums or Almonds of the ears: Plums that are sweet moisten the stomach, make the Belly soluble; those that are sour quench thirst more, and bind the Belly: the Gum or Leaves boyled in Vinegar and applyed killeth Tettors and Ringworms: the dried Fruit sold by the Grocers under the name of Damask Prunes, do somewhat loosen the Belly, and being stewed are often used both in health and sickness, to relish the mouth and stomach, to procure appetite and a little to open the Body, allay Choller, and cool the Stomach: The flowers of the Peach-tree steeped all night in a little Wine, standing warm, strained forth in the morning, and drunk fasting, doth greatly open the Belly,

Belly, and move it downwards: A Syrup made of them, as the Syrup of Roses is made, worketh more forcibly than that of Roses, for it provoketh Vomiting, and spendeth Waterish and Hydroptick Humors by the continuance thereof: The Flowers made into a Conserve worketh the same effect; for Children and young People nothing is better to purge Choller and the Jaundice than the leaves and flowers of this Tree, being made into a Syrup or Conserve; two spoonfuls may be given at a time: the liquor that droppeth from the tree, being wounded, is given in the Decoction of Coltsfoot to those that are troubled with the Cough or shortness of breath, by adding thereto some sweet Wine, and putting some Saffron also therein, it helpeth all defects of the Lungs: Two drachms thereof given in the Juice of Lemmons or of Radish is good for those that are troubled with the Stone.

An Excellent Receipt.

Take 50 Kernels of Peach Stones, and one hundred Kernels of Cherry Stones, a handful of Elder Flowers fresh and dried, and three pints of Muscadine; set them in a closed pot into a Bed of Horse-dung fourteen dayes, which after distill in a Glass with a gentle fire, and keep it for your use; you may drink upon occasion 3 or 4 ounces at a time.

This Drink does wonderfully ease the pains and wringings of the Belly through wind or sharp humors. The Milk or Cream of these Kernels being drawn forth with some Vervain water, and applyed to the forehead and temples doth much help to procure rest and sleep to sick persons wanting it: the Kernels of the Peach being bruised and boyled in Vinegar until they become thick, and applyed to the head, it will procure the hair to grow again upon bald places, or where it is too thin.

The Tamarisk Tree.

THIS Tree is not only a comely Ornament in a Garden, but Cans and Cups made of the Timber of the Tree are very wholesome to drink out of.

Uses Physical.

The Bark boyled in Wine or Vinegar and drunk, and applyed outwardly, is very powerful against the hardness of the spleen: The Leaves boyled in Wine and drunk is good to stay the bleeding of the Hemorrhoidal Veins, the spitting Blood, the Jaundice, the Collick, and the too much abounding of Womens Courses: The Bark and Leaves boyled in Wine, the mouth and teeth washed therewith, helpeth the Tooth-ach, and dropped into the ears easeth the pains: The Wood is very effectual to consume the spleen, and therefore to drink out of Cups and Cans made thereof is good for splenerick Persons, and is available to help the Dropfie arising from the hardness and obstruction of the Spleen, as also for the Melancholy and the black Jaundice that ariseth thereof: The Ashes of the Wood doth quickly help the blisters raised by Burnings or Scaldings by fire or water.

The Figg-tree.

I Cannot say much to the use of our English Figs, when they are ripe they are much eaten, and there will be no loss of them, because Poultry and Swine will thrive by feeding on them.

Uses Physical.

Figgs taken when they are young and green are very wholesome to eat either preserved or candied: the Confectioners know better how to order them than I can inform. The dried Figs sold at the Grocers are very Medicinal besides the common eating of them.

An Antidote against Poyson or Infection.

Take two Figs, a couple of Walnuts, 20 leaves of Rue, 20 Juniper Berries, and 2 or 3 Corns of Salt: beat all these together into a Masse; take about the quantity of a Hazel Nut every Morning fasting, and it will to admiration preserve your Body in health.

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The Medlar-tree.

THE Fruit of this Tree is useful in House, and vendible at Markets.

The Uses Physical.

The Medlar Stones made into Powder, and drunk in Wine wherein some Parsly roots have lien infused all night, or a little boyled, do break the Stone in the Kidneys, helping to expel it: The Fruit eaten by Women with child stayeth their longings after unusual meats, and is very effectual for them that are apt to miscarry to help that Malady, and make them joyful Mothers: The Decoction of them is good to gargle and wash the mouth, throat, and teeth when there is any defluxion of blood to stay it, or of humors which causeth pains and swellings: The dried Leaves in Powder strewed on fresh bleeding wounds restraineth the blood, and healeth up the wounds quickly: If a Plaster be made with dried Medlars beaten and mixed with the Juice of Red-Roses, whereunto a few Cloves and Nutmeg may be added, and a little red Corral also, and applyed to the stomach that is given to casting or loathing of meat, it effectually helpeth.

The Quince-tree.

THIS Fruit is known by good experience to be very profitable in Housekeeping, being Pickled, Preserved, or made into Marmelade or Conserves.

The Uses Physical.

The Muccilage taken from the Seeds of Quinces boyled a little in water, is very good to cool the heat and heal the sore Breasts of Women: The same with a little Sugar is good to lenifie the harshness and hoarsness of the Throat, and roughness of the Tongue: Quinces when they are green help all sorts of Fluxes in Man or Woman, and Chollerick Lasks, Castings, &c. The Crude Juice of Quinces is held a Preservative against

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the force of deadly Poison : The Oile of Quinces or other Medicines that may be made thereof are very available to cool any hot Fluxes, if the Belly or other parts be annointed therewith; it likewise strengthneth the Stomach and Belly, and the Sinews that are loosned by sharp humors falling on them, and restraineth immoderate Sweatings : The Cotton or Down of Quinces boyled to Plague sores healeth them up, and laid as a Plaster made up with Wax, it bringeth hair to them that are bald, and keepeth it from falling if it be ready to shed : The Syrup of the Juice or the Conserve are much of a binding quality, being consumed by the fire; if a little Vinegar be added it stirreth up the languishing Appetite, and much conducive to the Stomach given to casting; some Spices being added it comforteth and strengthneth the decayed and fainting Spirits, and helpeth the Liver oppressed that it cannot perfect the digestion, and correcteth Choller and Flegm : If you would have them purging, put Honey in them instead of Sugar; and if more laxative for Choller, Rubarb; for Flegm Turbith; for Watery Humours Scammony : but if more forcibly to bind, use the unripe Quince with Roses and Acacia, or Hipocistis and some torrefied Rubarb.

The Bay-tree.

THe Boughs of this Tree with Holly and Ivy are very com-ly to be set up about Pews in Churches, also about several Rooms in Houses, therefore vendible at Markets.

Uses Physical.

The Berries are very effectual against all Poison of Venemous Creatures, as also against the Pestilence or other infectious diseases; and therefore is put in sundry Treacles for that purpose; seven of them given to a Woman in sore travail of Child-birth do cause a speedy Delivery, and expel the After-birth, and therefore not to be taken by such as have not gone out their time, lest they procure Abortment, or cause labour too soon :
They

They wonderfully help all cold and rheumatick Distillations from the Brain to the Eyes, Lungs, or other parts : A Bath of the Decoction of the Leaves and Berries is singular good for Women to sit in that are troubled with the Mother, or the Diseases thereof, or the stopping of their Courses, or for the Diseases of the Bladder, Pains in the Bowels by Wind, and stopping of Urin. The Oil made of the Berries is very comfortable in all cold Grievs of the Joynts, Nerves, Arteries, Stomach, Belly or Womb, and helpeth Palsies, Convulsions, Cramps, Aches, Trembling and Numness in any parts, Weariness also and Pains that come by sore travelling; all Grievs and Pains likewise proceeding from Wind either in the Head, Stomach, Back, Belly or Womb, by annointing the parts affected therewith. A Decoction of equal parts of Bay-berries, Cummin-seed, Hysop, Origanum and Euphorbium, with some Honey, doth wonderfully help Distillations and Rheums, and setteth the Pallat of the Mouth into its place : The Powder made into an Electuary with Hony doth help the Consumption, Old Coughs, Shortness of Breath, and thin Rheumes; also the Meagrim; they mightily expel Wind and provoke Urin, help the Mother and kill the Worms.

Thus have we given an account of the Use and Vertues of all Trees and Shrubs planted within this Pleasant Land : In the next place we shall give you the Vertues and Use of those Roots and Herbs, and only those that are most common and useful in a Family.

Alexander, Vertues and Use.

Alexander is a timely Pot-herb; It warmeth a cold Stomach, and openeth stoppings of the Liver and Spleen; it helpeth the Strangury; it is good to break Wind, to provoke Urin, to move Womens Courses, and to expel the After-birth: if the herb be boyled in Wine, or being bruised and taken in Wine. The Seed is likewise effectual for all these things: Alexander Potage is very good and wholsom food.

Asparagus, Vertues and Use.

THe Buds or young Shoots of this Plant are much sold and eaten in and about *London*: The Shoots or Branches boyled in White-wine or Vinegar is prevalent for them that have Arteries loosned, or are troubled with the Hip-gout or Sciatica; and boyled in ordinary broth maketh the Belly soluble and open: The Decoction of the Roots in White-wine, and the Back and Belly bathed therewith, or sitting therein as a Bath, or kneeling or lying down in the same hath been found effectual against Pains in the Reins and Bladder, Pains of the Mother and Chollick, and no less effectual against stiff and benumbed Sinews, or those that are shrunk by Cramps and Convulsions, and helpeth the Sciatica: The Decoction of the Roots boyled in Wine, and taken, is good to clear the Sight, and being taken fasting several Mornings together stirreth up bodily lust in Man or Woman: The Buds or Branches boyled in ones ordinary Broth provoketh Urin, being stopped it expelleth the Gravel and Stone out of the Kidneys.

Aniseeds, Vertues and Use.

Anise-seeds are of an opening and cleansing quality, therefore very effectual to break Wind, and open Obstructions, and are much used in Comfits.

Artichoaks, Vertues and Use.

Artichoaks are plentiful of fruit, and much desired; for they increase Sperm and procure bodily Lust.

Angelica, Vertues and Use.

THe Stalks or Roots candied and eaten fasting are good Preservatives in time of Infection, and at other times to warm and comfort a cold Stomach: The Root also steeped in Vinegar,

gar, and a little of that Vinegar taken sometimes fasting, and the Root smelled unto is good for the same purpose. The Root steeped in Wine, and a Water distilled from the said Root in glasse, and two or three spoonfuls at a time easeth all Pains and Torments coming of Cold and Wind, so as the Body be not bound; and taken with some of the Root in Powder at the beginning helpeth the Plurisie, as all other Diseases of the Lungs and Breast, as Coughs, Pthifick and Shortness of Breath: It helps Pains of the Chollick, the Strangury, and stopping of the Urin, openeth the Stoppings of the Liver and Spleen. The Decoction drunk before the Fit of an Ague, that they may sweat if possible before the Fit come, will in two or three times taking rid it quite away: It helps digestion, and is a Remedy for a Surfit: The Juice or the Water dropped, or Tents wet therein, and put into old filthy deep Vicers; or the Powder of the Root, (in want of either) doth cleanse and cause them to heal quickly, by covering the naked bones with flesh: The Root taken in Powder to the weight of half a drachm at a time, with some good Treacle in Carduus Water, it doth resist Poison, the Plague, and all Epidemical Diseases, if the party thereupon be laid to sweat in his Bed.

Alehoofe, Vertues and Use.

A Handful of the said Herb put into Drink that is thick with removing, or any other accident, it will clarify it in a few hours; and if tinn'd up with new Drink, it will so clarify it in a night, that it will be the fitter to be drunk the next morning: The Decoction of it in Wine drunk for some time together procureth ease unto them that are troubled with the Sciatica or Hip-gout, as also the Gout in the Hands, Knees or Feet: The Juice boyled with a little Honey and Verdigrees doth wonderfully cleanse Fistula's, Vicers, and stayeth the spreading and eating of Cancers and Vicers. The Decoction of Ground-Ivy in Wine, and if you put to it some Honey and a little burnt Allum, it is excellent good

good to gargle any sore Mouth or Throat, and to wash Sores and Ulcers : The Herb boyled and drunk is singular good for exulcerated Lungs, and being drunk tunn'd up in Beer or Ale, it in a short time easeth all griping Pains, windy and chollerick Humors in the Stomach, Spleen or Belly.

An Excellent Receipt for Sore Eyes.

The Juice of Celandine, Field-Daisies, and Ground-Ivy clarified, and a little fine Sugar dissolved therein, and dropped into the eye, is a sovereign Remedy for all the Pains, Redness, and Watering of them, as also for the Pin and Web, Skins and Films growing over the sight ; it helpeth Beasts also.

Garden Beans, Vertues and Vse.

BEans eaten are extreme windy meat, but if eaten with Bacon they are good food, and useful in a Family; and if after the Dutch fashion, when they are half boyled you husk them, and then stew them with sweet Butter, they are wholesomer food : The Flower of Beans and Fenugreek mixed with Hony, and applyed to Fellons, Boyles, Bruises, or blue marks by blows, or the Imposthumes in the Kernels of the Ears, helpeth them all; and with Rose-leaves, Frankincense, and the White of an Egg being applyed to the Eyes helpeth them that are swoln, or do water, or have received any blow upon them, if used with Wine : The Ashes of the Husks made up with old Hogs-grease, helpeth the old Pains, Contusions, and Wounds of the Sinews, the Sciatica and Gout : The Water distilled from the green Husks is held to be very effectual against the Stone, and to provoke Urin. Bean Flower is used in Poultices to assuage Inflammations rising upon Wounds, and the Swelling of Womens Breast.

French-Beans, Vertues and Vse.

THe ordinary French or Kidney-Beans are much in use, being sold in every Market, and commonly boyled and eaten with the Husk; they are of an easie digestion; they move the

the Belly, provoke Urin, enlarge the Breast that is straitned with shortness of breath, engender Sperm, and incite Venery.

Balm, Vertues and Vse.

ASyrup with the Juice of this Herb and Sugar would be kept in every Gentlewomans House to relieve the weak Stomachs and sick Bodies of their poor sickly Neighbours, as also the Herb kept dry in the House, that so with other convenient Simples you may make it into an Electuary with Honey according as the Disease is : The Herb bruised and boyled in a little Wine and Oil, and laid warm on a Boil, will ripen and break it : The Leaves with a little Nitre taken in Drink are good against a Surfet of Mushromes, helps the griping pains of the Belly, and being made into an Electuary is good for them that cannot fetch their breath : A Tansie or Cawdle made with Eggs and the Juice thereof while it is young, putting to it some Sugar and Rose-water, is good for Women in Childbed, when the After-birth is not thoroughly avoided, and for their faintings upon or after their sore Travel. This is an excellent Herb to revive a fainting Heart, and drive away all troublesome cares and thoughts out of the mind arising from Melancholly or black Choller; it is very good to help Digestion and open the Obstructions of the Brain, and causeth the Mind and Heart to become merry.

Wood-Betony, Vertues and Vse.

THis is a very precious Herb, most fitting to be kept in a Mans House both in Syrup, Conserve, Oyl, Ointment and Plaister : The Flowers are usually conserved : The Green Herb bruised, or the Juice applyed to any inward Hurt or outward green Wound in the Head or Body, will quickly heal and close it up; as also any broken Bone, Splinter, Thorn or other thing gotten into the Flesh, and old Sores, or filthy Ulcers : The

Powder

Powder of Betony mixed with pure Honey is very good for all sorts of Coughs or Colds, Wheezing or Shortness of Breath, Distillations of thin Rheum upon the Lungs, which causeth Consumptions : The Herb, the Root, or the Flowers in Broth drunk or made into Conserve, Syrup, Electuary, Water, or Powder, either of these wayes taken, helpeth the Palsie, Falling-sickness, Jaundice, Convulsions, Gout, or Shrinking of the Sinews, Dropfies and Pains in the Head : The Decoction of the Herb made with Mead and a little Penyroyal is good for those that are troubled with putrid Agues : The Decoction made in Wine killeth the Worms in the Belly, openeth Obstructions both of Spleen and Liver, cureth Stitches and Pains in the Back or Sides, the Torments and griping Pains of the Bowels and the Wind-Chollick, and mixed with Honey purgeth the Belly : A Drachm of the Powder of Betony taken with a little Honey in some Vinegar doth wonderfully refresh those that are overwearied by travail, and helpeth those that piss or spit blood, or that are Bursten or have a Rupture : The Juice dropped into the Ears destroyeth the Worms, easeth the Pains, and cureth the running Sores in them : The Leaves and Flowers are comfortable both in Meat and Medicine, and helpeth those that cannot digest their meat, or sowre Belchings, or continual Rising in their stomach, using them either green or dry.

Burnet, Vertues and Use.

THis Herb is little inferior to Betony, for it is a most precious herb ; the continual use of it preserves the Body in health : The Juice taken in some Drink, and the Party laid to sweat, is a special help to defend the heart from noisom Vapours, and from infection of the Pestilence : The distilled Water, the Juyce, or Decoction of the Herb, or the Powder of the Root or Herb, they are available in all manner of Fluxes of blood or humors, to stanch bleeding inward or outward, Lasks, Scourings, the Bloody-flux, Womens too aboundant Courses, the

the Whites and the chollerick belchings and castings of the Stomach, and is a singular good Wound-herb for all sorts of Wounds either inward or outward.

Burrage and Bugloss, Vertues and Use.

THese are both great Cordials, great Strengtheners of Nature, exceeding good Pot-herbs, good for Bees, and most comfortable for the heart and stomach : The Flowers candied or made into a Conserve is good for those that are weak with long sickness, and to comfort the heart and spirits of those that are in a Consumption, or troubled with often swoonings or passions of the Heart : The Distilled Water is effectual to all the purposes aforesaid, and helpeth the redness and inflammation of the Eyes being washed therewith : The Juice of the Herb made into a Syrup and taken, is good to defend the Heart, and help to resist and expel Poyson ; also good to expel Pensiveness and Melancholly ; it helpeth to clarify the blood, and mitigate heat in Fevers : The Root, Seed, and Leaves are good to all the purposes aforesaid : The Seed and Leaves are good to encrease Milk in Womens Breasts : The Leaves, Flowers, and Seed, all or any of them are put with other cooling, opening, cleansing herbs, to open Obstructions, help the yellow Jaundice ; and mixed with Fumitory, to cool cleanse and temper the Blood, thereby it helpeth all spreading Scabs or Sores,

Carrets, Vertues and Use.

They are useful in a Family, and that Powder-beef Eaters do well know ; Carrets break Wind, and remove Stitches in the Sides, provoke Urin and Womens Courses, and help to break and expel the Stone ; the wild kind is most effectual to the purposes aforesaid : the Seed is good for the Dropfie, helpeth the Chollick, the Stone in the Kidneys, and helpeth Conception, being taken in Wine.

Cabbages and Coleworts, Vertues and Use.

THese are our Country Housewives Pot-herbs; they are much commended being eaten before meat, to keep one from surfetting, as also from being drunk with Wine: The often eating of them well boyled helpeth those that are entring into a Consumption: The Pulp of the middle ribs of Colewort boyled in Almond-milk, and made up into an Electuary with Honey, being taken often, is very profitable for those that are pursie and short-winded: The Decoction of Coleworts taketh away the Pain and Ach, and allayeth the Swelling of swoln and gouty Legs and Knees, wherein many gros and watery humors are fallen, the place being bathed therewith warm.

Caraway, Vertues and Use.

THe Roots of Caraways eaten as men eat Parsnips, strengthen the Stomach of Ancient People exceedingly: Caraway Comfects once only dipped in Sugar, and half a spoonful of them eaten in the Morning fasting, and as many after each Meal, are a most admirable Remedy for such as are troubled with Wind: The seed is conducing to all the cold Grievs of head and stomach.

Sweet Cicely, Vertues and Use.

THis is an excellent Sallet Herb; the candied Roots hereof are held as effectual as Angelica to preserve from Infection in the time of a Plague, and to warm and comfort a cold weak Stomach: The Root boyled and eaten with Oil and Vinegar doth much please and refresh an old cold Stomach oppressed with Wind or Flegm, or those that have the Phthisick or Consumption of the Lungs; the same drunk with Wine is a Preservative from the Plague, expelleth Wind, and procurereth an Appetite to meat.

*Chamomel**Chamomel, Vertues and Use.*

THe Oyl made of the Flowers is much used against all hard swelling Pains or Aches, Shrinking of the Sinews, or Cramps or Pains in the Joynts of any other part of the Body: The bathing with a Decoction of Chamomel taketh away Weariness, easeth Pains to what part of the Body soever they be applyed, it comforteth the Sinews that are over-strained, mollifieth all Swellings; it moderately comforteth all parts that have need of warmth, digesteth and dissolveth whatsoever hath need thereof, by a wonderful speedy property; it easeth all the Pains of the Chollick and Stone, and all Pains and Torments of the Belly, and provoketh Urin: A Syrup made of the Juice taken with Sugar is excellent for the Spléen; also it most wonderfully breaks the Stone: The Flowers boyled in Posset-drink provoke Sweat, and helpe to expel Colds, Aches and Pains: A Syrup made of the Juice of Chamomel, with the Flowers and White-wine is a Remedy against the Jaundice and Dropfie: The Flowers boyled in Lye are good to wash the Head, and comfort both it and the Brain.

Clary, Vertues and Use.

THe fresh Leaves dipped in a Batter of Flower, Eggs, and a little Milk, and fried in Butter, and served to the Table, are not unpleasant to any, but exceeding profitable for them that are troubled with weak Backs, and the effects thereof: The Seed or Leaves taken in Wine provoketh to Venery; it is of much use both for Men and Women that have weak Backs, to help to strengthen the Reins, used either by it self or with other Herbs conducing to the same effect, and in Tanxies often.

Costmary, Vertues and Use.

THis Herb is very profitable taken when fasting in the Morning for the Pains in the head that are continual, and

and to stay, dry up, and consume all thin Rheums or Distillations from the Head into the Stomach, and helpeth much to digest raw humors that are gathered therein: It is very profitable for those that are fallen into a continual evil disposition of the whole Body, called *Cachexia*, being taken especially in the beginning of the Disease: It is an especial friend and help to evil, weak, and cold Livers.

Comfry, Vertues and Vse.

THe Roots of Comfry being bruised and laid unto fresh Wounds or Cuts immediately healeth them, and is especially for Ruptures and broken Bones: It is said to be so powerful to consolidate and knit together, that if it be boyled with dissevered pieces of flesh in a Pot, it will joyn them together again: The Root boyled in Water or Wine, and the Decoction drunk, helpeth all inward Hurts, Bruises and Wounds, and the Ulcers of the Lungs, causing the Flegm that oppresth them to be easily spit forth: It stayeth the defluxion of Rheum from the Head upon the Lungs, the Fluxes of Blood or Humors by the Belly, Womens immoderate Courses. A Syrup made thereof is very effectual for all those inward griefs and hurts, and the Distilled Water for the same purpose: The Roots taken fresh beaten small and spread upon Leather, and laid upon any place troubled with the Gout, do presently give ease of the Pains, also give ease to pained Joynts, and are good to be applyed to Womens Breasts that grow sore by the abundance of Milk coming into them.

Cowslips, Vertues and Vse.

AN Ointment made of the Leaves and Hogs-grease, taketh away Spots and Wrinkles of the skin, Sun-burnings and Freckles: The Distilled Water of the Flowers and Leaves works the same effect, and adds Beauty exceedingly: they remedy

medy all infirmities of the Head coming of wind and heat: The Flowers Preserved or Conserved, and the quantity of a Nutmeg eaten every Morning is a sufficient Dose for inward diseases.

Cinkfoyl, Vertues and Vse.

THe Powder of the Leaves taken in White-wine or White-wine Vinegar about the quantity of 20 grains at a time of the said Powder doth seldom miss the cure of any Ague: The Decoction of the said herb is as effectual: The Juice or Decoction taken in Honey helpeth the hoarseness of the Throat, and is good for the Cough of the Lungs: The Roots are effectual to help Ruptures or Burstings taken either inwardly or outwardly, or both; as also for Bruises, Falls, or the like.

Celandine, Vertues and Vse.

THe Herb bruised and laid to the Rists cureth all sorts of Agues: The Juice dropped into the Eyes cleanseth them from Films and Cloudiness which darkens the sight: The Herb or Roots boyled in White-wine with a few Annise-seeds and drunk openeth the Obstructions of the Liver and Gall, and helpeth the Yellow-Jaundice and the Dropie: The Juice taken fasting is of singular good use against the Pestilence: The Herb with the Roots bruised and heated with Oil of Camomile, and applyed to the Navel, taketh away the griping pain in the Belly and Bowels, and all the pains of the Mother: The Powder of the dried Root laid upon an aking hollow or loose Tooth will cause it to fall out: An Oil or Ointment made of Celandine is a speedy and certain Cure for Sore-eyes, they being anointed therewith.

Clowns Woundwort, Vertues and Vse.

ASyrup made of this Herb and Comfry will to admiration cure all inward Wounds, Ruptures, Spitting, Pissing, or Vomiting Blood: An Ointment or Plaister made of this Herb and

and Comfrey will excellently and speedily cure any Vein swelled, Muscle cut, or a Rupture, if a Plaister be applyed to the place, and by taking now and then a little of the Syrup.

Dill, Vertues and Vse.

THe Herb or Seed being bruised and boyled, or the Decoction in White-wine and drunk is a gallant Expeller of VVind; and Provoker of the Terms, and is good to ease Swellings and Pains, also stayeth the Belly and Stomach from casting, and easeth the pains and windiness of the Mother.

Endive, Vertues and Vse.

ASyrup of the herb is a fine cooling Medicine for Fevers. The Seed is available for Faintings, Swounings and Passions of the Heart: The Decoction of the Leaves or the Juice or the Distilled Water serveth well to cool the excessive heat in the Liver and Stomach, and in the hot Fits of Agues, and all other Inflammations in any parts of the Body: This is also a very good Pot-herb.

Elecampane, Vertues and Vse.

THe Roots and Herb beaten or bruised, and put into new Ale or Beer, and daily drunk, cleare, strengthen, and quicken the sight of the Eyes wonderfully: The Decoction of the Roots in Wine, or the Juice taken therein, killeth and driveth forth all manner of Worms in the Belly, Stomach, and Maw: The dryed Root made into Powder, and mixed with Sugar, and taken, is very effectual to warm a cold and windy Stomach, or the pricking therein, and stiches in the Sides caused by the Spleen, and to help the Cough, Shortness of Breath, and Wheeving in the Lungs: The fresh Roots preserved with Sugar, or made into a Syrup or Conserve, serveth to the same purposes: The

The Root chewed fastneth loose Teeth, and helpeth to keep them from putrefaction: The Decoction of the Roots in Wine being drunk is good for those that are Bursten.

Eye-bright, Vertues and Vse.

THe Juice of Eye-bright tunned up with strong Beer, that it may work together, or the Powder of the dryed herb mixed with Sugar, a little Mace and Fennel-seeds, and drunk or eaten in Broth, or the said Powder made into an Electuary with Sugar doth powerfully help and restore the Sight decayed by Age: The Juice or Distilled Water of Eye-bright taken inwardly in White-wine or Broth, or dropped into the Eyes for divers dayes together, helpeth all Infirmities of the Eyes that causeth dimness of sight, also helpeth a weak Brain and Memory.

Feaverfew, Vertues and Vse.

THe Decoction of the Herb made with some Sugar or Hony put thereto, is used with good success to help the Cough and stuffing of the Chest by Cold, as also to cleanse the Reins and Bladder, and help to expel the Stone in them: The Herb boyled in White-wine and drunk cleanseth the Womb, and expelleth the After-birth: A Syrup of the Herb worketh the same effect: The Powder of the Herb taken in Wine with some Oximel purgeth both Choller and Flegm, and is available for those that are short-winded, and are troubled with Melancholly and Heaviness or Sadness of the Spirits: This Herb is chiefly used for the Diseases of the Mother app'ied outwardly, or a Decoction of the Flowers in Wine with a little Nutmeg or Mace put therein and drunk often in a day.

Fumitory, Vertues and Vse.

THe Juice of Fumitory and Docks mingled together with Vinegar, and the places gently washed or wet therewith, cureth all sorts of Scabs, Wheals, or Pushes on any part of the Body: The

The Juice or Syrup thereof, or the Decoction made in Whey by it self, with some other purging or opening Herbs and Roots to cause it to work the better, is very effectual for the Liver and Spleen, opening the Obstructions thereof, and clarifying the Blood from saltish, chollerick, and adust humors, and after the purging doth strengthen all the inward parts; it is good also against the Yellow-Jaundice, and spendeth it by Urin, which it procureth in abundance: The Distilled Water of the Herb is also of good effect in the former Diseases, and conduceth much against the Plague and Pestilence being taken with good Treacle: The Powder of the dried Herb given for some time together cureth Melancholly, but the Seed is strongest in operation for all the former Diseases,

Fennel, Vertues and Vse.

This is a very good Pot-herb, or for Sallets, and of good use to boyl with Fish; for it consumes the Flegmatick humor which Fish most plentifully afford and annoy the Body by; and therefore it is a most fit Herb for that purpose: Fennel is also very good for Bees, and is much used in dressing Hives for Swarms: The Distilled Water of the whole Herb or the Juice dropped into the Eyes cleanseth them from Mists and Films that hinder the sight: The Leaves or Seed boyled in Barley Water and drunk is good for Nurfes to encrease their Milk, and make it more wholsome for the Child: The Roots are of most use in Physick-Drinks and Broths that are taken to cleanse the Blood, to open Obstructions of the Liver and provoke Urin, and amend the ill colour in the Face: The Seed and the Root helpeth the painful and windy swellings of the Spleen and the Yellow-jaundice, as also the Gout and Cramps.

Germander, Vertues and Use.

The Decoction thereof taken for some dayes together driveth away and cureth both Tertian and Quartan Agues: It is also good against all Diseases of the Brain, as continual Head-ach,

ach, Falling-sickness, Melancholly, Drowfiness, and Dulness of spirit, Convulsions and Palsies: The Juice of the Leaves dropped into the Ears killeth the Worms in them.

Gromel, Vertues and Use.

The Seed being bruised and boyled in White-wine, or in Broth or the like, or the Powder of the Seed taken therein: Two drachms of the Seed in Powder taken with Womens Breast Milk is very effectual to procure a speedy Delivery to such Women as have sore pains in their Travail, and cannot be delivered. The Herb when the Seed is not to be had either boyled, or the Juice thereof drunk, is effectual to all the purposes aforesaid, but not so powerful or speedy in operation: It is an Herb of singular force as any other to break the Stone, and avoid it and the Gravelei ther in the Reins or Bladder.

Goutwort, Vertues and Use.

The very bearing of this Herb about one easeth the pains of the Gout, and defends him that bears it from the disease, therefore had not his Name for nothing; but upon good experience is known to help the Cold-Gout and Sciatica, as also Joynt-aches, and other cold Griefs.

Groundsel, Vertues and Use.

This Herb is moist and somewhat cold withall, thereby causing expulsion and repressing the heat caused by the motion of the internal parts in Purges and Vomits, and is as gallant an universal Medicine for all Diseases coming of heat as the Sun shines upon: The Juice taken in Drink, or the Decoction of the Herb in Wine or Ale helpeth the pains in the Stomach proceeding of Choller: It is good against the Jaundice and Falling-sickness being taken in Wine: A drachm of the Juice given in

Oximel is good to provoke Urin, expelleth Gravel in the Reins or Kidneys : It helpeth also the Sciatica, Gripping of the Belly and Chollick, helpeth the defects of the Liver : The Juice of the Herb, or the Leaves and Flowers, with some fine Frankincense in Powder, used in wounds of the Body, Nerves, and Sinews, doth singularly help to heal them : The Distilled Water of the Herb performeth well all the aforesaid Cures.

Hysop, Vertues and Use.

Hysop boyled with Figs is an excellent Medicine for the Quinsie, or swelling in the Throat, to wash and gargle it : The green Herb bruised, and a little Sugar put thereto, doth quickly heal any Cut or green Wound ; and being taken either in a Syrup or licking Medicine, it helpeth to expectorate tough Flegm, and is effectual in all cold Grievs or Diseases of the Chest and Lungs : Hysop boyled with Rue and Honey, and drunk, helpeth those that are troubled with Coughs, Shortness of Breath, Wheesings and Rheumatick Distillations upon the Lungs : Taken with Oximel it purgeth gross humors by the Stool : It helpeth those that have the Falling-sickness which way soever it be applyed.

Hops, Vertues and Use.

The Decoction of the tops of Hops open Obstructions of the Liver and Spleen, cleanseth the Blood, loosens the Belly, provokes Urin, and cleanseth the Reins from Gravel : A Syrup made of the Juice and Sugar cureth the yellow Jaundice, easeth the Head-ach that comes of heat, and tempereth the heat of the Liver and Stomach.

St. Johns wort, Vertues and Use.

The Seed is much commended being drunk for forty dayes together, to help the Sciatica, the Falling-sickness, and the Palsie : The Decoction of the Herb and Flowers, but of the Seed

Seed especially ; in Wine being drunk, or the Seed made into Powder, and drunk with the Juice of Knot-grass, helpeth all manner of spitting and vomiting Blood, be it by any Vein broken, inwardly by bruises, falls, or howsoever : the same helpeth those that are bitten or stung by any venomous Creature : Two drachms of the Seed made into Powder, and drunk in a little Broth, doth gently expel Choller or congealed Blood in the Stomach.

Kidney-wort, Vertues and Use.

The bruised Herb, or the place bathed with the Juice or Distilled Water thereof healeth Pimples, Redness, the St. Antonies Fire, and other outward Heats and Inflammations : The Juice or the Distilled Water being drunk is very effectual for all Inflammations and unnatural heats to cool a fainting hot Stomach, or a hot Liver, or the Bowels : The said Water is available for the Dropsie, and helpeth to break the Stone.

Liquoris, Vertues and Use.

The Juice of Liquoris dissolved in Rose-water with some Gum-Tragacanth, is a fine licking Medicine for Hoarseness and Wheesings : Liquoris boyled in fair Water with some Maiden-hair and Figs, maketh a good Drink for those that have a dry Cough, or Hoarseness, Wheesings, Shortness of Breath, and for all Grievs of the Breast and Lungs, Phthisick or Consumptions caused by the distillation of salt humors on them.

Lavender, Vertues and Use.

A Decoction made with the Flowers of Lavender, Horehound, Fennel and Asparagus Roots, and a little Cinnamon is very profitably used to help the Falling-sickness and the giddiness or turning of the Brain, to gargle the Mouth

with the Decoction thereof is good against the Tooth-ach: Two spoonfuls of the Distilled Water of the Flowers taken helpeth them that have lost their Voice, as also the Tremblings and Passions of the Heart, and Faintings and Swounings; not only being drunk, but applyed to the Temples, or Nostrils to be smelt unto: Lavender is of special good use for all the Griets of the Head and Brains that proceed of a cold cause.

Lettice, Vertues and Vse.

THis is one of our good House-wifes Sallet-herbs, but the use of them is forbidden to those that are short-winded, or have any imperfection in their Lungs: the best way of eating them is boyled. The Juice of Lettice boyled with Oyl of Roses, or mixed therewith and applyed to the Forehead and Temples procureth Sleep, and easeth the Head-ach, proceeding of an hot cause: The Seed and Distilled Water of Lettice are as effectual as the Herb: In all things Lettice being eaten helpeth Digestion, loosens the Belly, quenches Thirst, encreases Milk in Nurses, easeth griping Pains of the Stomach or Bowels that come of Choller.

Lovage, Vertues and Vse.

THe Distilled Water of the Herb helpeth the Quinsie in the Throat, and helpeth the Plurisie being drunk 3 or 4 times: The Leaves bruised and fried with a little Hogs-Lard, and laid hot to any Botch or Boil will quickly break it: Half a drachm at a time of the dried Root in Powder taken in Wine doth wonderfully warm a cold stomach, helping digestion, and consuming all raw and superfluous moisture therein, easeth all inward Gripings and Pains, dissolveth Wind, and resisteth Poison and Infection. To drink the Decoction of the Herb is good for any sort of Ague.

Sweet-

Sweet-Marjerom. Vertues and Vse.

THe Powder snuffed up into the Nose provoketh sneezing, and thereby purgeth the Brain, and chewed in the Mouth draweth forth much Flegm: The Decoction of the Herb made with some Pellitory of Spain and Long Pepper, or with a little of Acorus or Origanum being drunk is good for those that are beginning to fall into a Dropfie, for those that cannot make water, and against Pains and Torments in the Belly: The Decoction of Marjerom being drunk helpeth all the Diseases of the Chest which hinder the freeness of breathing, and is also profitable for the Obstructions of the Liver and Spleen: It helpeth the cold Griets of the Womb, and the windiness thereof.

Mint, Vertues and Vse.

THe Decoction of the Herb gargled in the Mouth cureth the Gums and Mouth that is sore, as also with Rue and Coriander causeth the Pallat of the Mouth that is down to return to his place, the Decoction being held and gargled in the mouth; it also mendeth an ill-favoured Breath: the Powder of Mint being dryed and taken after meat helpeth digestion and those that are splenetick: taken with Wine helpeth Women in their fore travail in Child-bearing: it is good against the Gravel and Stone in the Kidneys, and the Strangury; it is a safe Medicine for the biting of a Mad Dog: the Herb being bruised with salt and laid thereon; being smell'd unto it is comfortable for the head and Memory.

Marigolds, Vertues and Vse.

A Plaister made with the dry Flowers in Powder, Hogs-grease, Turpentine and Rozin, and applyed to the Breast strengthens and succours the Heart infinitely in all Fevers: Thee
Flowers

Flowers either green or dried are used much in Poffets, Broths, and Drinks, as a Comforter of the heart and spirits, and to expel any malignant or pestilential quality which might annoy them.

Mustard, Vertues and Vse.

THe Seed taken either by it self or with other things, either in an Electuary or Drink, doth mightily stir up bodily Lust, and helpeth the Spleen and Pains in the Sides, and Gnawing in the Bowels, and used as a Gargle draweth up the Pallat of the mouth being fallen down: The Distilled Water of the Herb when it is in flower is much used to drink inwardly to help in any Diseases aforesaid, but outwardly also for Scabs, Itch, or other like infirmities: The Decoction of the Seed made in Wine and drunk provoketh Urin, and resisteth the force of Poison. We shall add an excellent Receipt or Medicine for Old People or Weak Stomachs.

Take of Mustard-seed a drachm, Cinnamon as much, and having beaten them to Powder, and half as much Mastick in Powder, and with Gum-Arabick dissolved in Rose-water, make it up in Troches, of which take about half a drachm weight an hour or two before Meals.

Motherwort, Vertues and Vse.

THere is no better Herb to strengthen and drive melancholly Vapours from the heart, and make a merry chearful blith soul, than this herb; it may be kept in Syrup or Conserve: the Powder thereof to the quantity of a spoonful drunk in Wine is a wonderful help to Women in their sore Travails; as also for the suffocation of the Mother; it also cleanseth the Chest of cold Flegm, and is of good use to dry up the cold humors, to digest and disperse them that are settled in the Veins, Joynts, and Sinews of the Body.

Sweet

Sweet-Maudlin, Vertues and Vse.

THis Herb taken in Whey or the Decoction, purgeth Chol- ler and Flegm, openeth Obstructions, and healeth their evil effects, and is a wonderful help to all sorts of Day-Agues: It is astringent to the Stomach, and strengthneth the Liver, and all other inward parts: taken fasting in the Morning it is very profitable for the pains in the head that are continual: it is an especial friend and help to evil, weak, and cold Livers, and very profitable for those that are fallen into a continual evil disposition of the whole Body called *Cachexia*.

Mallows, Vertues and Vse.

THe Roots and Seeds hereof boyled in Wine or Water is good for those that have Excoriations in the Guts or the Bloody-flux, also for them that are troubled with Ruptures, Cramps or Convulsions of the Sinews; and boyled in White-wine for the Imposthumes of the Throat, called the Kings-Evil, and the Kernels that rise behind the Ears, and Inflammations or Swellings in Womens Breasts. The Juice of Mallows drunk in VVine, or the Decoction of them therein, doth help VVomen to a speedy and easie Delivery, and is special good for the Falling-sickness: The Syrup and Conserve made of the Flowers are very effectual for the same Diseases, and to open the Body being Costive: the dried Roots boyled in Milk and drunk is special good for a Chine-cough: The Marsh-Mallows are more effectual than the ordinary.

Onions, Vertues and Vse.

TO eat Onions fasting with bread and salt hath been held with divers People a good Preservative against Infection; being roasted under the Embers and eaten with sugar and Oyl or honey

honey much conduce to help an inveterate Cough, and expectorate the tough Flegm.

Orpine, Vertues and Vse.

A Syrup made of the Juice with Honey and Sugar, and a spoonful or two taken at a time is a speedy Cure for a Quinsie: The Leaf bruised, and laid to any green wound in the hands or legs doth heal them quickly, and being bound to the throat helpeth the Quinsie; it helpeth also Ruptures and Burstings: The Distilled Water of the Herb being drunk for certain dayes together is profitable for Gnawings or Excoriations in the Stomach or Bowels, or for Ulcers in the Lungs, Liver, or other inward parts.

Parsnip, Vertues and Vse.

The Root is very useful in a Family, being good and wholesome Nourishment, and fatneth the Body much; the Seed hereof being drunk, cleanseth the Belly from tough Flegmatick matter therein, easeth them that are Liver-grown and Vomens passions of the Mother. The Seed and Root of the Wild or Cow-parsnip boyled in Oyl, and the head rubbed therewith helpeth those that are fallen into a Frenzy, also Lethargie or Drowisie evil and the Headach.

Parsly, Vertues and Vse.

An excellent Receipt or Medicine to open Obstructions of the Liver and Spleen, and expel the Dropsie and Jaundice by Urin.

Take of the Seeds of Parsley, Fennel, Annise, and Caraways of each an ounce; of the Roots of Parsley, Burner, Saxifrage, and Carawayes of each an ounce and an half; let the Seed be bruised, and the Roots washed and cut small; let them

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lie all night in steep in a Pottle of White-wine, and in the Morning be boyled in a close earthen Vessel until a third part or more be wasted, which being strained and cleared, take 4 ounces thereof Morning and Evening first and last, abstaining from drink after it for three hours; this is also good against the Falling-sickness and the Stone in the Kidneys. The Distilled Water of Parsley is good to give Children when they are troubled with Wind in the Stomach or Belly.

Pennyroyal, Vertues and Vse.

The Herb boyled in Milk and drunk is very effectual for the Cough, and for Ulcers or Sores in the Mouth. the Decoction thereof being drunk helpeth the Jaundice and Dropsie, and all Pains of the Head and Sinews that come of a Cold cause, and helpeth to clear and quicken the Eye-sight: Pennyroyal and Mint together put in Vinegar, and put to the Nostrils to be smell'd unto, or a little thereof put into the Mouth helpeth Faintings and Swounings; and being drunk in Wine it easeth the Headach and the Pains of the Breast and Belly, stayeth the Gnawing of the Stomach, and inward Pains of the Bowels.

Pellitory of the Wall, Vertues and Vse.

The Juice clarified and boyled into a Syrup with Honey, and a spoonful of it drunk in a Morning once a week, is a certain Cure for those that are subject to the Dropsie: The Decoction of the Herb being drunk easeth pains of the Mother, it also easeth those griefs that arise from Obstructions of the Liver, Spleen, and Reins; the same Decoction with a little Honey added thereto is good to gargle a sore Throat: The Juice held a while in the Mouth easeth the pains in the Teeth: The dried Herb made up into an Electuary with Honey, or the Juice of the Herb, or the Decoction made up with Sugar or Honey

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is a singular Remedy for any old or dry Cough, the Shortness of Breath, and Wheefing in the Throat: A Poultis made of the Herb with Mallows, and boyled in Wine with Wheat, Bran, and Bean-flower, and some Oyl put thereto, and applied warm to any bruised Sinew, Tendon, or Muscle, doth in a very short time restore them to their strength: The green herb bruised and bound to any green wound for three dayes, you shall need no other Medicine to heal it further.

Pepper-wort, Vertues and Vse.

THe Leaves bruised and mixed with old Hogs-grease and applied to the place, and to continue threon four hours in Men and two hours in Women, the place being afterwards bathed with Wine and Oyl, and then wrapped with Wool or Skins is very effectual for the Sciatica or any other Gout or pain in the Joynts.

Purflan, Vertues and Vse.

THis is a very good Sallet Herb, to cool any heat in the Liver and in hot Agues nothing better, it also cooleth the Blood, Reins and Stomach: The Herb bruised and applyed to the Forehead and Temples allayeth excessive heat therein hindring rest and sleep: The Juice is good to stay Vomitings, and taken with Sugar or Honey helpeth an old and dry Cough, Shortness of Breath, and the Phtisick, and stayeth immoderate Thirst: The Seed is more effectual than the Herb to all the purposes aforesaid, and is good to cool the heat and sharpness of Urin: The Distilled Water of the Herb is used by many (as the more pleasing) with a little Sugar to work the same effects.

Rubarb, Vertues and Vse.

THe Powder of Rubarb taken with a little Mummia and Madder Roots in some Red-wine dissolveth clotted blood in the Body happening by any fall or bruise, and healeth Bur-

stings:

stings: The Root steeped all night in White-wine, and a draught drunk in a morning fasting, or a drachm of the Powder of the dried Root being either taken of it self (or with a scruple of Ginger made into Powder) in a Mess of Warm Broth, or in a draught of White-wine, purgeth Choller and Flegm downwards very gently and safely without danger, cleanseth the Stomach, Liver, and Blood, opening Obstructions, helpeth those Griets that come thereof, as the Jaundice, Dropsie, swelling of the Spleen, Tertian and Day Agues, and the pricking pain of the Sides, and also stayeth spitting of blood.

Rosemary, Vertues and Vse.

THe dried Leaves shread small, and taken in a Pipe as Tobacco is taken helpeth those that have any Cough or Phtisick or Consumption, by warming and drying the thin Distillations which cause those diseases: to burn the Herb in Chambers correcteth the air in them: the Flowers and the Conserve made of them is singular good to comfort the heart and to expel the Contagion of the Pestilence; the Decoction or Powder of Rosemary taken in Wine helpeth the cold Distillations of Rheum into the Eyes, and all other cold Diseases of the Head and Brain, as the Giddiness, Drowfiness, Dulness of the Mind and Senses, dumb Palsie or loss of Speech and Falling-sickness, to be both drunk, and the Temples bathed therewith; it is a Remedy for the Windiness in the Stomach or Bowels, Wind in the Spleen; helpeth those that are Liver-grown; it helpeth a weak Memory, quickneth the Senses, helpeth dim Eyes and a stinking Breath; it is very comfortable to the Stomach in all cold Griets; helping both retention of meat and digestion.

We shall here direct you to make a soveraign Oyl or Balma to heal the Diseases before mentioned.

Take what quantity you please of the Flowers, and put them in a strong Glass, tie a fine linnen cloth over the mouth, and

turn the mouth down into another strong Glass, which being set in the Sun, an Oyl will distill into the lower Glass; this preserve as precious for divers uses, to touch the Temples and Nostrils with two or three drops is the Dose allowed for the Diseases of the Head and Brains, and a drop, two or three, as the cause requireth, for the inward griefs.

Rue, Vertues and Use.

An Excellent Receipt or Antidote against Poison or Infection, and to preserve the Body in health.

TAke twenty leaves of Rue, a little Salt, two Walnuts, and two Figs, all of them beaten together into a Mass with twenty Juniper Berries; take every morning fasting the quantity of a Hazel Nut.

We shall add another Receipt, and it is a Remedy for the pains or griefs of the Chest or Stomach, of the Spleen, Belly, or Sides by wind or stiches of the Liver, obstructions of the Reins and Bladder by the stopping of Urin.

Take of Nitre, Pepper, and Cummin-seed of each equal parts, of Rue clean picked, as in weight as all the other three: First steep the Cummin-seed in Vinegar twenty four hours, then dry it by the fire or in an Oven, and then beat them well together, and with Honey make it up into an Electuary: this will also help to extenuate fat corpulent Bodies. A Decoction made of Rue, with some dried Dill leaves and flowers, easeth all pains and torments, inwardly to be drunk, and outwardly to be applyed warm to the place grieved: the same being drunk helpeth the pains both of Chest and Sides, also Coughs, hardness of breathing, the Inflammations of the Lungs, and the tormenting pains of the Sciatica, and the Joynts, being anointed or laid to the places; as also the shaking Fits of Agues, to take a draught before the Fit come.

Roses,

Roses, Vertues and Use.

OF the Red Roses are made many Compositions, all serving to sundry good uses; the moist Conserve is both binding and Cordial; for untill it be about two years old, it is more binding than cordial, and after that more cordial than binding: The old Conserve mixed with *Aromaticum Rosarum* is a very good Cordial against Faintings, Swounings, Weakness and Trembling of the Heart; strengthening both it and a weak Stomach, helpeth Digestion, stayeth casting, and is a very good Preservative in the time of Infection: some of the younger Conserve taken with *Mithridatum* mixed together, is good for those that are troubled with Distillations of Rheum from the Brain to the Nose, and defluxion of Rheum into the Eyes; and being mixed with the Powder of Mastick, is very good for the Running of the Reins, and for other looseness of humors in the Body: The dry Conserve or Sugar of Roses is a very good Cordial to strengthen the heart and spirits: The Syrup of drie red Roses strengthens a Stomach given to casting, cooleth an overheated Liver, comforteth the Heart, and resisteth Putrefaction and Infection. Red-rose Water is better than Damask, being cooling and cordial, refreshing and quickning weak and faint spirits, and used either in meats or Broths. Honey of Roses is good to gargle the Mouth and Throat to cleanse and heal them: the Cordial Powder, called *Diarrhodon Abbatis* and *Aromaticum Rosarum* doth comfort and strengthen the Heart and Stomach, procures an Appetite, helps Digestion and stayeth Vomiting: Vinegar of Roses is of much good use, and to procure rest and sleep; if some thereof and Rose-water together be used to smell unto; but more usually to moisten a piece of Red-rose Cake cut fit for the purpose, and heated between a double folded Cloth, with a little beaten Nutmeg and Poppy-seed strewed on the side that must lie next to the forehead and temples, and so bound to for all night; The Syrup of Damask Roses is both simple and compound;

pound; the simple solutive Syrup is a familiar, safe, gentle and easie Medicine purging Choller, taken from one ounce to three or four: The Syrup with Agarick or the compound Syrup is more forcible in working, for one ounce thereof by it self will open the body more than the other, and worketh as much on Flegm as Choller.

Rupture-wort, Vertues and Vse.

THe Juice or Distilled Water of the green Herb taken in Wine and drunk helpeth all Fluxes, Vomitings, Running of the Reins, the Strangury, Stone or Gravel in the Reins or Bladder, also Stitches in the Side, all griping pains in the Stomach or Belly, the Obstructions of the Liver and the Yellow-Jaundice: A drachm of the Powder of the dried Herb taken in Wine every day for certain dayes together is effectual for all the Diseases aforesaid, and is found by experience to be an excellent and speedy Cure for the Rupture.

Sage, Vertues and Use.

THe Juice of Sage drunk with Vinegar is very good against the Plague: Sage, Rosemary, Honey suckles and Plantane boyled in Wine or Water, with Honey and Allum put thereto, is an excellent Gargle to wash sore Mouths and Throats, Cankers, or the secret parts of Man or Woman.

A Medicine or Pills much commended for those that are in a Consumption.

Take of Spicknard and Ginger of each two drachms, of the Seed of Sage roasted at the fire eight drachms, of long-Pepper twelve drachms; all these being brought into fine Powder, put thereto so much Juice of Sage as may make them into a Mass for Pills, taking a drachm of them every Morning fasting, and so

so likewise at night, drinking a little pure water after them: It helpeth also the Falling-sickness, the Lethargy, the Palsie, and all Defluxions of Rheum from the Head, and for the diseases of the Chest or Breast, also all pains of the Head and Joynts that come of cold.

Winter and Summer Savory, Vertues and Vse.

THe Conservees and Syrups of these Herbs are a very good Remedy against the Chollick and Iliack passions, expelling Wind in the Stomach and Bowels, also it is a present help for the rising of the Mother procured by wind: it cutteth tough Flegm in the Chest and Lungs, and helpeth to expectorate it the more easily: The Herbs are both of them hot and dry, but the Summer Savory is more effectual to all the purposes aforesaid; they are both of them very good Pot-herbs.

Saffron, Vertues and Use.

THis Herb is a very good Cordial, and a notable expulsive Medicine against Epidemical Diseases, as Pestilence, Small-Pox and Measles, an excellent Remedy for the Yellow-Jaundice; it quickens the Brain, helps difficulty of breathing, Consumption of the Lungs, and exceedingly strengthens the Heart; but let not above ten grains of the dried Flowers be given at one time; for an immoderate quantity may hurt the heart instead of helping it.

Scurvy-grass, Vertues and Vse.

THe Herb tunned up in new Drink, either by it self or with other things openeth Obstructions, evacuateth cold, clammy and flegmatick humors both from the Liver and Spleen, wasting and consuming both the swelling and hardness thereof: The Juice of Dutch Scurvey-grass, if to be had, or else the Eng-
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lish drunk in the Spring every morning fasting in a Cup of Drink, or the Decoction thereof drunk, is effectual for all the Diseases before mentioned, also to purge and cleanse the Blood, the Liver, and the Spleen, and especially for those that have the Scurvey.

Sorrel, Vertues and Use.

THE Roots of Sorrel in a Decoction, or in Powder, is good in all hot Diseases to cool any inflammation and heat of blood in Agues pestilential or chollerick, or other Sickneses and Faintings rising from heat, and to quench Thirst, and procure an Appetite in fainting or decayed Stomachs: A Syrup made with the Juice of Sorrel and Fumitory is a soveraign help to kill those sharp humors that cause the Itch; the Decoction of the Flowers made with Wine and drunck helpeth the Black-Jaundice, as also the inward Ulcers of the Body and Bowels: The Seed and Herb is effectual in all the causes aforesaid: Wood-sorrel serveth to all the purposes that the other or Garden Sorrel doth, and more effectually.

Smallage, Vertues and Use.

THE Juice of this Herb taken, but especially if made into a Syrup, openeth obstructions of the Liver and Spleen, rarifieth thick Flegm and cleanseth it and the blood, and is singular good against the Yellow-Jaundice: The Juice put to Hony of Roses and Barley-water is very good to gargle the Mouth and Throat of those that have Sores and Ulcers in them, and healeth all other foul Ulcers and Cankers elsewhere if washed therewith: The Decoction of the Root in Wine, or the Juice thereof taken in Wine is held to be stronger in operation than the Herb to all the purposes aforesaid. Smallage Potage eaten in the Spring is very effectual to purge and cleanse the Blood.

Succory,

Succory, Vertues and Use.

THE Distilled Water of the Herb and Flowers is especial good for hot Stomachs and in Agues, either Pestilential, or of Long continuance, for Swounings and Passions of the Heart, for the Heat and Head-ach in Children. A Decoction made in Wine and drunk, or a drachm of the Seed in Powder drunk in Wine before the Fit of an Ague, helpeth to drive it away: A handful of the Leaves or Roots boyled in Wine or Water, and a draught thereof drunk fasting driveth forth chollerick and flegmatick humors, openeth obstructions of the Liver, Gall and Spleen, helpeth the Yellow Jaundice, the heat of the Reins and of the Urin, also the Dropfie.

English Tobacco, Vertues and Use.

THE Herb bruised and applyed to the place grieved with the Kings Evil helpeth it effectually in nine or ten dayes; it also cureth any fresh wound or cut, and the Juice put into old sores both cleanseth and healeth them: The Juice made into a Syrup, or the Distilled Water of the Herb drunk with some Sugar, or the Smoke taken by a Pipe but only fasting: The same helpeth to expel Worms in the Stomach and Belly, and to ease the pains in the Head, and the griping pains in the Bowels: It is good to provoke Urin, and expel Gravel and the Stone in the Kidneys, also to expel Windiness and other Humors which cause the Strangurie or the Mother.

Tansie, Vertues and Use.

THE Herb bruised and often smelled unto, as also applied to the Navil, is very profitable for such Women as are given to miscarry in Child-bearing; or the Herb boyled in ordinary Beer, and the Decoction drunk doth the like: let those Women that desire Children make use of this Herb; for if their Womb be not as they would have it, this Decoction will make

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it as it should be : The Decoction or the Juice drunk in Wine helpeth the Strangury and those that have weak Reins and Kidneys; it also expels wind in the Stomach, Belly, or Bowels, and is good to procure Womens Courses. A Tansie made with the Herb and Eggs helpeth to digest and carry downward those bad humors that trouble the stomach.

Violets, Vertues and Vse.

THe Syrup of Violets is effectual in the Plurisie and all Diseases of the Lungs, to lenifie the sharpness of hot Rheums and the hoarsness of the Throat; the heat also and sharpness of Urin, and all pains of the Back, Reins, and Bladder; it is good also for the Liver and Jaundice, and to cool the heat and quench the thirst in hot Agues; and if a little of the Juice of Lemmons be put to it, or a few drops of the Oyl of Vitriol, it is made thereby the more powerful to cool the heat and quench the thirst: A Decoction of the Leaves or Flowers made with Water or Wine, and drunk, or to apply them Poultis wise to the griev'd place, easeth the pains, also the pains in the Head: A drachm weight of the dried Leaves of the Flowers of Violets taken in Wine, or any other Drink, a draught in a morning fasting doth strongly purge the Body of cholerick humors, and asswageth the heat.

Valerian, Vertues and Vse.

THe Decoction of the Root or Herb in Wine being drunk, and the Root being used to smell unto, it is of especial vertue against the Plague; it also helpeth all stoppings and stranglings in any part of the Body: The green Herb with the Root taken fresh, being bruised and applyed to the Head, taketh away the pains and prickings therein: The Root boiled with Liquoris, Raisins and Annise-seed is good, and of singular use for those that are short-winded, and are troubled with a Cough, it helpeth to open the passages, and to expectorate, begin easily.

Wormwood,

Wormwood, Vertues and Vse.

TAke of the Flowers of Wormwood, Rosemary, and black Thorn of each a like quantity, half that quantity of Saffron; boyl the Flowers in Renish-wine, but put not in the Saffron till it be almost boyled: A smal quantity of this Drink taken in a morning fasting cleanseth the Body of Choler, provokes Urin, helps Surfets, Swellings in the Belly, causeth an Appetite to meat, helps the Yellow-Jaundice, and doth wonderfully preserve and keep the Body in health, it being drunk for several dayes together. A draught of Woomwood-Beer, Ale, or Wine helps a dull Brain, a weak Sight, a stinking Breath, and a bad Memory, if a draught be drunk only in a Morning fasting; it is also good against a Surfet, procures an Appetite, and helps Digestion.

Wall-flowers or Winter-Gilliflowers, Vertues and Vse.

THis is one of the best Flowers for Bees to gather both Honey and Wax from in the Garden; A Conserve made of the Flowers is used for a Remedy both for the Apoplexie and Palsey.

Woodbind, Vertues and Vse.

A Conserve made of the Flowers of Woodbind helps Cramps, Convulsions, and Palsies, and whatsoever grieves come of cold; It takes away the evil of the Spleen, provokes Urin, procures speedy delivery to Women in travail, and is special good for the Lungs; also there is no better cure for an Asthma than this: An Ointment made of the Flowers will clear the skin of Morpew Freckles and Sunburning, or whatsoever discolors it.

It would spend much time, and make the work very tedious, to speak to every particular Herb, we shall therefore refer you to several Herbals in print.

Now for all that has been said touching the Use and Vertues of all Plants as to the cure of Mans Body being diseased, it is prudence to prevent or stop a Disease before it comes; and to perform this we are to know what a Disease is, and the first original cause.

A Disease then is the Corruption of an Entity in some part thereof, and a disposition of its total Perishing, that is Death; therefore the Body, Mind, and Soul have their Diseases: Secondly, the Diseases of the Body are various, scarce to be numbered, and oft-times mixt. A Disease added to a Disease is called a Symtome of a Disease. Thirdly, a Disease of the Body is either by solution of that which is continued, or by distemper of Humors. Fourthly, solution of that which is continued is either by a Rupture or a Wound: A Rupture is prevented by bewareing falls and violent motion; a wound is avoided by shunning those things which can cleave, cut, prick, rent, tear, bruise, or hurt any way. The cure of a wound is desperate if any vital Member be hurt, as the Heart, the Brain, the Liver, the Entrals, &c. for then the vital actions are hindred, and soon after cease: Secondly, if any Member be cut off, it cannot be set on again, because the spirit hath not wherewithal to pass into the part that is severed. Fifthly, the Distempers of the Humours, and the Diseases that come from thence alwayes proceed from one of these six causes, either from Crudity, Inflation, Distillation, Putrefaction, Obstruction, or Inflammation: First, Crudity in the Body is Nutriment not sufficiently concocted, namely either Chyle or Blood, which comes first from the quality of Meat and Drink when they are taken too raw flegmatick and unwholsome, which the Concoctive faculty cannot well subdue: Secondly, from the quantity, when more Meat and Drink is put in than it is able to alter and assimilate unto the —; for hence undigested and not assimilated humours burthen the body like strangers, and not pertaining thereunto: Thirdly, for want of Exercise, when the natural heat is not stirred up, nor strengthened to perform its Office lustily in the concoction of Meats; from such

such like Crudities divers inconveniences follow; for first, if the Crudity be in the stomach it causeth lothing of food; for so long as the first food is not digested, there can be no appetite to any other. Secondly, if there be a viscosus Crudity adhering in the Ventricle, or in the Guts, being warmed, it takes spirit and is turned into worms, which gnawing the Bowels, stir up the evil vapours by their motion; whence also come Phantasies very hurtful to the Head. Lastly, Crudity under the skin in the blood or flesh begets Paleness, and when it is collected and putrified, Scabs, Vicers, &c. Crudity is prevented by a temperate Diet, as to Food, Sleep, and daily Exercise; and cured first by violent expurgation; secondly by strong Exercise; Thirdly by the use of hot Meats and Drinks; Fourthly by comforting the Stomach with such things as heat both within and without, Seventhly Inflation is much and gross Vapours exhaling from the Crudities that are gathered together, and stretching the Members; and that either without pain, as when it causeth yexing or belching in the Ventricle, panting in the Heart, giddiness in the Head; when being prohibited to go any further, it is carried in a round laziness and stretching in the whole Body, or else with pain, as when it causeth aches in the Bowels, straightning the spirits that lie between the Fibres, and sharp or else blunt prickings in the Muscles according as it is more gross or subtle: It is cured by strong Exercise, that the Vapour being attenuated may go out at the Pores opened. Secondly by expurgation of the humors by which they are generated. Eighthly Distillation is the condensation of crude vapours into the Rheum, which is the cause of many Evils; for crude vapours getting up to the head, when as by reason of the abundance and grossnes of them they cannot be expurgated by the ordinary passage, they become Rheum flowing several wayes, and causing divers diseases; for first, if they run abundantly, and run at the Nose they cause the Murre or Pose. Secondly, if the Distillation fall into the Jaws it causes the Cattarrhe. Thirdly, if into the Kernels of the Jaws the Quinsie. Fourthly, if in-

to the Lungs difficulty of Breathing and the Asthma. Fifthly, if the Distillation be salt and sharp; ulcerating the Lungs, it causeth the Cough. Sixthly, which if it be done oft, and the Lungs be filled with Apostemes it causeth the Consumption; for when the ulcerous Lungs cannot with dexterity enough perform their Office of cooling the Heart, the Vital is generated more hot than it should be, which doth not cherish but feed upon the flesh and blood, and at length burns out the very Workhouse it self of the Blood, which is the Liver, whence for want of Blood, which is as it were the Food, follows the consumption of the whole body. Seventhly, if the Distillation flow in abundance and gross down the Marrow of the Back, it causeth the Palsie, by hindring the Animal Spirit that it cannot be distributed by the Nerves springing from the Backbone. Eighthly, if it fill the Nerves of the Muscles only it becomes the Spasme, or Convulsion. Ninthly, if it flow subtle, and penetrating the Nerves, it is at length gathered together in the extremities of the Members, and there raises Pains, which in the Feet are called the Gout, in the Hands *Chiragra* or the hand-Gout, in any of the Joynts of the Bones *Arthritica* the running Gout, in the Hip it is called *Ischias* or the Hip-gout, or the Sciatica. Tenthly, if those kind of Runnings stay in the Head they procure divers diseases, as when they are subtle the Head-ach, too raw and and flegmatick the Lethargie, salt and choleric the Phrensie, gross and mixt with a melancholly humour the Epilepsie or Falling-sickness: When as the spirits diffused through the whole Body, making hast to relieve the spirits besieged in the Brain, make most vehement stirs, and fight till they either overcome and repel the Disease, or else faint and are extinguished: But if the gross flegmatick humours have occupied all the vessels of the Brain at once, it becomes the Apoplexie, that is a privation of all sense and motion, whence also the vital fire in the heart is soon after extinguished.

All these Diseases are both prevented, and also if they go not too far, cured: first by Exercise; secondly by Rectification of the

the Brain by good smells; thirdly by a thin hot and sulphury Air; fourthly, by thin light Meat and Drink: And if these will not prevail you have liberty to go to the Physicians.

Ninthly, Obstruction is a stopping of the Bowels by thickened flegm, whence it comes to pass that they cannot execute their office; for example, when the Entrals are stopt that they cannot void, it is the Volvuli or wringing of the Guts, when the Liver is stopt the Dropsie; for the Chylus being not turned into blood, flows through the Veins and Members, and is not turned into Members, when the bladder of the Gall is stopt, the Yellow-Jaundice, when the Spleen, the Black-Jaundice; for in the first the Cholera; in the other the Melancholly, when it cannot be voided diffuseth it self through the Blood; but when the Urin Pipes, or the Veins, or the Bladder are stopped, that is by reason of the breeding of Tartar, which they call the Stone, which stopping the passages by its sharpness pains the Veins and Nerves.

The Cure is first by Purgations, secondly by Medicines, attenuating or breaking, cutting and driving out the gross humors before they are gendred or knit.

Tenthly, Putrefaction is the corruption of some humors in the Body, as either of Flem. or of Cholera, or of Melancholly, which putrefying in or out of their Vessels produce Fevers or Ulcers.

The Cure is first Expurgation of the place affected, secondly a good Diet and Daily Exercise, thirdly Motion.

Eleventhly, Inflammation is a burning of the Vital Spirit or of the Blood, caused by the too much motion either of the Body by wearying it, or of the Mind by Musing and Anger; or else by Putrefaction, or else by Obstruction; for it is known out of Physicks, that Motion doth heat even unto firing, and that by Obstruction doth by Antiperistasis exasperate the heat included even in those things that are watery and putrid, so that at length it breaks out violently. When the blood is kindled within it becomes a Fever, when under the skin *St. Antonies Fire*.

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The General Cure is the Opening a Vein and Cooling; If you like not this way the Physicians can better direct.

Thus have I cast into the great Treasury my Widows Mite, and if it shall be instrumental for the encouraging the Industry of others, I shall think I have well imployed both my time and my labour; and if any shall be pleased to put these Proposals of mine into practice, either as to a less or greater quantity of ground, I doubt not but he will find I have been too sparing a Discoverer both of the Pleasure and Profit, which are to be reaped thereby.

Having hitherto discoursed of the Planting Timber Trees to make provision for the building of Ships (the main strength and support of these Nations, as well as the chief Instruments of Trade all over the World) I have to the five foregoing Books added the following Treatise, wherein not altogether from the purpose, I have set down the great Improvement which has been made by Shipping to a Nation, the vast benefit of Trade, particularly of the Fishing Trade, in order to which you have an Account of a Voyage to Orkney and Shotland, with the Manner and Way of the *Hollanders* Fishing and Trading in those and the adjacent Islands. This Discourse was printed by it self in the year 1662, and having now an opportunity to reprint it, I have rather chosen to make it a part of this, than let it go abroad in a second Edition alone, as it did in the first: 'Tis the same word for word now as it was then; and this I have done purposely that I might, if possible, satisfy all, and yet not be tedious.

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ENGLAND'S IMPROVEMENT REVIVED.

THE SIXTH BOOK.

The Argument.

You have a Description of the Islands of Orkney and Shotland, with the manner and way of the Hollanders Fishing and Trading in those Seas and Islands: Also a Diurnal or short account of Coasting from London to those Islands, with a discovery of several Rocks and Harbours on that Coast: Here is likewise set down, that the Original of the Hollanders Trade, which is now much increased and spread through a great part of the World, was and is from the Fish they every year take on the Coast of England and Scotland. And in this Book lastly is set down the great benefit that does arise from Trade, with a short discourse, that the Traffick of Europe hath been engrossed into the hands, and carried on all along by the Venetians, Genoese, Portugals, Easterlings, Hollanders and English; and that the failure and decay of the one was the original rise to another. Also a Composition with the Hollanders made with King Charles the First, to pay unto his Majesty one hundred thousand pounds yearly, and a hundred thousand pounds ready down. With a particular Account of the Herring, Ling, Cod, and other Fish taken in the British Seas by the Hollanders and other Nations every year worth ten Millions of pounds.

IN the year 1633, being then an Apprentice to Mr. Matthew Cradock of London Merchant, one of the Society for the Fishing Trade of Great-Britain, I was sent to Sea by the Right Honorable the Earl of Pembroke and Montgomery, and his Associates, for the discovery of the Island of Shotland, the manner and way of Trading, the Profits and

Customes thereof, the settling a Staple, building of Store-houses, the viewing the ground on shore for landing and drying of Nets, making and drying of Fish, and the building of Block-houses for the security of Trade; The manner of the *Hollanders* fishing for Herring with Busses, and other Vessels for Ling and Cod, according to the Journal kept thereof, is as followeth.

We set sail from *Gravesend* the 27th of *April* 1633, and having Letters from the Earl of *Pembroke* to Mr. *William Dicks* of *Edinbourg* in *Scotland*, we directed our course towards *Scotland*; but by reason of foul weather we e forced into *Harwich*, and set sail from thence the 30th *Ditto*; the wind not favouring us we came to an Anchor in *Yarmouth* Road, and there going on shore were informed, that the *Hollanders* Busses did drive at Sea for Herrings on that Coast, and that from the *Holms* before *Yarmouth* to *Bookness* in *Scotland*, North North-East is 96 Leagues, and from *Bookness* to the South end of *Shotland* North and by East about 53 Leagues. The fifth of *May* we set sail from *Yarmouth*, and by stress of wind were forced into *Scarborough*, and there going on shore were informed of the *Hollanders* Busses fishing on that Coast, and that from *Scarborough* Northwards towards *Catness*, in 45 Fathom or thereabouts, in that fair way is usually the first Summer Herrings caught. From *Scarborough* we set sail and came to an Anchor before *Leith* in *Scotland* the 13th *Ditto*, where going on shore, and from thence to *Edinburg*, delivered my Letters to Mr. *William Dicks*, who was at that time Governor of the Island of *Shotland*, and did receive the Revenue of those Islands.

Having received my Instructions and Letters from Mr. *William Dicks* directed to Mr. *James Scot*, who lived at that time in the North parts of the Islands of *Shotland*, and was Agent or Deputy to the said *William Dicks*.

We set sail from *Leith*, and came to an Anchor at *Casten* in the Islands of *Orkney*, the 22 *Ditto*: And because these Islands are very considerable as to the Fishing Trade, I cannot pass them by without a brief description thereof, which is as followeth.

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The Islands of *Orkney* are 31, and lye from the North and North-East Point of *Scotland*; the first and Southermost Island is called *Elhey*, but the greatest and chiefeft Island of *Orkney* is called *Maland*, which lieth Southermost from the Point of *Catness*; on the North side of this great Island are the Havens, where the Ships come to that Trade in those parts, and to the Island called *Lewis*, and the Islands thereabouts.

The *Lewis* Islands are the Islands on the West of *Scotland*, and those Seas, being also very considerable as to the Fishing-Trade, I make bold to give account thereof as followeth.

These Islands lying Westward from *Scotland*, and to the Northward of *Ireland* are in number 34.

There are four great Islands that lie near the main Land; but the greatest and chiefeft Island is called *Lewis*, which lyeth Northward from the foresaid Islands; but the Northermost of all the Islands which lyeth towards the *Orkanes*, about sixteen Leagues from *Lewis*, is called *Rona*; betwixt *Rona* and *Orkney* lye some small Islands. The Island *Lewis* lyeth from *Shotland* South-West or more Westerly about 58 Leagues; and from the South end of *Lewis* to the North-West of *Ireland* is 27 Leagues: In and between these Islands are many very good Sounds and Havens for Ships. *Lewis* with the Islands belonging to it ly South and By-West, and South South-West about 29 Leagues.

I shall farther add to my boldness, and give you an account of the Islands of *Fero*.

These Islands lye Northward from the *Lewis* Islands about 54 Leagues, and from *Shotland* Westerly about 58 Leagues, and are in number 22. The Sounds and Havens are many.

The Southermost great Island is called *Sugdro*: on the North side of this Island are several good Sounds and Havens; but the best and chiefeft of all the Havens, and where all the Trade and Merchandise is, is called *Tor-Haven*, which lyeth on the great Island *Strone*. But these Islands being out of my Road, I shall return to my former Discourse on the Coast of *Orkney* and *Shotland*.

The South part of *Shotland* lyeth about 20 Leagues Northward from the Island called *Maland*; but between the Islands of *Orkney* and *Shotland* lye two Islands, the one called *Fair-hill*, and the other called *Fulo*; these two Islands lye about 10 Leagues one from the other, *Fulo* lyeth North-North-East from *Fair-hill*.

The Island *Fair-hill* lyeth from the North-East point of *Orkney* about 9 Leagues, and the Southermost point of *Shotland* lyeth from *Fair-hill* North and By-East about 8 Leagues, and from *Fulo* East and By-South about four Leagues.

Being informed of the manner of the *Hollanders* fishing for Herring, Ling, and Cod, with Busses and Dogger-boats, in those Seas, and the Inhabitants of the Islands manner and way of Fishing; we set sail from *Casten*, and came to an Anchor by *Sunbrough-head*, being the South part of *Shotland*, the third of *June*, and going ashore, spake with the Good-man of *Quandale*, one of the chief of those parts; the said Gentleman with other of the Inhabitants did inform me of their manner of Trading with the *Hamburgers*, and others; and of the *Hollanders* fishing for Herring on that Coast, also of their Dogger-boats that fish only for Ling and Cod.

After I had received information from the Inhabitants of the several Islands, and the manner of Fishing and Trading there, we set sail from thence and came to an Anchor in *Bracey-Sound*, otherwise called *Broad-Sound*, a very gallant Harbour, where many Ships may lye Land-lockt for all Winds.

Having informed my self by the Inhabitants of those parts of the manner of their Trading and Fishing, and the *Hollanders* fishing for Herrings driving on that Coast, we set sail from thence and came to an Anchor in *Evey-Sound*, the Northermost Sound in *Shotland* on the 12 *Ditto*, and there going on shore, I continued about 11 or 12 Months, and in that time travelling the greatest part of the Island by Sea and Land, did thereby better inform my self concerning the manner of Trading and Fishing by the Inhabitants, and the *Hollanders* at Sea.

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The Land of *Shotland* lyeth North and By-East and South or South and West about 60 Miles. But there are many Islands belonging to *Shotland*, which I shall have occasion to mention hereafter. That which is most considerable are the Sounds and Harbours. On the West-side of the Southward Point of *Shotland*, there is a good Harbour and Sound, called *St. Magnus*, and on the East-side near *Sunbrough-head* is a fair Sand-Bay, where there is good Anchoring in ten or twelve Fathom; to the Northward of this last Sound there is another Sound called *Hambrough-Haven*, which is a lade-place for the *Hamburgers* and *Scots*. About 9 or 10 Leagues from the Southward point of *Shotland* there is a Chanel that runneth through the Land, the South-part of the Land divided by the Chanel is called *Swanberg*, the other part so divided, or the North-part, is called *Laxford*; within this Chanel aforesaid are several Sounds or Harbours, but the best and chiefest Sound in *Shotland* is *Brace-sound*, or *Broad-sound*, as before mentioned; out of this Sound the aforesaid Chanel doth run Northward.

On the North-part of *Swanberg* lieth the high hill of *Hanglix*, from the said *Hanglix* about 9 Leagues Northwards, lie some out-Rocks, called the *Stars*; to the Northward of the *Stars* there is a very good Harbour, called *Bloom-Sound*, to the Northward of this last Sound is another good Haven, called *Hue-Sound*, being the Northermost, or North-East-Sound or Haven belonging to the Island, called *Ounst*.

There are other Havens, or Sounds, which lie through the Land, between and about that part of *Shotland* called *Laxford*, and the Island called *Fello*. There are also other Islands and Sounds, which for brevity sake I forbear to mention.

The Merchants which Trade with the Inhabitants of *Shotland* are *Hamburgers*, *Breamers*, *Luberghers*, *Scots* and *English*.

The chief Inhabitants of the Islands are *Scots*, the meaner or inferior sort are a mixed People of *Danes* and *Scots*.

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The Islands of *Shotland*, as I have been informed, were given to King *James* of blessed Memory, by the King of *Denmark*, with Queen *Ann*, being part of her Dowry.

The Commodities of *Shotland* which the Inhabitants do for the most part Trade withal is Ling and Cod, which they take with Hooks and Lines in small Boats, called *Yalls*, about the bigness of *Gravesend* Oars; the Ling they sell for 3d. a piece, being a Ling of the largest size, and is called a *Gild Ling*; if smaller, then we have two for one, or three for two, and so proportionable. The *Cod* is sold for 2d. the *Gild Cod*, and is measured as the Ling. I bought of Fishermen, the Inhabitants of the Island called *Ounst*, 11635 *Gild Ling*, and 834 *Gild Cod*, at 3d. the *Gild Ling*, and 2d. the *Gild Cod*; which Ling and Cod were taken by the said Fishermen at several times in their small Boats, and brought to my Booth, or place of abode every morning as they were caught; the said Ling and Cod being very good and Merchantable, were salted aboard the Ship that landed me, and within seven weeks after my landing, I sent her for *London* with the said Fish to the Right Honourable the Earl of *Pembrook*, as by my Books of Account, delivered into his hands, and left with him, may appear.

There is also other small Fish which the Inhabitants do catch with Angles sitting on the Rocks, and in their small Boats with Hooks and Lines in the Sounds, and between the Islands; and these small fish are very considerable, for although they cannot spend them by reason of the multitude they take, and have not industry to make use of them for Transportation, yet the Livers they preserve, and with the Livers of the Ling and Cod, make *Train-oyle*; but if it were improved, as taking them with Nets, the *Train-oyl*, I say, would amount to a considerable sum. And if this increase of Trade were carried through the whole Islands, it would be a great encouragement to all Merchants Trading into those parts.

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There were several other Merchants in the Island where I did inhabit, that bought Ling and Cod of the Fishermen, so that the quantity which I sent for *England* was not above the fifth part taken in that Island: with which the whole quantity of fish that was bought by other Merchants throughout the whole Islands of *Shotland* being added together, would amount to a very considerable Sum or Quantity, to the lading of many Vessels, which might be much more improved, and encrease Trading thereby, furnishing the Inhabitants with Mony and Commodities.

In the Islands of *Shotland* there were Beeves and Sheep sold at a very reasonable rate; I bought for my own use, and the Victualing the Ship sent to *London*, three Oxen for 3 l. and at another time four Oxen for 5 l. which were fat, and about the bigness of the small sort of Cattel we have in *England*: There were also fat Sheep sold for 2 s. and 2 s. 6 d. per sheep; there were also other Creatures for food, as Conies and Fowl. But desiring not to multiply words, I forbear to mention them.

The Fuel or Firing in *Shotland* is Peat and Turf.

There may be Salt-pans set up there, and good Salt made to serve all the Fishing Fleet. There are very good Shores for landing and drying of Nets, and making and drying Fish.

There is no Night in the North of *Shotland* part of two Moneths in the year, as *June* and *July*. In an Island North of *Ounst*, being not inhabited, but stocked with wild Cows and Conies, I did kill with my Birding piece ten couple of Conies in one night, shooting from a little before Sun-set to Sun-rising, and it was as light as a Cloudy Winter-day.

I do not remember any Frost or Snow in *Shotland*; if any, it was not of long continuance; the coldest weather is by reason of great Winds in the Winter-quarter, the wind blowing so violent, that no ship dare look on the North-Coast; so that the people of those Islands have little commerce with other Nations in that Quarter. I can speak by experience, being blown down flat to the ground by the violence of the wind, was forced

to creep on my hands and knees to the next wall, and going by the wall got into an house, or else must have stayed by the wall till the violence of the Wind were over. Sometimes it lasteth half a day, and sometimes more.

There are several Towns in *Shotland*, so called, being about eight or ten houses together, where they plow and sow corn, as Oates, which is their chiefest Bread; and if my memory do not much deceive me, there was good Barley growing in my time. But the Land might be much improved if the inhabitants were industrious; they are like unto the idle *Irish*, not improving any thing either by Sea or Land, spending that in the Winter which they get in Summer; although their Winter might be very profitable unto them, if they were laborious and industrious, as the *Hollanders* are.

The Goods and Commodities that are vendible in *Shotland* are Hooks and Lines for the taking of Ling and Cod, Nets for the taking of Herring, Strong-Beer, Bisket, Wheaten Meal, Salt, Pease, Fruits of all sorts, Strong-Water, Monmouth-Caps, and many other particulars, which is not needful at this time to mention.

The Inhabitants of the Island of *Ownst* usually have a Bark that they Trade with to *Norway*, where they may buy Timber for Houses ready framed, also Deal-Boards, Tar, Ships, Barks, and Boats of all sorts, and other necessaries for their use.

With their small Fishing-Boats, called *Talls*, they will Row into the Main about two or three Leagues, more or less, where the Banks are that they lay their Hook and Lines for Ling and Cod; in one of these Boats Rowing with two men, and sometimes four, according to the largeness of the Boat, they do usually bring to Shore every morning that they go to Sea, about fifty or sixty Ling and Cod.

There are many Barrels of Herrings taken by the Inhabitants, with their small Boats, in the Sounds, and at Sea not far from Land, which are the gleanings of the *Hollanders* Busses; for the Busses driving at Sea, break the Skull or Shole of Herrings, and then

then the Herrings flee near the Shore, and through the Sounds, where these small Boats, with those Nets they have, take them. But, if they had better Tackling and Boats, they might take five hundred Barrels for one, which would much enrich the *Islands*, and by encreasing of Trade would augment His Majesties Revenue.

I was an eye-witness of the *Hollanders* Busses Fishing for Herring on the coast of *Shotland*, not far from *Ownst*, one of the Northernmost *Islands*; demanding the number of them, was informed by several persons of quality, that the Fleet consisted of 1500 Sail, and that there were about 20 Wasters, as they call'd them, which were shis carrying about 30 Guns a piece, being the Convoys of the Fleet of Busses; which said Busses were of the burden of about 80 Tun.

There were also a small Fleet of Dogger-boats, which were of the burden of 60 Tun and upward, which did fish only with Hooks and Lines for Ling and Cod. Many of these Boats and Busses came into several Havens or Sounds, to fit and trim themselves. One thing was observable, that within 8 or ten dayes after the Dogger-Boats went to Sea, they came into the Sound again so full laden as they could swim. The certain number of Dogger-Boats I could not learn, but the general report was about 400.

The Composition of the *Hollanders*, as I was informed after my coming into *England*, was an Annual Rent of 100000*l.* and 100000 *l.* in hand; and never having been paid or brought into the Exchequer, as I could hear of, there is in Arrearages above 2500000*l.* an acceptable Sum, and which would come very happily for the present occasions of His Majesty.

As for the Charges in Building, Rigging, and setting forth the Busses to Sea, with Nets and other Materials for the Fishing, as also Dogger-Boats for Ling and Cod, I refer to several Books in Print, as *The Royal Herring-Buss Fishing*; and, *A Narrative of the Royal Fishing*, both set forth by Mr. *Simon Smith*, who is well experienced in those Affairs.

If God would please to put it into the heart of our Gracious King and his Subjects to set out such a Fleet of Busses, as before mentioned, for the Fishing-Trade, being in our own Seas, and on our own ground; and that the *Hollanders* and all Strangers may be discharged from Fishing in those Seas; and the *Hamburgers*, *Breamers*, and *Lubeckers*, and all Strangers, from Trading in the Islands of *Orkney* and *Shotland*, and that onely the Subjects of the three Kingdoms may have the Trading and Fishing, it would make our King one of the greatest Monarchs in the World, for Riches and Glory; and the three Kingdoms the happiest people in Christendom, and there would not be one wanting Bread; but the hearts of the Subjects would be lifted up with Praises to God and our King.

For it is well known, that Trading is the life of all the habitable World, and therefore much more of these Three Kingdoms, which are but Islands, and so populous, that we are ready to devour one the other; and if Trading be not encreased and maintained amongst us, we shall in a short time be the most despicable People in the World, and the derision of all Nations.

Having in thirty years experience in Travelling *England*, *Scotland*, and *Ireland*, and other parts, observed, That without Trading no Nation can subsist, which I humbly conceive I shall be able to make good against all opposers thereof, which are enemies to your Sacred Majesty, and these three Kingdoms: And that if there be not an encrease of Trade powerfully carried on; we are an undone People, as I shall make more fully appear by my ensuing Discourse.

Now it is well known to all, who are not quite ignorant of the course of Trade and Merchandise, that the Traffick of *Europe* hath been engrossed into the hands, and carried on all along by the *Venetians*, *Genoese*, *Portugalls*, *Easterlings*, *Hollanders*, and *English*; all which I shall briefly run through, and shew how the failure and decay of One, was the original rise to Another, till the whole at present is divided between the *Hollanders* and us.

I shall begin with *Venice*, That City therefore and *Genoa* at first, two pretty equal Common-wealths, by reason of that mutual advantage they had one of another, and community of Trade to the same places, were counter-ballances one to another; in one thing the *Venetians* than the *Genoese*, in another the *Genoese* than the *Venetians*, being better supplied; for if the *Venetians* had better Shipping, the *Genoese* had richer Merchants, and a greater Bank, and so they continued: Till *Venice* disdain- ing to be confin'd in so narrow limits, as was the compass of its City, encreased its Dominion, and adding to its Power greater Industry, utterly undid the *Genoese*, underfold them in their best Commodities, and so wore them out; which they could well do, being better in this continuance of time provided, as to Men, Mony, and all manner of Provisions.

Hence they made themselves Lords of all the Trade of the *Levant*, comprehending in it *Turkey* part of *Africk*, and *Italy*: and by multitude of Ships of their own, transported the Commodities of those Countries into *France*, *England*, and the *Netherlands*. They made their way also into the *Indies*, and all over *Persia* by their Caravans, and by *Egypt* and *Aleppo* return- ed thence all kind of Silks and Spices, and sold them at their own Rates, where ever they found the best vent, and so they continued to do at excessive Rates, though not without exces- sive Gains, by reason of the difficulty of conveyance; till the *Portugals* discovered the passage to the *Indies* by the *Cape of good Hope*, receiving in Exchange for the Commodities so Bartered, the Staple Commodities of all the Countries they traded to; Here in *England* they had for them Cloth, Tin, Lead, &c. and with which we our selves, by our own Shipping, cheaper, and with greater gain, might have supplied *Italy*, *Turky*, and the greatest part of *Africk*.

Hence also that State, at first confined to a few scattered Islands, on which by degrees they built their City, whither be- fore they onely fled for security, came to encrease and grow to that heighth in which now it is, nay greater in all probability; for

by the decaying of Trade, their Power and Dominion hath sensibly decayed. By the greatness of their Trade they enlarged their Jurisdiction, both upon the *Levant* Seas, and very high into the Main-Land, in *Lombardy*, *Gracia*, on the Dukedom of *Milan*; conquered and purchased many considerable Islands in the *Mediterranean*, as *Candy*, *Zant*, *Cyprus*, and other places which lay convenient, both for strength and security of the trade and Navigation of that Republick.

It would be tedious for me to recount how many Colonies they have dispersed over the World, and that fear and jealousy other Kings and Emperors have had of its growing strength; how that City was thought to have a design upon the Sovereignty of *Italy*, and the many combinations to prevent. And all this to have compassed from so small a beginning, onely by the extent of its trade, as its neighbour *Rome* enjoyed it by strength of Arms.

After the *Venetians* and *Genoese*, the *Easterlings* or *Hance-Towns* were Master of the trade and Commodities transported from *Moscovy*, *Poland*, *Germany*, *Sweden*, *Prussia*, *Denmark*, &c. and with them, by their abundance of Shipping, served *England*, *France*, *Spain*, and the *Low-Countries*. And that in regard of that continual need we had of the Commodities of those parts or People, as Hemp, all manner of Cordage, Sope-Ashes, Flax, Pitch, Tar, Masts, Corn, &c. They received in return from us our Staple-Commodities, which by their own ships, at their own Rates, they conveyed all over *Europe*, when we for want of shipping could not: but did see their excessive gains, and yet were forced to be content. Even here in *England* they had very great priviledges, mighty Indulgencies; and out of that necessity we thought we had of them, finding by them the speediest vent for our Commodities we embraced them into our bosom, so that by degrees they began to be very potent upon the Northern Seas, and upon every occasion were ready to turn our Enemies, the most dangerous, because, as it were, within our own bowels: Hence taking advantage, in their shipping, the *Saxons*, *Danes* and

and *Normans* invaded *England*; and the *Hance-Towns* were grown formidable both to *Italy* and *France*. But as their Trading decayed, so did also their Strength; and their Shipping being wasted, they have undergone the same necessity that others, once famous Cities of *Mart*, have done, and have utterly lost all their Power and Strength at Sea.

The *Portugals* discovering the way to the Indies by the *Cape of good Hope*, quickly became Engrossers of the whole Trade thither, and by the same stratagem and device undermined at once the *Venetian* and all the *Hance-Towns*, whereupon encreasing with the strength of *Spain*, they made themselves the terror of all round about them, and a very rich Nation and People within it self.

This was the first rise of the *Portugals*, who lying so commodiously for Navigation, and a no less industrious than a very cautelous people in the management of their affairs, proceeded so far, that Queen *Elizabeth* of blessed memory jealous of them, fearing lest *Spain* should joyn with them, and of their future greatness, continually encreasing by reason of its Traffick into the *East* and *West-Indies*, for the security of her Self, and safety of all her good Subjects, endeavoured to make her self equal in strength, and counterpoise them, if possible, by the enlargement of the Trade of *Great-Britain*; and this she prosecuted with so much vigour, and so successfully, that in a little space *England* had as great a Trade and Power by Sea, as either the King of *Spain*, or any Principality of *Europe*.

But before her time, in the Reign of King *Edward* the Sixth, our own Merchants discovered the Trade into *Muscovy* by the way of *St. Nicholas*, ever since which time, in our own Shipping we have thence transported home all the Commodities of that large and vast Countrey, formerly brought in by the *Hance-Towns*, their Agents and Merchants.

And whereas a great part of those same Commodities, as *Cavear*, *Tallow*, *Hides*, &c. are not vendible in *England*, and being bought must be again sold or exchanged, Need and Use hath

hath found a better Vent for them in *Italy*, and other parts of the *Levant*, whereupon first began our Trade there; a Trade, which though it at first appeared very small and inconsiderable, increased in a few years to that height of Improvement, that within 90 or 100 years, we have worn out the *Venetians* out of all that mighty Trade they carried from those parts, or in *Turky*, and all over Christendom.

So that by this you easily see how Trade hath flourished and decayed in *Genoa*, *Venice*, the *Hance-Towns*, and *Portugal*, the whole being now fallen betwixt Us and the *Hollander*, either striving who shall use means most effectual for advancing the general Trade of its Country; and though the *Hollander* hath by Art and Industry better improved his Interest, yet that wherein his Interest most lies may obviously appear, and wherein, in that very particular, we may, if we please, go before them, I shall thus endeavour to demonstrate.

The *Hollanders* have not at present, neither ever had any other means to rise to this greatness of Wealth and Trade, but by betaking themselves to Fishing, being a People of constant Labour, and unwearied Industry; a multitude in a Spot of Land, which doth not afford them any Commodities sufficient to be the ground even of a mean Trade.

They first began, and all along have drove this Trade of Fishing, being their Original of all Trade upon our Coast, and the Coast of *Scotland*, on which they employ thousands of poor people, besides others of a better Rank, making some Mariners and Fishermen, others they keep at work about the making and mending of Nets; others they employ as Merchants about the Transportation or Exchanging of their Fish for other Commodities. So that in all *Holland* you shall scarce see one Beggar, there being so many thousand things, or particular Trades or Employments belonging to the Fishing Trade, out of which they may find a livelyhood.

They employ also hereby great store of Ships, and in the industrious management hereof, make us in *England* at what rate they please buy our own Fish. The

The great quantity of Herrings every year they take, they transport to *Dantzick*, *Melvin*, *Quinbrough*, *Leghorn*, and other parts; and with the Returns they make of them, buy Corn, Hem, Flax, Pitch, Tar, Clap-boards, and other Commodities; and in *Holland* store them up in a Magazin, whence they again disperse them into *Italy*, *France*, *Spain*, yea *England*, and all over *Europe*.

Fish, and the Fishing-Trade being the only Stock upon which they continually live and spend, putting off most there where they find the best Rates; and this hath encreased their Shipping and Wealth, that now they have lengthned their Power all over the World, and in most Countries have a considerable Stock. And this growing and encreasing of theirs hath been within the space of 70 or 80 years, and yet they are not come to their height; for every day they glory in some new addition to their Sway. And if care be not taken of this their growth, they will within few years not only be Master of our Seas but of our Trades too.

His Majesty hath been graciously pleased to take this into his Princely consideration, and if it be seconded with the prudent management of those Commissioners he hath already employed in the carrying it on, I dare be bold to say the *Hollanders* are at their Meridian.

For first of all, *England* is not inferior to the *Netherlands*, nay, we are before them in all the advantages both of Art and Nature.

The situation of our Country is such, that for the convenience of all kind of Marts the World hath not the like, and being seated between the North and South, so that it is fixed, as it were, by Art and Nature, the fittest staple for both Northern and Southern Commodities.

Secondly, our Ports and Harbours are fairer and safer, having good Anchoring, and more in number throughout the three Kingdoms, than any Country in Christendom can boast of.

And then thirdly, which exceedeth, we have valuable Commodities,

modities, as to the quantity and quality of them, such as are the enriching of all those that trade with them.

So that if we are not our own Enemies, and will be but a little industrious, one quarter of that will serve and be enough in *England*, which is but necessary and scarce sufficient in *Holland*; adding thereto providence for the employing our own Shipping, and not any Forreigners, we shall within few years have the greatest power at Sea, and make our selves Master of all Trades; and the *Hollanders* a Servant to that Wealth and Power, of which at present he is the sole Master.

But for the quicker advancement of so great and noble a Work, there is necessary to be a Protection and Favour of his Majesty to all manner of Trades, so that they be not carried on by Strangers, and acted by them, as at present it is in and about the City of *London*, there being thousands of them up and down the Suburbs, *French* and *Dutch*, and others, who live as it were upon the ruins of the poor free-born Citizens, vending any unmerchandable Ware, and at lower Rates than any other honest Tradesman can. And this I humbly conceive is the reason why Trading hath been so bad and dead in this great City for these late years.

But the prudence of his Majesty is such, and under his prosperous Reign all things so readily begin to run in their old Channel, that we doubt not but in a little time Trading and Merchandize will do so too, and not be any longer the burden of the Land for the lack of it, but of the Sea in bringing it hither.

After men comes money, and without this sure Foundation, we shall never be able to make any Superstructure to stand.

There must be a Stock of Shipping, Money and Commodities; for Commodities in Traffick will bring in more Money, and Money commands all Commodities, and to attempt this without both, or at least one of these two, is like a Soldier going to Battle without his Offensive and Defensive Weapons; with the one we offend all our Enemies, the Engrossers of our Trade, and with

with the other we defend our selves against their most powerful assaults.

In antient times, Merchants and Tradesmen were very careful to provide and lay up a Stock of Money for the building of Ships, and buying of Commodities to Trade with. But in these latter years, as within 40 or 50 years, they have disbursed much money in purchasing Land, and building stately Houses, minding pleasure more than profit, and have neglected Trade, to the undoing of many of them, and that great cause of the decaying of Trade.

Therefore to preserve and uphold Trade, I humbly offer unto his Majesties consideration, and His Honorable Council, that all Merchants and Tradesmen within the Three Kingdoms may be restrained from purchasing Land above the yearly value in rent of pounds.

This being effected, and the Fishing-Trade carried on, will within few years make the greatest Bank of Money, and the greatest Trade in the Three Kingdoms, to be equal, if not greater, than any Trade or Bank of Money in the World.

For hereby great and vast Sums of Money, which are now consumed in continual Purchases, will be expended only in and about Trade and Traffick in general; and the best security for this Money will be a settled Bank, which all will of necessity use.

Having not read any of those Books which are in Print concerning the Fishing-Trade, but referring to several Books that I heard of, and not knowing the number of Busses allotted or appointed to be bought or built, neither how they shall be disposed of as to their Ports or Harbours; therefore I make bold to offer my judgement.

That a certain number of Busses be bought or built, as also Dogger-boats; the number of Busses to consist of 1000 or 1500, or thereabouts; for that some years 15000 may as soon catch their Lading as 500, and therefore more considerable as to the charges of the three Kingdoms; for a small number of Busses will not do the work.

The Dogger-boats which Fish only for Ling and Cod, would consist of 400, or thereabouts.

These Busses and Dogger-boats being fitted for Sea to proceed in their Fishing, that then they be sent or appointed to several Ports or Harbours of the Three Kingdoms, that lie most convenient for the Fishing.

And that the Counties or Shires that these Ports do belong to, be enjoyned to keep the same number of Busses and Boats perpetually well rigged and furnished to Sea for the Fishing, as was delivered to them.

And if by reason that these Counties, which have the most and best Harbours, and that lie most convenient for the Fishing-Trade, will bear the greatest burden, by reason the greatest number of Busses will be sent to these Ports.

Then thirdly, I humbly offer, that the Undertakers of the said Counties have allowance out of the main Stock or Bank of Money proportionable to their Charges.

And I do further humbly offer unto consideration, that there be a Corporation made of all the Adventurers for the Fishing-Trade, and that Merchants and Tradesmen be admitted into this Corporation.

And that this Corporation be armed with large Priviledges, and ample Immunities, for the Transportation of the said Fish.

I might also have told you of the Pilchard-Fishing, and for Ling and Cod on the West and North-West of England, and that great Pilchard-Fishing, and Fishing for Cod on the West Coast of Ireland, frequented by those of Biscay, Galicia, and Portugal; but they are so well known that I forbear to mention them.

The Islands that belong to Scotland, and lye on the North, North-West, and West of Scotland, which are useful for the Fishing-Trade, are in number 94.

And whereas it is credibly reported, that above 220 Fisher-Towns are decayed and reduced to extreme poverty, for want of

of Favour, Succour, and Protection: On the contrary, by diligent endeavouring to make use of so great a blessing, as is offered unto us by the Seas, we might in a short time repair those decayed Towns, and add both Honour, Strength, and Riches to our King and Country.

The Premises being taken into serious consideration, it maketh much to the ignominy and shame of our Nation, that God and Nature offering us so great a Treasure, even at our own doors, we do notwithstanding neglect the benefit thereof.

By the foregoing discourse of Planting and Fishing my great design will easily appear to all to have been chiefly the advancing of Trade, for the improvement of which no place in the habitable World lies more convenient and better situated than this Isle; though no People seem more averse, some out of negligence and listlessness, others wilfully ignorant: To do therefore what lies in me to awaken the industry of the first, and condemn the froward peevishness of the other, I could not conclude this Subject without giving the following Account of some Observations in order hereto, collected out of a small Treatise of Sir John Burrows, printed in the Year 1633.

The *Hollanders* by reason of those multitude of Ships and Mariners, they have extended their Trade to all parts of the World, exporting for the most part in all their Voyages our Herring and other Fish, for the maintenance of the same in exchange whereof they return the several Commodities of other Countries.

From the Southern parts, as *France, Spain* and *Portugal* for our Herrings they return Oiles, Wines, Prunes, Honey, Wools, and store of Coin in specie.

From the *Streights*, Velvets, Sattins, and all sorts of Silles, Alomes, Currans, Oyles, and all Grocery ware, with much Money.

From the East-Countreys, for our Herrings, and other French

and Italian Commodities before returned, they bring home Corne, Wax, Flax, Hemp, Pitch, Tarr, Soap-Ashes, Iron, Copper, Steel, Clap-boards, Timber, Deal-board, Dollers, and *Hungaria* Gelders.

From *Germany*, for Herrings, and other salt-Fish; Iron, Steel, Glass, Milstones, Rhenish-Wines, Silkes, Velvets, Rashes, Fustians, Baratees, and such like Frankford Commodities, with store of Rixdollers.

From *Brabant* they return for the most part ready Money, with some Tapestries, yea, some of our Herring are carried as farr as *Brasile*.

Now, to carry on this great Trade, they have 700 Strand-boates, 400 Euars, and 400 Sullits, Drivers, and Todboates, wherewith the *Hollanders* fish upon their own Coasts; every one of those imploying another ship to fetch salt, and carry their Fish into other Countreys, being in all 3000 sail, also they have 100 Doger-boates of about 150 Tuns a piece, also 700 Pincks and Well-boates, from 60 to 100 Tun a piece, which altogether Fish upon the Coasts of *England* and *Scotland* for Cod and Ling on-ly, and each of these employ another Vessel for Providing salt, and transporting of their Fish, making in all 1600 ships.

For the Herring season they have 1600 Busses at the least, all of them fishing onely upon our Coasts, and every one of these maketh work for 3 other ships that attend her; the one to bring in salt from Forraign Parts, another to carry the said salt and Cask to the Busses, and to bring back their Herrings, and the third to transport the said Fish into Foreign Countreys, so that the Total Number of ships and busses plying the Herring-Faire is 6400, every Busse one with another imployeth 40 Men Mariners and Fishers within her own Hold, and the rest ten Men a piece, which amounteth to 112000 Fishers and Mariners; All which maintain above double so many Tradesmen, Women and Children a Land: Moreover they have 400 other Vessels that take Herring at *Yarmouth*, and there sell them for ready Mony, so that the *Hollanders* (besides 300 ships before mentioned

oned fishing upon their own shores) have at least 6800 ships on-ly maintained by the seas of *Great Britain*; by which meane principally *Holland* being not so big as one of our shires in *England*, have encreased the number of their shipping to at least 10000 sail; being more then are in *England*, *France*, *Spain*, *Portugal*, *Italy*, *Denmark*, *Poland*, *Sweden* and *Russia*.

Besides these of *Holland*, *Lubeck* hath 700 Great ships, *Hamborough* 600, *Embden* 1400, whereunto add the ships of *Bremer*, *Biscay*, *Portugal*, *Spain*, and *France*, which for the most part Fish in our seas, and it will appear that 10000 sail of Forreign Vessels, and above, are imployed and maintained by Fishing upon our Coasts.

By reason of those Multitude of ships they cannot imploy less then 200000 Mariners and Fishers, out of which they daily furnish their longer Voyages to all parts of the World; for, by this meanes they are not onely enabled to brook the seas, and to know the use of the Tackles and Compass, but are likewise instructed in the Principles of Navigation and Pilotage.

Moreover, How mighty the Publick Revenue and Customes of the *Hollanders* are encreased by their Fishing, may appear, in that above thirty years since, over and above the Customes of other Merchandise, Excises, Licences, Wastage and Lastage, there was payed to the *State* for Custom of Herring and other salt-fish above 300000 pound in one year, besides the tenth fish and Caske payed for Wastage, which cometh at least to as much more among the *Hollanders* onely; whereunto the tenth of other Nations being added, it amounteth to a far greater sum.

We are likewise to know, That great part of their Fish is sold in other Countries for ready Money, for which they commonly export of the finest Gold and silver, and coming home recoyne it of a baser allay under their own stamp, which is not a small meanes to augment their Publick treasure.

Also the gain made by private men must of necessity be exceeding great, as by observing the particulars following will plainly

by appear. During the Wars between the King of *Spain* and the *Hollanders*, before the last Truce, *Dunkirke*, by taking, spoiling, and burning the *Busses* of *Holland*, and setting great Ransome upon their Fishermen, enforced them to compound for great Sums, that they might Fish quietly for one year; Whereupon, the next year after, the Fishermen agreed amongst themselves to pay a Dollar upon every Last of Herrings, towards the maintenance of certain Ships of Warr, to Waft and secure them in their Fishing, by reason whereof there was a Record kept of the several Lasts of Herrings taken that year; and, it appeared thereby, that in one half year there were taken 300000 Lasts of Herrings, which at 12 pound the Last amounteth to 3600000, and at 16 or 20 pound the Last they are ordinarily sold, then transported into other Countreys it cometh between both Prises at least to 5000000 of Pounds: Whereunto, if we add the Herrings taken by other Nations, together with the *Codd*, *Ling*, *Hake*, and the Fish taken by the *Hollanders*, and other our Neighbours upon the *Brittish* Coast all the year long, the Total will evidently arise to be above 10000000 of pounds yearly, or every year.

And, to Conclude, such is the Clear and Indubitable Right of our Sovereign Lord the KING to the Superiority of the *Brittish* Seas, that no Man can produce Clearer Evidence for any part of his Estate: And, as those Seas (under God) are the Principal Means of our Wealth and safety, so it doth much concern all his true subjects, who are bound by the Law of Grace and Nature, with Heart and Hand to preserve and maintain the same with the Hazard of their Lives, Goods and fortunes.

F I N I S.