





Digitized by the Internet Archive
in 2009 with funding from
NCSU Libraries

PRICE

\$350



A
T R E A T I S E
O N
F O R E S T - T R E E S :

C O N T A I N I N G

Not only the best Methods of their CULTURE hitherto practis'd,
but a variety of new and useful DISCOVERIES, the result of
many repeated experiments :

A S A L S O,

PLAIN DIRECTIONS for removing most of the valuable kinds of
FOREST-TREES, to the height of thirty feet and upwards, with certain
success ;

A N D,

On the same principles, (with as certain success) for transplanting HEDGES
of sundry kinds, which will at once resist Cattle :

T O W H I C H A R E A D D E D

DIRECTIONS for the Disposition, Planting, and Culture of HEDGES,
by observing which, they will be handfomer and stronger Fences in five years,
than they now usually are in ten.

By WILLIAM BOUTCHER, NURSERYMAN,
At COMELY-GARDEN, EDINBURGH.

*Who then shall grace, or who improve the soil ?
Who plants like BATHURST, or who builds like BOYLE.
'Tis use alone that sanctifies expense,
And splendor borrows all her rays from sense.*

POPE.

E D I N B U R G H :

Printed by R. FLEMING, and sold by the AUTHOR, by J. MURRAY, No. 22.
Fleet-street, London, and the other Bookfellers in Great Britain.

M. D C C L X X V.

Entered in **STATOPENSIALI**,

And each genuine Copy is signed by

[Handwritten signature]
M

TO HIS GRACE

HENRY DUKE of BUCCLEUGH,

EARL of DALKEITH and DONCASTER,

&c. &c. &c.

MY LORD DUKE,

NEITHER your GRACE'S Birth nor Fortune, tho' the one is most illustrious, and the other ample, were the motives that induced me to beg the honour of your countenance to the following TREATISE, my point in view being, I conceive, of a higher nature than can be derived from any external advantages. What I have here written, is the effect of much experience, and long observation,—and I am made to believe, it will contribute to the general improvement of our plantations, and consequently to the public benefit. This being the principal object of the Work, to whom can I inscribe it with so great propriety, as to your GRACE, who, from the earliest dawn of manhood, has

invariably and industriously pursued every measure tending to support the decaying honour, and promote the real interest of your country?

Accept then, my Lord, these humble essays, as the only means in my power most expressive of that true esteem which I sensibly feel, and which every honest considerate Scotsman must, for so noble and bold an asserter of his country's rights and liberties. I am, with the utmost deference and respect,

MY LORD DUKE,

Your GRACE'S most obedient,

And most humble Servant,

COMELY-GARDEN, }
July 10. 1775. }

WILL. BOUTCHER.

THE P R E F A C E.

AFTER the great number of books that have been published on Gardening in general, some of them by men of learning and observation, it may to many appear unnecessary, and even presumptuous, to offer any thing new to the Public on that subject: But the Author of the following sheets flatters himself, that, on an attentive perusal of them, these impressions will be removed; that the system is far from being exhausted; that the best rules hitherto directed are here extended and improved; and that so many new observations are made, as to render a very considerable part of the work an original performance.

To relate the many pleasures and advantages that attend the skilful practice of Gardening in all its various branches, but particularly in that of noble and extended plantations, would ill become my humble talents, after the high encomiums bestowed on it by the greatest antient and modern authors. It is enough for me to say, it has been the favourite study and amusement of the greatest and wisest Princes, Philosophers, Lawgivers, and Conquerors, many of whom have gladly retired from the ambitious pursuits of life, and enjoyed more solid and rational pleasures in the virtuous innocent employments of planting, and cultivating their gardens and farms, than in all the magnificence and luxury of Courts.

IN the books hitherto published on the cultivation of Forest Trees, the rules have been very short and confined: Their authors seem generally to have adopted the opinion, which yet unhappily prevails amongst the greatest number of unexperienced planters, that when they have put a young tree in the ground, they have done their duty, and that their labours are at an end: But such are somewhat like unnatural parents, who neglect to tend and foster their infant offspring, since trees, as well as animals, must have food and discipline, to rear them to strength, maturity, and good order. These books comprehend no more than sowing the seeds, planting the cuttings, or laying down the branches in their proper season, there to abide a certain time, and from thence to be transplanted to the nursery, where they are to continue two, three, or four years; from the nursery, to be removed to the places where they are meant to remain for good; and thus the business is at an end. But this Treatise is much more comprehensive: It contains not only the best methods of propagating plants in all their various ways, and of their culture to the common ages and sizes of transplanting presently practised in Great-Britain, but will also instruct the gardener, by plain, easy, and certain methods, to remove most of the valuable deciduous Forest Trees, to the height of thirty feet or upwards, with the same safety as the smallest plant; and that such will not only be as handsome trees, but will ever after advance as much in growth, as those standing in the same kind of soil and situation, from having been planted young; and that they will, without the expence of staking, resist the most impetuous winds, the greatest enemy of new-planted trees raised and managed in the common way.

FROM this culture of the trees too they may be planted with the most certain success, and without any sensible check to their growth, during all the summer months, without any additional expence, further than two or three extraordinary waterings. This circumstance alone ought surely to be of much consideration in this climate, as our grounds in winter are usually so much lock'd up with frost, flooded with rains, or the weather otherways so intemperate, that our common planting season is confined to a small part of spring and autumn. I should likewise imagine, that men of fortune, who spend the winters in town, could hardly be more agreeably entertained in the country, during the milder season, than in, as it were, creating (if I may be allowed the phrase) verdant groves, thickets, avenues, &c.

NOR is this plan confined to deciduous trees only; it extends to many of the best kinds of Evergreens, the greatest part of which are now generally thought unfit for planting, after four, five, or six years old: But here certain rules are given for removing them with the same safety as the other kinds, to the height of eight, ten, and twelve feet, according to their different species.

ON the same principles likewise, and with the same advantages, hedges of Thorns, and many other plants, may be removed, that will immediately resist cattle, shelter the ground, and save the expence of ditches, palings, and other fences necessary to protect them when young.

To which is added, *Observations on the best method of planting Hedges, adapted to various soils and situations.* Any improvement made on this subject is certainly of great and universal

concern to this kingdom. By this not having been properly adverted to, but left to the direction of ignorant gardeners, or common labourers, much discouragement has been given to inclosing with hedges; and many persons of fortune have, within these few years, bestowed large sums in that way to very little purpose.

SEVERAL useful discoveries are also subjoined, on the improvements that may be made by Grafting and Inoculation, on stocks that will enlarge the smaller kinds of plants, and render the tender more hardy.

MOST of the modern authors on Gardening have boldly included all its various parts: This, I am afraid, is arrogating to themselves a reach of fancy and genius, that few, if any, have yet discovered a just title to. Had they confined their writings to fewer branches, they would have acquired more reputation, and been more useful to their country. And here, I humbly think, Mr POPE's caution to those indiscreet men who launch beyond their depth, may with propriety be applied:

- “ One science only will one genius fit;
 “ So vast is art, so narrow human wit:
 “ Not only bounded to peculiar arts,
 “ But oft' in those confin'd to single parts.”

I HAVE therefore in that respect endeavoured to avail myself, from the unsuccessful presumption of others: Conscious as I am of my contracted abilities, and being doubtful of gratifying the Public on the topics here presented, I have confined them to

a few, and those only that have in a particular manner engaged my attention, and of which I have had much experience.

To have the various productions of Gardening in any degree of perfection, I doubt we must enlarge our present plan, of keeping one gardener only where much is to be done. I have for a succession of years, and at different seasons, visited with attention many of the most elegant and magnificent seats in Great-Britain, but never once in my life have seen all the different branches of the business properly executed, and the crops seasonably and uniformly flourishing, in regular progression and beauty, under the management of one man. And how indeed is it possible it should be? Every gardener has his favourite points, which will be first and best done, and every species of gardening must be attended to at several periods of the year; but, in the spring, much the greatest part of all must be executed in a few weeks. The kitchen-garden must be crop'd with its various seeds and plants; hot-beds must be made, and constantly attended to; the green-house, hot-house, and flower-garden, will employ much of the principal gardener's time and personal labour,—as will also the fruit-garden, in pruning the espalier, wall, and standard trees. These different parts have indeed a nearer connection than the others, and may with propriety come under the direction of one man, which, if he executes well, by providing a large family, and elegant table, in the great variety and wholesome luxury these gardens should abound with, he will find no idle time to spare, though a person of knowledge in his profession, and of the greatest sobriety and industry.

THE other principal part, formerly called the *Pleasure-garden*, in all the stately late designs, consists chiefly in extensive lawns, and fields of grass, interspersed with large plantations of Forest Trees and Flowering Shrubs, planted in the wilderness way. To execute, and (from bad seasons, with other accidents) even to supply the defects of these works, as well as to keep up a provision for inclosing and planting the other parts of the estate, a nursery ought always to be supported. The planting, annual pruning, and culture of the soil in large wilderness designs, so as both to promote the growth, and reduce the trees to a beautiful form, requires skill and labour. To sow the seeds of Flowering Shrubs, Fruit and Forest Trees,—to increase them by layers, cuttings, &c.—to improve many kinds by grafting and inoculation, —and to remove them at proper periods, giving them all other necessary culture,—is as much as any one man can see executed with judgment; and whatever gardener holds these performances in so cheap a light as to allow their being conducted by his common workmen, that moment he forfeits his pretensions to sense and ability in his business, if not to honesty also.

To men of plentiful fortunes then, who would promote all the various branches of Gardening, and enjoy them with refinement, I think two gardeners, for the different purposes named, seem indispensibly necessary: And I cannot help here proceeding a little farther, humbly to represent, that the most effectual method of promoting the more universal knowledge of the art in this part of the kingdom, would be to give the gardener double the encouragement we usually do, as the present (I mean in general) is extremely disproportioned to the importance of his office.

I MUST lay it down as a principle, that some small degree of learning at least is necessary to make a good gardener; and what sensible man will bestow that on his son, to qualify him for an employment, that, to all appearance, and without some uncommonly favourable circumstance, will never gain him more than fifteen or twenty pounds a year? or what boy of spirit and genius will study a profession, from which he can only receive so poor a return? It therefore appears to me very certain, that an increase of wages to these useful men, would, in a short time, have most desirable effects, and that we should then have at command twenty intelligent gardeners, where we now perhaps are at a loss to find one; nor is it to be doubted the master would gain in greater proportion than the servant.

A GREAT man bestows from fifty to a hundred pounds a year on a French cook; for a British gardener, seldom more than from twenty to forty. I despise all national reflections, and esteem an honest Frenchman of any profession, but in a particular manner a French cook; yet I can by no means think him intitled to so great an advantage above the other. Every body knows the best cook cannot furnish out a handsome table without the assistance of a good gardener; and perhaps there is as much judgment required in raising materials of the best quality, as in dressing them well.

HOWEVER, from what I have here said, endeavouring to put the gardener on the footing I think a good one deserves, I am, as has been hinted, far from meaning to depreciate a good French cook; nor am I either clownish or morose enough, to surmise, that a man of birth and opulence should deny himself

the elegance that attends the labours of these industrious men : On the contrary, as the nature of my profession, in planning and designing ground works, has often procured me the honour of sitting at the best tables, where I have often eat of dishes drest in the French manner, I must acknowledge I ever thought them both as pleasant and healthful as the best British I had ever tasted. Notwithstanding which, I esteem the various labours of an able gardener, to be of a nobler nature, and of more solid importance to every person, from a Prince to a private man, than all the dishes invented from the birth of Cleopatra to the present date.

As inclosing ground with hedges, and making plantations of Forest trees, are the first principles, and most solid foundation for promoting all the different branches of husbandry and gardening, our northern climate being highly improved by these means, the greatest encouragement is surely due from all lovers of their country, to whoever shall contribute to the executing these important points, in a handsomer, more successful, and more expeditious manner than is generally practised,—though I am sorry to say, we are less attentive to, and farther behind in knowledge of the best methods for effecting this, than in most other improvements. We plainly see, that, to procure the quick growth and comely figure of our own hardy native plants, we must give them the mutual assistance of one another ; and how much more necessary shelter is in rearing tender foreign trees and vegetables with any exuberance of growth, is too plain to insist on. To that alone, then, we owe all the choicest delicacies of the table, and the more refined pleasure of viewing a vast variety of the most beautiful plants in nature, the

original production of more temperate climates, flourishing in our open air.

As a good nurseryman can soonest and most effectually procure us such essential advantages and pleasures, I cannot help thinking him, for these and many other reasons, justly intitled to be ranked in the highest class of gardeners; but I am afraid this is only the case with the few of sound judgment, and extended genius,—and that with the general, the unthinking, and contracted part, a man who can raise an early cucumber, or melon, is in much higher estimation, tho', in all the various parts of the profession, nothing is more plain and simple, than these operations with the assistance they have of glasses and dung: To which may be added, that the subject of kitchen-gardening is much more exhausted than the culture of trees, from being more generally practised, as more easily undertaken. The returns of profit from nursery are tedious, and to proceed in it to any considerable degree, a man must be wealthy, as he must long be out of his money; but the returns from the other being annual, the stock required for it small in comparison, and the luxury of the present times having raised the price both of early and late vegetables very high, it becomes a more tempting bait for the bulk of mankind; whence good nurserymen, or good nurseries, are not so frequently to be found as could be wished.

NOTWITHSTANDING the importance of a good nursery-gardener to his country, and the general esteem in which such have formerly been held, that profession has lately fallen into much contempt, and, in some respects, for just causes. From the success of a few sensible judicious men in it, various impostors

have started up, who, by the strength of a little money, and a great deal of assurance, now assume that character, tho' unbred to, or unknowing in the meanest branch of gardening, but followers of the grossest and most unthinking employments, in direct opposition to the cool observation and deliberate study of Nature in her admirable productions. Some of these gentlemen have set out, by amusing mankind, under no meaner pretence than serving their country, by reducing the price of trees: But they are not considerate enough themselves to reflect, that an intelligent gardener will readily discover their practice as subversive of every improvement he can possibly hope soon to make from the purchase of their plants, which are crowded together with many times the number that ought to be in the same quantity of ground; from whence they can well afford to sell their stunted, smothered stuff, at a lower price than an honest knowing gardener can raise good plants for. To appear more formidable too in this quackery, they have published pompous catalogues of they know not what; collected I know not where, and strangely jumbled together no body knows how, of half the plants in the creation, and some that I believe never were in it; but they have forgot to provide even specimens of many of these wonderful productions, and when you go to purchase them, you have the mortification to find they were sold the preceding week or day. To these catalogues they have likewise affixed prices, in imitation of some petty nurserymen in the North of England, who, not having abilities in their profession to push their way by the sale of good plants to skilful men, have had recourse to this practice, by selling bad ones at the expence of the ignorant and unwary. I have been well acquainted with the practice of the most eminent nurserymen in the South of England near thirty years;

during which period, there is not any material difference in the prices of the most useful capital plants. They are generally an honest, sensible, industrious set of men, and their emulation is of a virtuous kind, tending to public utility, as it consists in who shall raise the best, not the cheapest trees,—sensible that these improperly cultivated are dear of any price, and that the greatest difference of prices is an inconsiderable circumstance, even to a poor man, compared to the consequences that must ensue from their having been of a good or ill quality.

It gives me the most sensible pain to be under the necessity of saying any thing that has the appearance of severity or ill nature, as I hold in the greatest abhorrence and detestation, every principle tending to traduce an honest well-meaning man. I have the comfort however to think, that none such will be offended with what I have said in the present case; but be that as it may, I am certainly bound, by all the ties of truth, and gratitude to my country, to detect whatever errors I discover on a subject that is the basis of its greatest improvements, and which not attended to, but the present defects in the culture of trees and hedge-plants allowed to proceed, must terminate in at least greatly retarding that cultivation our farms and gardens would otherwise admit of.

I ESTEEM every honest judicious nurseryman in the kingdom, and most heartily wish their number increased. To many of them I have represented the ill consequences that must naturally arise from not bestowing proper culture on their plants: The common return is, that others selling their crowded, half-suffocated ones, at a price below what they can afford to raise them for at proper

distances, and to give them proper removals, they are constrained to go with the current, many purchasers not being skilful enough to estimate the value of a tree by any other standard than its height, without attending to the far more essential circumstances of its roots, thickness, and proportion. To these defences I have ever observed, what I am certain would have been the case, that a perseverance in the best practice would soon stop the progress of these invaders, and make them sensible of their inability to overcome the honesty and industry of good gardeners, and that as they had started up like mushrooms, they would vanish like smok; but if those who ought to know better will adopt their pernicious principles, it is hard to say how or when they may stop, if vigorous measures are not used to oppose them.

IN this case, if self-interest is justly considered, independent of other more sacred considerations, the Scots nurserymen and seedsmen have the most flattering example before their eyes, to animate them in the pursuit of such a practice as I have here endeavoured to recommend; and that is, in two persons, a father and son, of their profession, who, having made it an invariable rule in business, notwithstanding whatever present loss they might sustain, to sell no articles but the most excellent of their kinds, soon were justly established in so extensive a reputation and trade, as has acquired them large fortunes, with unblemished characters, and that too perhaps with greater ease, than many others have procured a scanty subsistence, whose principles were not established on so rational and solid a foundation. I have no intention to flatter by this remark. I never had any obligations to, or connections with the parties I mean, nor have any further knowledge of them than their characters and faces; but, on the

present subject, I will neither applaud a friend, nor detract from an enemy, without just grounds, but tell my undisguised sentiments upon it to the best of my knowledge,—and shall venture to predict, that whoever steadily adheres to the practice of those who have been mentioned as examples, will, in some degree, partake of their good fortune.

THE practice I have here advised is plain, and easily executed, nor can I believe any man of reflection will doubt of its success: But how unlucky would some of our late sanguine undertakers be, who having endeavoured, at considerable expence, to merit the favour of the Public, by the reduction of prices, the prevention of imposition from others, and the extirpation of all gardeners who oppose their public-spirited plans,—how lamentable indeed, if, after all these worthy attempts, which they have published in so modest and affecting a manner, their thankless country should neglect bestowing on them either an increase of reputation or wealth!

To stop the fast increasing evil of nurserymen (or those who call themselves so) selling bad plants, to the general discouragement of improvements, would show a truly public spirit; but I am afraid no private observations or communications, however just and well meant, will answer the end desired, particularly from one of the profession; and that, to effectuate the cure, (than which I conceive nothing more easy), the Public must be the physician.

EVERY body knows the general and amazingly good effects of the premiums given by the Commissioners and Trustees for

bate the deceit is, and how shocking to the person thus deceived, life being too short often to repair these misfortunes. Such circumstances however are far from being uncommon, and too many gentlemen in Scotland will shake their heads with hearty concern on the remembrance of similar cases, and second me in the justice of this observation, and how necessary it is to be cautious in the choice of nurserymen.

It has been an almost universally received opinion, that trees ought to be raised in the nursery on a poorer soil than that to which they are afterwards to be transported for good; and it has been directed by many, otherways the most respectable authors. I must acknowledge this doctrine has a very specious appearance at first view: I adhered to it early in life, and it is so seemingly consistent with Nature, that I am not surprized it has been generally adopted by young planters; at the same time, I cannot account for those who have had much practice, and long experience, not exposing the errors of it.

In the following sheets I have given some examples, from frequently repeated experiments, of the ill effects I have felt by planting young and tender seedlings in the poorest soils, and the greater success attending those that were well-grown, on the same, or in similar situations. The consequences of raising plants on poor hungry land, are no less fatal than planting the seedlings in such, and should as much as possible be avoided. I have mentioned, in the culture of many trees, the necessity of promoting their vigorous growth at first, in order to their becoming stately and handsome; nor can this be effected by any other means than being early nursed in generous soil, for whatever

future purposes they are meant, or to whatever situations they are destined; and that if they are but barely supported from infancy on meagre ground; they will never afterwards become strong, though removed to that which is rich and feeding. The causes for this, when the subject is searched to the bottom, are demonstrably plain: From their harsh and unfriendly food they contract diseases, which, if not immediately mortal, are certainly incurable; they necessarily have bad roots, they are hidebound, and their branches weak and crooked; in short, tho' they may long languish in the state of bushes, they will never arrive to the magnitude of what may properly be called trees.

BUT though I have advised trees to be raised on good land, let it be understood, I mean that only which is naturally so, and not what has lately been forced and pampered with dung, or at least before that dung has been mellowed and reduced to the consistence of earth, such being yet more baneful to trees in general, than even the poorest soils.

I AM not surpris'd at the frequent complaints made by Gentlemen, on the trees they often have from the nurseries about Edinburgh. I know from some quarters they have too good cause for such complaints. I have seen considerable portions of these gardens covered five or six inches deep with new-made horse and cow dung, immediately dug into the ground, and, without the intervention of a single week, planted with trees and hedge-plants. I should be sorry to think, nor do I believe, that many of my readers will require a description of the effects arising from this shameless practice; but, to the few yet quite uninformed, I shall only mention, that from this corruption at the root of the

plant, after standing some time, it will become blistered, which blisters will contain vermin, and these vermin, by eating the roots, occasion a fester, that, communicating with the juices in the body, will contaminate it also, make it become scabbed and hide-bound, to a degree no remedy will cure,—and in this ugly state the tree grows annually weaker, till it perish. This infection, however, does not soon discover itself, as, for some years, from the abundance though grossness of its food, it will make prodigious shoots,—and, from these unnatural shoots, they are boasted of as fine healthful plants, without reflecting on the latent poison in their veins.

I KNOW not if I may be indulged in venturing to make some distant comparison between these plants (animated as they seem at first with the rank fiery particles of new dung) and a man who drinks excessively of brandy, or other spirituous liquors: The one exults for a time in immoderate, tho' false wit and gaiety; the other seem to smile in the display of a no less extravagant growth; but both, in the long run, become diseased, faint, and languid. Whether I am right in this observation, I shall not pretend to determine; but I certainly believe I am, in thinking a nurseryman, who is guilty of this fraud, more hurtful to the Public, and better intitled to banishment, than some poor rogues I have known undergo that sentence: Such characters, however, I know; but it is my business only to expose bad practices, not bad men. It is these, and other circumstances of ill management, that have chiefly founded the common report, of trees raised on good soils not afterwards succeeding in that which is worse,—tho' there is nothing I can with more confidence assure my readers of, than that I have had very many of the clearest demonstrations to the contrary, where the plants were cultivated with judgment.

IN works of this kind, it is common to have a long dissertation on the soils most proper to be chosen for raising nursery; but this has generally appeared to me only an innocent method of swelling a book, when an author is covetous in furnishing other materials. I have described the soils that the different plants treated of most affect, and the best manner of preparing these soils, at the same time with the other circumstances of culture, which I imagine is the substantial part of all that can be said on the subject. With respect to the choice of soil, people must in general put up with the best they can get, as he must be either a very cunning, or very lucky gardener, who shall discover so small a spot of ground as is commonly required for a nursery-garden, consisting of as many various qualities as will be agreeable to all the plants necessary there to be raised: This must be the effect of judgment and labour, nor does Nature often admit of our enjoying such advantages but by the sweat of our brow. I shall therefore only further observe, that the most desirable soil for a nursery, is that which is loose and dry, reduced to the smallest particles by frequent digging and raking, and which, if of a generous nature, does not require great depth; but the worst quality of the worst land, is that which nearest approaches to heavy moist clay, wherein the trees will neither root liberally, nor our usual weather in winter and spring admit of its being laboured, but at particular, and frequently too late periods; whence it is impossible, that business can be carried on to any considerable extent, seasonably, in such grounds.

I HAVE said so much, on various occasions in the following Treatise, of the disadvantages the kingdom sustains from the ignorant or ill-designed culture of plants, as probably to be accused

of repetition. If I should be so, I shall not endeavour to defend myself, as in truth I could not easily avoid it; for where the errors are very gross, and their correction of so much moment, I imagine just impressions of them cannot be too deeply rooted: In which case, I flatter myself, a fault of this kind may probably pass as a more pardonable species of bad writing, than some others.

It may probably be objected by some, that transplanting large trees has often been practised without success. This is a melancholy truth, too glaring to be denied; tho' the reasons for it are no less obvious,—they have proceeded without judgment, and their miscarriages were a natural consequence. But in this Treatise the former errors are corrected, and a rational system, founded on Nature, and confirmed by experience, disclosed.

LARGE trees raised and cultivated after this manner, so far from succeeding worse than those planted young, will, from their much greater abundance of roots spreading near the surface, and enjoying all the benefits of the heavenly influences, grow much more freely, than such whose roots, being deeper, are struggling with cold, sluggish, inanimated soil.

WHEN a man has made a plantation of young trees, his labours, as has been hinted, are but begun; but by following this practice, they are ended, as the plants, being above the size of receiving injury from cattle, and reduced to their proper form by different prunings, require little or no further attention.

By adopting this mode of culture too, a person who will at once raise or purchase as many of the better kinds of young trees as

answer his future designs, tho' he is twenty years in executing his plan, may, at the end of that time, have his ornamental plantations of equal size and beauty.

It has been a great discouragement, and is a frequent observation made by men advanced in years, that from the small size of trees usually planted, they cannot hope to see them in any great degree of beauty or perfection during their lives. By following the rules here laid down, this discouragement will be entirely removed; and such as are above the regard of common expence, may have a flourishing plantation of well-grown trees in one season, as the principles on which the whole of the plan proceeds are infallibly certain, and ought to be convincing, even on perusal of the work, to every person of an ordinary capacity, and moderate knowledge of Gardening.

IN some papers of the Spectator, on the pleasures of imagination, we have a most ravishing description of an Evergreen, or Winter Garden. Mr Addison, the author of these papers, from a close attention to his immortal writings, was not much skilled in the practical parts of Gardening, but, when disengaged from more intense studies, it was his favourite amusement; and as the slightest observations of so great a man are infinitely preferable to the most laboured precision of an inferior genius, of all the later descriptions I have read, or plans seen executed, I never was so much animated on that subject as from the hints he has thrown out, tho' the designs for gardens in his time were of a much more contracted kind than now, and less imitative of the charming negligence of Nature. But after what he has said, for me to enlarge on the comfort and pleasure such a place, not

distant from the house, and well disposed, must afford during several of our winter months, would be the highest presumption and vanity: Therefore I shall only observe, that I cannot help looking on it as a capital defect in our elegant and extended designs, that no attention is paid to a circumstance so conducive to health, and productive of pleasure.

HAVING endeavoured to avoid extending this Treatise to any unnecessary length, in the catalogues of the plants I have only given the different species, their commonly received names in England and Scotland, their botanical characters being universally known to the Learned, and of no use to the young and illiterate gardener, but in some cases might more probably perplex and confuse him, and, till he is a little advanced in the knowledge of Botany, rather expose his ignorance, than establish his reputation for judgment.

IN like manner I have abridged the catalogues of many authors, some of whom have wrote without experience of what they recommend, and others, either more ignorant or designing, have given or created different names to the same plant. This, I can honestly assure my readers, I have carefully guarded against. The species I have mentioned are distinct, and I have recommended none but those that from experience I believed worthy of it.

THE common uses and virtues of the timber of such trees as are not frequently cut down with us, I have principally taken from Mr Evelyn, as Mr Miller had done before me; but to these I have added other well-attested circumstances relating to them.

No book on Gardening can now be altogether original, from the many great improvements made; but the subject will yet admit of very many advances towards the more perfect knowledge of it. It is far from my intention to introduce novel doctrine, or to make innovations on the general culture of plants, where I have not found it defective. But this I have by no means done: I have, as others usually do in early life, taken many hints from different authors, and examples from practical gardeners, tried their effects, and, where successful, have followed and directed them: But I have not rested satisfied with what may be called bare success; I have endeavoured to improve on the best rules I knew, to abolish some others altogether, substituting better in their place, and, for the general system of culture here directed, I am unconscious of being indebted to any author or other man. That I have many years ago succeeded in my own practice by following the system here laid down, I have the most incontestible evidence to adduce; but to convince unbelievers at a distance, must be the effect of trial, which is all I require. In the mean time, I shall listen to the voice of the Public with the greatest respect and deference, and, as far as in my power, amend whatever errors are justly pointed at.

HAVING mentioned Mr Evelyn, I must here express the sensible pleasure I feel, from hearing a fine impression of his *Silva*, with notes by some Gentlemen of approved learning, and knowledge of Gardening, is now printing. His observations on the culture of young plants in the seed-bed and nursery, tho' the best published before or during his time, are since then much improved, and they now become the least valuable part of his work; but the additions and remarks on these, with the other essential improvements that will apparently be made, must render

it the most valuable book on the subject ever appeared. His just encomiums on the pleasures and advantages arising from well-cultivated plantations, if attentively read by young men of education and fortune, must animate all but the most tasteless and dull to the pursuits of Gardening; and some of his chapters to that purpose, ought to be recorded in capital letters of gold, and hung up in the dining-rooms of all rich men who love their country, or mean to give the most striking example of true patriotism to the present and succeeding generations.

I AM far from the vanity of believing, that many just reflections may not be thrown out against the following Treatise. Tho' I have had much experience in the culture of trees, I have none from writing in so public a manner; and my most sanguine expectations will be accomplished, if an abler pen will improve and extend my hints in a more masterly way,—to whom I shall be happy to communicate any farther observations I am capable of making.

FROM showing my manuscript, (which I have often done without ceremony), and some of the contents transpiring, I am already sensible of having enemies amongst some of the nurserymen. I cannot help it, having done but my duty. I wish none of them ill, and desire them, for their own sakes only, to reflect, that till they refute my arguments, their enmity to me will but the more expose themselves:—I should be ungrateful at the same time, if I meant that to be understood of the profession in general, as I have the pleasure to believe, it is not the greater part of them, or those most formidable, for knowledge at least, that are so ill inclined.

I AM sensible the humble stile of this work may render it obnoxious to some of the many Critics with which this age abounds, who may display their learning, if not ill-nature, at my expence, though ignorant of the subject on which I treat. To the correction of the sensible and candid I will patiently submit, and endeavour to improve myself from their observations: But the partial and snarling species of them, I hold in the greatest contempt; for as such can neither affect my interest nor reputation, they shall be unable to ruffle my temper. I acknowledge myself incapable of adorning my subject with the beauties of language, or, if I were, should I be very sollicitous about it: For though I have reason to believe this simple Treatise will be admitted into many libraries, both of the Great and Learned, yet if the principles of culture on which I proceed are just, their politeness and humanity will excuse other defects; to which I must add, that it is far from being intended for such alone, but no less to instruct the ignorant and illiterate gardener (to whom the plainest language is surely the best) in such practices as will improve our plantations, both in point of beauty and profit. I have not ventured however on this publication, without the approbation of several Gentlemen of candour, learning, and knowledge in Gardening,—and by them I have been persuaded to give it to the Public in my own homely dress, wherein alone it now appears, and which is the more agreeable to me, as I have ever thought, that even the disguise of another man's language is a kind of imposition on the world, and that it is but just to publish one's own sentiments in one's own way.

I SHALL only further intimate to those (if any such there be) who feel themselves sore from what I have written, that no

fooner will I have an opportunity, than give them the most convincing proof of the rectitude of my intentions, and that I have no personal repentment at any one of them :—That the observations I have made on the general bad culture of trees, are apparently too just, and that consequently it was my indispensable duty, when writing on a subject of such universal concern, to detect the errors I discovered, as the only means of having them amended. Whoever begins to renounce his former ill practices, I shall, with superior pleasure, in place of the painful sensations I have felt from what is said, exert my utmost endeavours, and use the strongest expressions I am capable of, by applauding them in the most public manner; and if communicating the effects of my experience is thought worthy their notice, they may, from the sincerity of my heart, command me with the most unreserved freedom. The greater part of them will probably, and I hope justly, think themselves above so mean an assistance, yet the young and unexperienced may reap some advantage by it.

I WERE unworthy the indulgence I have received from the Public in general, and ungrateful to my Subscribers in particular, to conclude this, without expressing (what I truly feel) the warmest gratitude for the assistance their liberal subscription afforded me in carrying on this publication. The quality, if not the number of those, does me honour, as I can boast of many the greatest and most respectable names in the kingdom; and if I am fortunate enough to have contributed to the good of my country, and of consequence to their pleasure or advantage, I have obtained the highest reward my most sanguine hopes ever pointed at.

S U B S C R I B E R S N A M E S.

A

- His Grace the Duke of Argyll, 4 *Books*.
 His Grace the Duke of Atholl, 4 *Books*.
 Right Hon. the Earl of Aberdeen, 2 *Books*.
 Lieutenant-General James Abercromby.
 Hon. Lord Auchinleck, one of the Senators of the College of
 Justice.
 Hon. Lord Alva, one of the Senators of the College of Justice.
 Hon. Lord Alemoor, one of the Senators of the College of Ju-
 stice.
 Alexander Auchyndachy of Kincredgie, Esq; advocate.
 Alexander Alifon, Esq; deputy-cashier of Excise.
 James Abercromby of Brucefield, Esq;
 John Adam, Esq; architect.
 Thomas Adair, Esq;
 Alexander Arbuthnott, Esq;
 Mr Robert Anderfon nurseryman and seedfinan, 2 *Books*.

B

- His Grace the Duke of Buccleugh, 2 *Books*.
 Right Hon. the Earl of Buchan.
 Right Hon. the Earl of Balcarras.
 Right Hon. Lord Belhaven.
 Hon. George Baillie of Jarviswood, Esq; 2 *Books*.

Sir Alexander Burnet of Leys, Baronet.

Major-General Boyd.

Captain Alexander Baillie of Parbroath, Esq;

George Brown of Ellifton, Esq; one of the Commissioners of
Excise.

William Baillie of Polkemmet, Esq; advocate.

Andrew Balfour, Esq; advocate.

Rev. Dr Hugh Blair, professor of Rhetorick and Belles Lettres
in the university of Edinburgh.

Joseph Banks, Esq; London.

James Bruce of Kinrofs, Esq;

James Buchanan of Drumpiller, Esq;

Thomas Brown of Braid, Esq;

Hary Barclay of Killernie, Esq;

James Brodie of Brodie, Esq;

Adam Blair of Blair, Esq;

Henry Butter of Pitlochry, Esq;

Henry Bethune, Esq;

Robert Bontine of Ardoch, Esq;

John Baird, Esq; merchant in Glasgow.

Dr Robert Barclay, 2 *Books*.

Mr William Borthwick feedfman in Edinburgh, 4 *Books*.

Mr James Bayne land-surveyor and designer of ground.

Mr John Burrel chamberlain of Kinniel, 31 *Books*.

C

Right Hon. the Earl of Crawford.

Right Hon. Lord Cathcart.

Right Hon. Lord Frederick Campbell, Lord-Register of Scot-
land.

Right Hon. Lord Colvill.

Right Hon. Lord Cranston, 2 *Books*.

Hon. Lord Coalston, one of the Senators of the College of Justice.

Sir James Clerk of Pennycuick, Baronet.

Sir James Cockburn, Baronet, heretable usher of the White Rod, 2 *Books*.

Sir William-Augustus Cunnyngnam, Baronet.

Sir James Colquhoun of Lufs, Baronet.

Sir Walter Montgomery-Cuningham, Baronet.

Major-General Sir Eyre Coote, Baronet.

Major-General Henry Campbell of Boquhan.

Col. James Mure-Campbell of Lawers, Esq;

Lieutenant-Colonel Archibald Campbell.

Lieutenant-Colonel Alexander Campbell, late 95th regiment.

John Campbell-Hooke, Esq; Lord Lyon King at Arms.

Archibald Cockburn of Cockpen, Esq; slieriff-depute of Mid-Lothian.

Ilay Campbell, Esq; advocate.

Andrew Crosbie, Esq; advocate.

George Cockburn of Gleneagles, Esq; advocate.

Walter Campbell, Esq; advocate.

Donald Campbell, Esq;

Archibald Campbell of Afkamell, Esq;

James Cathcart, Esq;

John-William Crawford of Crawfordland, Esq;

Allan Cameron of Glendeffarie, Esq; 13 *Books*.

Patrick Crawford of Auchinames, Esq;

James Goodlatt-Campbell of Achline, Esq;

John Crawford of Doonfide, Esq;

James Coutts, Esq; London.

- Robert Chalmers, Esq;
 Daniel Campbell of Shawfield, Esq; 2 *Books*.
 James Cheap of Sauchie, Esq;
 — Carruthers of Holmains, Esq;
 George Carnegie of Pitarrow, Esq;
 John Campbell of Otter, Esq;
 Captain Robert Campbell of Monzie, Esq;
 Thomas Craig of Ricarton, Esq;
 Robert Campbell of Finab, Esq;
 James Carmichael of Hailes, Esq;
 John Campbell of Skipness, Esq;
 Archibald Christie, Esq;
 Alexander Cunnyngnam of Lathriesh, Esq; one of the clerks
 to the signet.
 David Campbell, Esq; one of the clerks to the signet.
 Dr William Cullen physician in Edinburgh.
 Rev. Dr Carlyle minister of Inveresk.
 Mr George Cunningham of the Customs.
 Mr Lewis Cauvin teacher of the French language.

D

- Right Hon. the Earl of Dundonald.
 Right Hon. the Earl of Dalhousie.
 Right Hon. the Earl of Dunmore.
 Right Hon. Sir Laurence Dundas, Baronet, 2 *Books*.
 Right Hon. Robert Dundas, Esq; Lord President of the Court
 of Session.
 Right Hon. Henry Dundas, Esq; Lord Advocate for Scotland.
 Hon. Archibald Douglas of Douglas, Esq; 2 *Books*.
 Hon. Arthur Duff, Esq; advocate.

- Sir William Dalrymple of Cranston, Baronet.
Sir James Dunbar of Mochrum, Baronet.
Sir Alexander Dick of Preftonfield, Baronet.
Colonel James Douglas, 3d regiment of Guards,
William Duff, Esq; fheriff-depute of Ayrshire.
David Dalrymple, Esq; advocate,
James Dunbar of Dorn, Esq; advocate.
John Douglas of Tiliwhilly, Esq; advocate.
James Sholto-Douglas, Esq; advocate.
James Dickfon, Esq; advocate.
John Dalrymple, Esq; merchant in Edinburgh.
Thomas Dundafs of Castlecary, Esq; 2 *Books*.
James Dundas of Dundas, Esq;
James Dickfon of Broughton, Esq;
Robert Drummond of Pitkellony, Esq;
James Dewar of Vogrie, Esq;
James Dallas of Parkly, Esq;
William Douglas, Esq;
George Dempster of Dunichen, Esq;
Charles Dalrymple of Orangefield, Esq;
Henry Drummond, Esq; banker, London.
David Dickfon of Kilbucho, Esq;
William Dickfon, Esq; of Kilbucho, *junior*.
William Douglas of Kellhead, Esq;
Charles Dalrymple of North-Berwick, Esq; 2 *Books*.
John Davidfon of Revelrig, Esq;
Mr Thomas Dallas furgeon in Muffelburgh.
Mr Archibald Dickfon nurferyman at Haffendean-burn.
Mr John Darling gardener at Pinkie.

E

- Right Hon. the Earl of Errol, 2 *Books*.
 Right Hon. the Earl of Eglintoun, 3 *Books*.
 Right Hon. the Earl of Elgin.
 Right Hon. Lord Elphinston.
 Right Hon. Lord Elibank.
 Right Hon. Sir Gilbert Elliot of Minto, Baronet.
 Hon. Lord Ellick, one of the Senators of the College of Justice.
 Hon. Jo. J. F. Erskine of Mar, Esq;
 Sir Francis Elliot of Stobs, Baronet.
 Sir William Erskine, Baronet.
 Alexander Elphinston of Glack, Esq; advocate.
 Peter Edgar of Marchfield, Esq;
 James Edmonstone of Longfaugh, Esq;
 Mr William Elliot writer in Edinburgh.

F

- Right Hon. the Earl of Finlater, 4 *Books*.
 Right Hon. Lord Forbes.
 Sir Adam Ferguson of Kilkerran, Baronet.
 Sir Arthur Forbes of Craigievar, Baronet.
 William Forbes-Leith, Esq; advocate.
 John Fordyce of Ayton, Esq; 2 *Books*.
 William Fullerton of Lockhart-hall, Esq;
 William Finlay of Croftangry, Esq;
 James Ferguson, Esq; of Pitfour, *junior*.
 William Fullerton of Rosemount, Esq;
 Malcolm Fleming of Barochan, Esq;
 Richard Fisher, Esq;
 James Forrest of Comiston, Esq;

- John Foulis of Roselholm, Esq; 7 *Books*.
 George Forbes, Esq; Bedford-street, London.
 James Farquharson of Invercal, Esq;
 Andrew Fletcher of Salton, Esq;
 Captain John Forbes of New.
 Captain Thomas Fullerton of Gallery, Esq;
 Francis Farquharson of Finzean, Esq;
 Thomas Forrester of Denovan, Esq;
 John Forbes of Culloden, Esq;
 Charles Fordyce, Esq; London.
 James Geddes, Esq;
 Rev. Robert Finlay of Drummore, Esq;
 Mess. Robert and Andrew Foulis, printers to the university of
 Glasgow.

G

- His Grace the Duke of Gordon, 2 *Books*.
 Right Hon. the Earl of Galloway, 2 *Books*.
 Right Hon. the Earl of Glasgow, 2 *Books*.
 Right Hon. the Earl of Glencairn.
 Right Hon. Lord Gray.
 Right Hon. Lord Glenorchy.
 Right Hon. Lord Adam Gordon, 2 *Books*.
 Hon. Lord Gardenston, one of the Senators of the College of
 Justice, 2 *Books*.
 Sir Thomas Gascoigne of Parlington, Baronet.
 Sir Archibald Grant of Monymusk, Baronet, 2 *Books*.
 Sir Ludovick Grant of Grant, Baronet.
 Sir Alexander Gilmour of Craigmiller, Baronet.
 Lieutenant-General David Graem.
 Thomas Graem of Balgowan, Esq;

- William Graham of Airth, Esq;
 ——— Craham of Workraw, Esq;
 Robert Gardiner, Esq;
 James Garthshore of Alderston, Esq;
 James Glen of Long-Croft, Esq;
 Captain Gilchrist of Amisfield, Esq;
 Alexander Gordon of Whiteleys, Esq;
 David Gavin of Langton, Esq;
 James Guthrie, Esq;
 Charles Gascoigne, Esq;
 Alexander Gibson of Durie, Esq;
 William Gordon, Esq;
 John Glassford of Dougleston, Esq;
 George Gray, Esq;
 Robert Graham of Fintry, Esq; 2 *Books*.
 Patrick Gramc, Esq; advocate.
 Alexander Gray, Esq; one of the clerks to the signet.
 Mr Richard Gardner of the Customs.
 Mr John Gardner of the Customs.

H

- Right Hon. the Earl of Hadinton, 2 *Books*.
 Right Hon. the Earl of Hopeton, 2 *Books*.
 Right Hon. the Earl of Home.
 Right Hon. the Earl of Hyndford.
 Right Hon. Lord Haddo.
 Right Hon. Lord Archibald Hamilton.
 Hon. Lord Hailes, one of the Senators of the College of Justice.
 Hon. Charles Hope-Weir, Esq; 2 *Books*.
 Sir Robert Henderson of Fordel, Baronet.

- Sir Archibald Hope, Baronet.
 Sir John Home of Renton, Baronet.
 Sir Thomas Hay of Alderfton, Baronet.
 Alexander Hay of Drumelzier, Esq;
 Alexander Hay of Mordington, Esq;
 Robert Hepburn of Clerkington, Esq;
 Alexander Home of Manderfton, Esq;
 James Hamilton of Bangour, Esq;
 Alexander Hunter of Polmood, Esq;
 Hugh Hathorn of Castlewigg, Esq;
 John Hamilton of Sundrum, Esq;
 Alexander Hamilton of Rosehall, Esq;
 — Hume of Gemelthiels, Esq;
 Thomas Hog of Newlifton, Esq;
 William Hay, Esq; one of the clerks to the fignet.
 William Haggerfton-Conftable, Esq;
 William Halkerfton of Rathillet, Esq;
 Dr James Hay of Hayfton, phyfician in Edinburgh.
 Dr John Hope profefſor of Botany in the Univerfity of Edinburgh, 2 *Books*.
 Rev. Mr Gilbert Hamilton miniſter of Cramond.
 Mr John Hunter gardener to Lord Elliock.

I

- Right Hon. Viſcount Irwin, 2 *Books*.
 Sir Adam Inglis of Cramond, Baronet.
 Alexander Innes of Cathlaw, Esq;
 Alexander Johnſton of Stratoun, Esq;
 William Irving of Bonfhaw, Esq;

John Johnston, Esq; writer in Edinburgh.

Mr William Jameſon architect.

Mr Stanley Joyce nurſeryman, Newcastle.

K

Right Hon. Lord Viſcount Kenmore.

Right Hon. Lord Kinnaird.

Hon. Lord Kennet, one of the Senators of the College of Juſtice.

Hon. David Kennedy, Esq; advocate.

Charles Ker of Wells, Esq;

Alexander Keith of Revelſton, Esq;

Captain James Kydd.

Mr Gavin Kempt.

L

Moſt Hon. the Marquis of Lothian, 2 Books.

Right Hon. the Earl of Loudon.

Right Hon. the Earl of Leven.

Right Hon. the Earl of Lauderdale, 2 Books.

Sir Andrew Lawder, Baronet.

Sir Robert Laurie, Baronet.

General Lockhart of Carnwath.

Captain James Lumſdain of Invergelly, Esq;

Captain Francis Lindſay.

William-Charles Little of Libberton, Esq; advocate.

James Lockhart of Camnethen, Esq;

John Lamont of Lamont, Esq;

William Lock, Esq;

William Lennox, Esq;

John-Frederick Loof, Esq;

Mr John Leslie land-surveyor.

Mr Andrew Lochie seedsmen in Kelfo.

M

His Grace the Duke of Montagu, 2 *Books*.

His Grace the Duke of Montrose, 2 *Books*.

Right Hon. the Earl of Marchmont, 2 *Books*.

Right Hon. the Earl of Morton, 2 *Books*.

Right Hon. the Earl of Moray.

Right Hon. the Earl of Dumfries.

Right Hon. Lord John Murray.

Right Hon. James Montgomery, Lord Chief Baron of Exchequer, 2 *Books*.

Right Hon. Thomas Miller, Lord Justice Clerk.

Hon. Baron John Maule.

Hon. George Murray, Esq;

Sir Alexander M'Donald, Baronet.

Sir Robert Myrton of Gogar, Baronet.

Sir Robert Murray, Baronet.

Sir William Maxwell of Monreith, Baronet, 2 *Books*.

Sir William Murray of Ochertyre, Baronet.

Sir William Maxwell of Springkell, Baronet.

Sir Harry Munro, Baronet.

Colonel Monypenny.

Colonel James Mafterton.

Archibald Menzies of Culdares, Esq; one of the Commissioners of the Customs.

Alexander Murray, Esq; Solicitor-General for Scotland.

Alexander M'Dougal, Esq; Deputy-remembrancer of the Exchequer.

- Donald M'Leod, Esq; advocate.
 William M'Kenzie, Esq; advocate.
 John M'Kenzie of Delvin, Esq;
 William Mercer of Aldie, Esq; 2 *Books*.
 Francis Macnab of Macnab, Esq;
 John Mill of Old Montrose, Esq; 2 *Books*.
 James Milliken of Milliken, Esq;
 James Moray of Abercairny, Esq;
 William Murray of Polmaise, Esq;
 Ronald M'Donald of Clanronald, Esq; 2 *Books*.
 Donald Macdonell of Glengary, Esq;
 William Macdowall of Castlefemple, Esq;
 Donald Macneil of Collancy, Esq;
 Alexander Murray of Philiphaugh, Esq;
 William Moncrieff of Tippermolloch, Esq;
 James Murray of Broughton, Esq;
 Charles Macdonald of Largie, Esq;
 George Monro of Poyntzfield, Esq;
 John Macdouall of Logan, Esq;
 Robert Mackenzie of Fairburn, Esq;
 John MacCulloch of Barholm, Esq; 2 *Books*.
 William Miller of Craigentenny, Esq; feed-merchant in Edinburgh.
 Duncan Macmillan, Esq;
 Robert Murray, Esq;
 Kenneth Mackenzie, Esq;
 John M'Gowan, Esq; writer in Edinburgh.
 Dr James Mounsfey.
 Dr John Macfarlane.
 Dr William Miller physician, London.

Mr Duncan Macdonald writer in Edinburgh.
 Mr John Murray bookfeller, Fleet-street, London.
 Mr Robert Macnair merchant in Glasgow.
 Mr Murdoch M'Lean merchant in Edinburgh.
 Mr George Miller brewer.
 Mr George Manderfon nurferyman at Dumfries.

N

Right Hon. the Earl of Northek.
 Right Hon. Lord Napier.
 Sir James Nafmyth of Poffo, Baronet, 2 *Books*.
 Sir John Nifbet of Dean, Baronet.
 Sir William Nairn of Dunfinnan, Baronet, 2 *Books*.
 William Nelthorpe, Esq; one of the Commissioners of the
 Customs.
 William Nifbet of Dirleton, Esq;
 William Nifbet *junior*, of Dirleton, Esq;
 Mr John Neal merchant in Edinburgh.

O

Right Hon. Lord Oliphant.
 Hon. Henry Oliphant, Esq;
 Lieutenant-General Sir James-Adolphus Oughton, Baronet.
 Robert Oliphant of Rossie, Esq; Postmaster-General of Scot-
 land.
 Robert Ord, Esq;
 James-Townsend Oswald of Dunnekier, Esq;
 Archibald Ogilvy of Inchmartin, Esq;
 John Orr of Barrowfield, Esq;
 Alexander Orme, Esq; one of the clerks to the signet.

P

Right Hon. the Earl of Panmure.
 Sir John Paterfon of Eccles, Baronet.
 Colonel Peter Preston.
 William Pulteney, Esq;
 Thomas Pennant of Downing, Esq;
 John Pringle of Crichton, Esq;
 John Patoun, Esq; of Inveresk.
 Boyd Porterfield of Porterfield, Esq;
 John Pringle, Esq; one of the clerks to the signet.

Q

His Grace the Duke of Queensberry and Dover, 4 *Books*.

R

Right Hon. Lord Reay.
 Right Hon. Lord Ruthven.
 Sir Alexander Ramfay of Balmain.
 Major John Rofs, 3rd regiment.
 David Rae, Esq; advocate.
 Archibald Roberton of Bedley, Esq;
 John Rofs of Balnagowan, Esq;
 David Rofs of Inverhassie, Esq;
 John Rutherford of Edzertoun, Esq;
 Alexander Robertson of Straloch, Esq;
 Allan Ramfay of Kinkell, Esq;
 James Rocheid of Inverlieth, Esq;
 James Riddell of Ardnamurchan, Esq;
 Thomas Rigg of Morton, Esq;
 John Renton of Lamerton, Esq;

- Alexander Rofs, Esq;
 Walter Rofs, Esq; one of the clerks to the signet.
 David Reid, Esq; Inspector-general of out-ports, 2 *Books*.
 Dr James Ruffell, professor of Natural Philosophy in the university of Edinburgh.
 Dr John Roebuck.
 Dr Robert Ramsay physician in Edinburgh.
 Mr Robert Robinson architect.
 Mr Charles Renton land-surveyor.
 Mr John Richmond and Company, nursermen, Edinburgh.
 Mr Charles Rofs at Greenlaw, nurserman.
 Mr George Roy gardener, 2 *Books*.

S

- Right Hon. the Earl of Seaforth.
 Right Hon. Lord Viscount Stormont.
 Right Hon. Lord Somerville.
 Hon. Keith Stuart, Esq;
 Sir John Sinclair of Murkle, Baronet.
 Sir John Stuart of Allaubank, Baronet.
 Major-General John Scott.
 Colonel Robert Skene, Adjutant-General of his Majesty's forces in Scotland.
 Captain Archibald Swinton.
 John Swinton of Swinton, Esq; advocate.
 James Stuart-Fleming, Esq; advocate.
 Robert Scott of Dunneald, Esq;
 Hugh Seton of Touch, Esq;
 Charles Scott of Bavelaw, Esq;
 — Sharp of Holden, Esq;

— Stewart of Shambelly, Esq;
 John Spottifwood of Spottifwood, Esq;
 James Sutherland-Murray of Clyne, Esq;
 James St Clair of Dyfart, Esq;
 Alexander Stuart of Blantyre, Esq;
 William St Clair of Rolin, Esq;
 David Scott of Scotfarvet, Esq;
 David Smyth of Methven, Esq;
 Alexander Sherriff of Craigleith, Esq;
 James Stewart, Esq; merchant in Edinburgh.
 James Small, Esq;
 Gideon Schaw, Esq;
 Andrew Stevenfon, Esq;
 John Shaw-Stewart, Esq;
 Andrew St Clair, Esq;
 Alexander Scrymgeour, Esq;
 Jacob Sandilands, Esq;
 John Spottifwood, Esq; London.
 Mr William Sutherland writer in Edinburgh..
 Mr William Shiells feedfman at Dalkeith.

T

Most Hon. the Marquis of Tweeddale.
 Captain Alexander Turnbull, 3^d regiment.
 John Thomfon, Esq; Secretary to the Board of Excise.
 Alexander Telfer of Kimergham, Esq;
 Joseph Tudor, Esq;
 Richard Thornton, Esq;
 Mr Archibald Telfer.
 Mr John Veitch.

U

Alexander Udny, Esq; one of the Commissioners of Excise.

W

Hon. James Wemyss of Wemyss, Esq;

Hon. Baron George Winn.

Sir John Whitefoord, Baronet.

Sir Thomas Wallace of Craigie, Baronet.

Sir John Wedderburn, Baronet.

Colonel Sir John Warrender, Baronet, 2 *Books*.

John West, Esq; one of the Commissioners of the Customs.

Thomas Wharton, Esq; one of the Commissioners of Excise.

William Wallace, Esq; advocate.

Joseph Williamson, Esq; advocate.

William Wilson of Houdon, Esq;

Andrew Wauchope of Niddrie, Esq;

John Wauchope of Edmonston, Esq;

James Watfson of Saughton, Esq;

Robert Waddell, Esq;

William Wood, Esq;

George Warrender, Esq;

Mr Thomas Whyte of Primrose-Barns.

Mr William Whyte bookfeller in Kirkcaldy, 12 *Books*.

Mr Robert Whyte seedfman.

Mess. Williamson and Company, nurferymen, London.

Mr William Wright nurferyman at Leith.

Y

Dr Thomas Young phyfician in Edinburgh.



T R E A T I S E

O N

F O R E S T - T R E E S.



C O N T E N T S.

DECIDUOUS TREES, with their different Species.

| CHAP. | PAGE. |
|--|-------|
| I. <i>The</i> ELM TREE, - - - | 1 |
| II. <i>The</i> BEECH TREE, - - - | 21 |
| III. <i>The</i> Platanus, or PLANE TREE, - - - | 25 |
| IV. <i>The</i> MAPLE TREE, - - - | 29 |
| V. <i>The</i> OAK TREE, - - - | 34 |
| VI. <i>The</i> ASH TREE, - - - | 45 |
| VII. <i>The</i> LIME TREE, - - - | 51 |
| VIII. <i>The</i> HORNBEAM TREE, - - - | 56 |
| IX. <i>The</i> WALNUT TREE, - - - | 59 |
| X. <i>The</i> CHESNUT TREE, - - - | 66 |
| XI. <i>The</i> HORSE-CHESNUT TREE, - - - | 73 |
| XII. <i>The</i> Larix, or LARCH TREE, - - - | 76 |
| XIII. <i>The</i> VIRGINIAN TULIP TREE, - - - | 84 |
| XIV. <i>The</i> ACACIA TREE, - - - | 89 |
| XV. <i>The</i> WILD CHERRY TREE, in England commonly called the Black Cherry, in Scotland the Geen Tree. 92 —This chapter also contains the BIRD CHERRY, in Scotland called the Hagberry, - - - | 96 |
| XVI. <i>The</i> POPLAR TREE, - - - | 97 |
| XVII. <i>The</i> Lote, or NETTLE TREE, - - - | 104 |
| XVIII. <i>The</i> Laburnum, or BEAN-TREFOIL, - - - | 108 |
| XIX. <i>The</i> ALDER TREE, - - - | 111 |
| XX. <i>The</i> BIRCH TREE, - - - | 112 |
| XXI. <i>The</i> SERVICE TREE, - - - | 115 |
| XXII. <i>The</i> JUDAS TREE, - - - | 118 |
| XXIII. <i>The</i> ELDER TREE, - - - | 124 |
| XXIV. <i>The</i> TACAMAHACA TREE, - - - | 126 |

EVERGREENS, with their different Species.

| CHAP. | PAGE. |
|--|-------|
| XXV. <i>The PINE TREE,</i> - - - | 128 |
| XXVI. <i>The FIR TREE,</i> - - - | 131 |
| XXVII. <i>The CEDAR TREE,</i> - - - | 132 |
| XXVIII. <i>The CYPRESS TREE,</i> - - - | 133 |
| XXIX. <i>The Arbor Vitæ, or TREE of LIFE,</i> - | 134 |
| XXX. <i>The Ilex, or EVERGREEN OAK TREE,</i> | 138 |
| XXXI. <i>The CORK TREE,</i> - - - | 174 |
| XXXII. <i>The HOLLY TREE,</i> - - - | 178 |
| XXXIII. <i>The YEW TREE,</i> - - - | 188 |
| XXXIV. <i>The Laurel, or CHERRY BAY TREE,</i> - | 192 |
| XXXV. <i>The BAY TREE,</i> - - - | 197 |
| XXXVI. <i>The Arbutus, or STRAWBERRY TREE,</i> - | 202 |
| XXXVII. <i>THORNS,—their culture from the seed, till they arrive to the size of becoming fencible Hedges at transplanting,</i> - - - | 207 |
| XXXVIII. <i>On the propagation of TREES by Layers,</i> - | 232 |
| XXXIX. <i>On GRAFTING and INOCULATION,</i> - | 235 |
| XL. <i>On FORESTS or WOODS, and the most speedy manner of rearing them,</i> - - - | 243 |
| XLI. <i>On making TREES fit for removal, that have stood uncultivated, and too thick, in Nurseries or Woods,</i> - - - | 256 |

A

T R E A T I S E

O N

F O R E S T - T R E E S.

CHAPTER I.

THE E L M T R E E.

The SPECIES are :

1. The small-leav'd or true ENGLISH ELM ;
2. The ENGLISH ELM with large rough leaves ;
3. The FRENCH ELM ;
4. The rough-bark'd DUTCH ELM ;
5. The CORNISH ELM ;
6. The RED ELM from CANADA ;
7. The SCOTS ELM in England, call'd the WITCH ELM ;
8. The ENGLISH ELM with strip'd leaves.

THE five sorts first mentioned are propagated by layers or suckers, the former of which is by much the better method, as the trees, so raised, will, in their first stages, advance more in growth, and make handsomer plants than these taken from the roots of old trees ; neither will they so soon, or in so great a number, produce suckers, which retards the growth of the tree. I shall therefore first describe the manner of raising

those kinds in that way, and proceed to the best methods of their culture, from the mother, till they arrive to the height of thirty feet or upwards.

HAVING prepared a spot of ground, neither too light and thin, nor too moist and heavy, but fresh and mellow, that has been well trenched the preceding year, and all root-weeds and stones carefully pick'd out of it, and that has been a year or two employed in leafy kitchen-garden crops, dig it well, and level it in the beginning of October: Then, if you have them not yourself, procure from a nurseryman your stools, or mother-plants; let these, if you can get such, be trees that have been cut over close by the ground two years preceding, but that have not yet been layed; cut all their branches over again, two or three inches above the last cutting, from which they will produce a great number of clean young shoots the following summer; plant these at about eight feet asunder in the Quincunx order, which will fill the ground more equally than by planting them in squares; then give them a gentle watering, to settle the earth about their roots.

If you cannot procure such as have been cut over with a view to making mother-plants of them, chuse from the nursery found vigorous trees, of about six or seven years growth; and if they have been two or three times transplanted, they will be so much the better, as, by having abundance of roots, they will produce plenty of strong sound branches: Cut them over slanting, eighteen inches or two feet above ground; then make a trench long enough to receive them lying on their side, sloping so as the root may be covered six or seven inches, and three or four in-

ches of the top appear above the surface; place the wounded part, which ought to be cut very clean and smooth, downwards, to prevent being injured by the winter rains; plant them at the same distances, watering them as the former, keep them diligently clear of weeds, frequently stirring and loofening the earth about them, so as to receive the full benefit of the summer rains and dews. If the ground is of a good quality, and the season favourable, many of them will be fit to lay the following October; and such shoots as are too weak for laying then, being again cut over, will produce enough to furnish the ground with a full crop of layers the succeeding autumn.

As early in October as the weather will permit, begin laying your Elms, giving them a gentle watering, which, in dry weather, should be frequently repeated during the summer months; the expence whereof will be well repaid by the number of roots and strength of your layers. The different methods of performing this operation on all the trees here treated of, will be described in a chapter by itself, to avoid repetitions.

THE following October, if the branches have been skilfully laid, and the ground managed as directed, most of the layers will be sufficiently rooted; when, having prepared a spot of good mellow ground, as for the stools, carefully uncover the plants, whose fibres are at this time extremely tender; raise them gently up with the spade, and with a sharp knife cut them off at the extremity of their roots, and such of them as have not pushed out fibres at the joint where they were laid, but are what the gardeners call *club-rooted*, should be thrown away, as these will never make good plants, or resist the winds: Having separated

them from their mothers, trim away only the small hairy fibres that are bruised and broken, which are apt to mould, and endanger the tree; but be very sparing of what is fresh and sound, shortening them and the principal roots moderately, tho' many fashionable gardeners make a little too free in this point, by cutting most of them away, endeavouring to show their address, by making trees grow without them; keep them as little time as possible out of the ground; cut them over about a foot in height, and plant them in lines three feet asunder, and eighteen inches distance in the line: Here let them remain two seasons, when they should again be cut over, in the beginning of March, within two or three inches of the surface: By this time the plants will be well rooted, and, the succeeding summer, in a good soil and temperate season, they will produce straight clean shoots, four and five feet high. In March following, prune away all strong lateral and ill-placed branches close to the stem, but leave several of the smaller shoots, more or less as the plants are thick or slender bodied, to detain the sap, and augment the trunk of the tree; the not observing which, is one great cause of seeing so many trees growing, without proportion, to great heights, with slender bodies and heavy tops, unable to support themselves, but bending almost to the ground with every gust of wind, from which, of course, they never can arrive to magnitude or beauty. Here these trees may remain another year, when, if they are intended to be made fit for transplanting at large sizes, they must be removed to another nursery, and planted at greater distances: But before I proceed to that, I shall direct their culture from suckers, and of the Scots Elm from seed, till they are fit to be treated in the same manner as those, and when the same management will answer all the kinds. It may here be necessary

to observe, after having cut over your Elms, or indeed any other tree, that, as soon as the young shoots appear, you should rub off all but the most promising one, which will much advance the growth of it.

BEING provided with suckers grub'd up from the roots of old trees, in the spring, when the sap begins to rise, which for them is preferable to the autumn, cut off all the bruised and broken roots, and trim their tops to about six or eight inches high; lay them in drills cut out with the spade, eighteen inches line from line, and eight or nine inches in the line; give them a gentle watering, and keep the ground clean and loose about them: Having stood here one year, cut them over by the ground, and let them remain another, when they ought to be raised and planted in a separate nursery, at double the former distances. Such of them as have made strong shoots, and thick in proportion to their height, may be planted at full length; but such as are dwarfish and ill-formed, or tall and slender, must be shortened again, more or less as they have good or bad roots; those with good roots less reduced in their height than the others, which ought to be an invariable rule in the pruning all sorts of Forest-Trees: In this situation, let them remain two, but not exceeding three years, managing them in all respects as the layers.

THE Canada Elm having been lately imported to Britain, they are not yet arrived to any magnitude with us, but in their native country they grow to a vast size. I have only cultivated them for three years past, during which time they have exceeded all the different species of Elms in growth considerably, and there is every probable appearance they will soon become stately trees in-

this climate. I have increased them from layers with ease, and they root more abundantly that way than the English Elm. I have also grafted them on English, Scots, and Dutch stocks, successfully; and the most vigorous shoots have been from the Dutch, though these on the English seem to have a more elegant form: Their leaves are broader than those of the Scots or Dutch Elm, but smoother, and of a much more lively green; from which circumstances, they seem to claim our encouragement. These trees produce plenty of seeds in Canada, from whence they may easily be procured; but from the length of the voyage, and the delicacy of the seeds, they seldom arrive fresh in Britain: Therefore, the readiest way to cultivate them here, is from layers, or by grafting them; and such plants will perhaps be hardier than those raised from foreign seeds.

THE Scots Elm may be propagated to the same advantage as the other sorts, by layers, and will produce abundance of roots with greater facility, and in courser land, than the English; but as they generally yield plenty of seeds annually, which are easily obtained, and which is much the cheapest way of raising large quantities of them, I shall direct their culture in that way.

THE seeds of this tree commonly ripen from the beginning till the middle of June, as the season is more or less forward: It is easy to discover their ripeness by the husk being full and firm, inclining to a tawny brown colour. These seeds must be attentively look'd after, as they approach to maturity; for when they are fully ripe, a blast of wind, or heavy rain, will drive them all off the trees in a day's time, as I have often experienced; and as

the feeds are very small, it will be difficult to gather any quantity of them, and indeed impossible if amongst grass, or where there is not a clean surface; but having watched the proper time, and selected the fairest and straightest trees, the best method of gathering them, is to make a man mount the tree, spreading a mat or canvass under it, when, gently shaking the branches, the ripe feeds will easily part with them and drop down. By this practice, you will have nothing but the most generous fully ripened feeds; a circumstance of no mean consideration in your future plantations; whereas, in the common way of sweeping the feeds from the ground, there is always a great deal of chaff, with many weak unripened feeds.

THE common practice is to sow these feeds a few days after gathering them, by which means a number of them will rise in four or five weeks; but these coming up at the hottest time of the year, and not having summer enough to make them strong plants before the hard weather comes on, are commonly sowed out of the ground the succeeding winter; or if that should be uncommonly mild, and they stand it out, yet such will be weak stunted plants, and hardly ever make free growing handsome trees; and though the bulk of the feeds will not appear till the following spring, yet, from the ground being hard and battered with the winter rains, they will make poor shoots, compared to such as are sown on fresh well-prepared land in the spring: It is therefore better management, and you will sooner come to your purpose, to raise vigorous healthful plants of these, or any other kinds, in a proper way, than struggle with the recovery of what have been originally starved and stunted. For these reasons, I shall pay no regard to common rules, however prevailing, further

than I have found them successful, but describe the methods of culture experience and observation has taught me are best, and by which I have raised great quantities of this valuable tree to a surprising size in a few years.

As soon as the seeds are gathered, spread them on a canvas in the open air, but not exposed to a warm sun, which would dry them too fast, and extract their vegetative juices; turn them over frequently, separating the clusters, into which, from their moisture, they are apt to gather and grow musty; let them be placed under cover in the night-time, to protect them from the rains and dews, which must be continued longer or shorter as the weather is temperate and clear, or damp and cloudy, but in general they will require ten or twelve days seasonable weather to make them dry enough to keep: After this, they should be put in bags, but not hard pressed in them, and carried to the seed-loft, where they may remain five or six weeks, by which time they will be thoroughly dry and firm, without having lost any of their virtue; and the season of vegetation being almost over, they will be in no danger of springing that year. From the seed-loft let them be removed to any covered shady place in the nursery, and mixed with one-third part fine sand to two-thirds of the seeds, covering them three or four inches thick with more sand or fine loose sifted earth, to prevent being injured by the frosts; and in this situation let them remain till February following.

ABOUT the 12th of this month, or as soon after as the weather will permit, prepare a spot of loose rich garden earth, made perfectly clean of root-weeds, and finely raked: Divide this land in beds three and a half feet wide, with alleys eighteen inches:

Thrust off a little of the earth with the head of the rake, as is practised in sowing onions, and other small kitchen crops; then sow the seeds moderately thin, (thick sowing being an almost universal though capital error in this and most kinds of tree-seeds); clap the seeds with the back of the spade gently into the ground, which will give a smooth level surface, and make it easy to cover them of an equal thickness; then draw on the earth that has been thrust back, and throw a little more from the alleys, till they are covered half an inch thick, but not more, deep covering being also another general error.

By the beginning of April, the seeds will appear above ground; after which time, when the weather is dry, and not frosty, they ought to be refreshed with frequent but very gentle waterings, either in the evenings, or early in the mornings, and carefully kept clear of weeds, which otherways would destroy many plants, and much impede the growth of the remainder.

If the seeds have been sown in a good well-prepared soil, and the season has been favourable, they ought all to be raised the following spring; but if the ground is poor, and of course the plants small, they may stand another year; in which event, it will be proper to draw the largest from amongst them, which otherways, the succeeding summer, would prevent the small ones from having air and moisture, and consequently rob the greatest part of their proper nourishment.

THE separation of the larger from the smaller plants, in all kinds of nursery, though not generally attended to, is of great consequence, both in point of use and beauty, as, from this prac-

tice, the trees nearly keep pace with one another in size, but which not observed, many are smothered or stunted by being overhung, to the great injury and deformity of the nursery; and indeed this rule ought to be extended, not only to nurseries, but more particularly to such trees as are planted out where they are to remain.

THESE plants having been carefully raised from the seminary with all their fibres, shorten their top-roots, and commit them to the nursery, the well-grown in October, but the smaller not till February, lest the winter's frost spew them out of the ground: Plant the largest in rows two and a half feet asunder, and a foot distance in the row, where they may remain two years; but let the smaller be laid in beds one foot row from row, and about six inches in the row, to stand one year only, when they may be treated as the larger seedlings, and like them stand two years longer.

THE English Elm with strip'd leaves, may be grafted on any of the Elms, though on the plain English they make the handsomest plants; but in order to preserve their original variegation, they ought to be planted on a poor light soil, as in deep rich ground they lose much of that beauty, and sometimes turn quite plain, though the most effectual method I have ever found for preserving the colours of this and many other strip'd plants, is to propagate them from layers of trees that are richest in the variegation, and which will continue so much better than such as have been grafted on plain stocks.

BESIDES the common methods of raising Elms from layers, suckers and seeds, there are many propagated, by grafting and

inoculating the English kind on Scots stocks. For certain soils and situations, this is a very great improvement; but where that is not judiciously considered; and the genius of the land where they are planted out for good consulted, it may have an opposite effect: I shall therefore (having tried many experiments on this favourite tree) be particular in mentioning the advantages, or otherways, of propagating the English Elm by grafting, adapting the stocks on which they are grafted to the soils where they ought to be planted, and the improvements in profit and beauty that may be obtained from this practice.

WHERE the soil is dry, found, and generous, and the climate good, there is no species of the Elm yet familiar to us, equal in beauty to the true small-leav'd English, from layers of its own kind; nor has it any fault, but being shy to root (when unskillfully laid), and in stormy situations reclining from the wind; but, by the present system of cultivation, that defect will be intirely cured, and it will root as abundantly as the Scots Elm, or any other tree, and resist the most impetuous winds equally well.

NEXT to the true English, I esteem the Cornish Elm as the finest tree of the kind, both for loftiness of growth, elegance of form, and the lively chearful verdure of its leaves.

THE English Elm grafted on the Scots makes both a beautiful and valuable tree, yet it is still inferior in regularity of form, and loftiness of stature, to those raised from their own mother; and as every tree must in some measure partake of the stock on which it is grafted, so this has a near resemblance of the Scots Elm in its bark even when young, and when old, like them, grows more

loofe, fpreading, and lefs erect than the true Englifh, though, when young, they are extremely beautiful.

WHERE the land is tolerably deep, though coarfe, and inclined to clay or till, thofe on Scots ftocks will fucceed better than the Englifh on its own bottom; but where the ground is thin and hungry, it is in vain to plant them.

ON moift, heavy, coarfe, and even wet lands, that have any competent degree of ftrength, plant the rough Dutch Elm; and in fuch fituations, I have even raifed goodly thriving plantations of the Englifh, grafted on ftocks of them, which makes a fairer tree than thofe on the Scots ftock, and has a nearer refemblance of the true Englifh, as the Dutch Elm itfelf has. At the fame time, though this plant moft generally affects a deep foil, I have feen many ftately thriving trees of them on burning fand and gravel.

THE French Elm affects a deep rich moift earth, where they will make amazing progrefs, and become beautiful trees. In fuch a fituation, if the Englifh Elm is chofen, graft them on ftocks of the French, which makes the fineft plants of the whole tribe, the Englifh on its own bottom only excepted, and which has no competitor, when fited to its proper foil.

THE French Elm may alfo be much improved, by grafting it on the Englifh, when required to be planted on fuch foil as is directed for that plant.

HERE it may be neceffary to obferve a practice extremely common amongft ignorant nurferymen, which is, cutting their

English Elm grafts from those on Scots stocks, and which indeed have the fairest and plumpest buds, (a plain indication from whence they immediately proceed, the buds of the Scots being larger and more turgid than those of the English) but these gentlemen either do not regard the quality of the plants they sell, so they are paid for them, or are ignorant, that, by repeating this practice, the English Elm may be brought so far to degenerate, as, in many graftings this way, to differ very little from the Scots; therefore, whatever kind the stocks are on which you graft the English, let the grafts be taken from trees of the true kind, raised by layers of their own mother. This, however little attended to, nature plainly dictates.

IT may also be proper to notice here, that all Elms planted in gardens, and by the sides of walks, lawns, or avenues, ought to be on Scots stocks, as these produce no suckers, which the English, French, and Dutch, do in such quantities, as to make it very troublesome and expensive keeping such places clear of them, and in good order.

I AM well aware that the ignorant part of my profession (but who I hope are not the majority) will say, here is a great deal of time, land, and labour lost, in cutting over trees before ready to fell and make money of, or at any rate which might have remained as they were till larger and higher priced. According to common practice, where ignorance and dishonesty go hand in hand, it will be difficult to convince such men of their real interest, which they perhaps believe consists in getting money by whatever means as fast as they can. Such will not easily relinquish their former ill-habits, or reflect, that a person of taste and

knowledge in gardening will reward their patience and industry, by readily paying a higher price for a handsome vigorous plant, than for an unlhapely stunted one: To such therefore I do not mean to address myself, but those of more ingenuous and liberal views. I will boldly affirm, that though a little more land and labour is bestowed, there is in the end no time lost, but much time saved by this operation, as, in four or five years, these cut over will be considerably larger than the others, with this further desirable circumstance, that, in place of being ragged, un-
fightly, and ill-rooted, they will be straight and clean-skin'd, with a much greater abundance of roots. In short, cutting over establishes the plants, by diverting the sap to the roots, frees them from the injury and concussions of the winds, and makes them produce handsome and generous shoots, infinitely preferable to such as are abandoned to nature and accident without this discipline; and when seasonably practised, nothing will so much accelerate the success of plantations for many years.

Thus having directed the best methods of treating these plants in their early stages, and which indeed is all the culture commonly bestowed on them, for whatever purposes they are designed, or at whatever sizes to be removed, I proceed to their management for a succession of years, with a view to their being transplanted when large trees, and which, by observing the rules here laid down, they may be, with the most certain success, to any size, capable of being raised and transported.

THESE trees, if planted in a good soil, having now arrived to the height of six or seven feet, the same practice will answer for all the sorts of Elms.

YOUR ground being prepared by a good digging, which on this occasion I prefer to trenching, (as deep loose soil would invite the roots downward, whereas the present system requires their spreading as much as possible near the surface), raise your plants carefully, with all their roots and herby fibres; reduce the downright roots considerably, but only smooth with a sharp knife the extremities of the spreading ones, and whatever earth adheres to the fibres, if the distance is small to their new quarters, should be preserved, cutting away only some of the smallest straggling hairy parts; for roots are the mouths that suck in the nourishment, and transfuse it to all the parts of the tree. The roots thus prepared, prune away, close to the body, all ill-placed straggling branches, leaving only a few of the smallest, to detain (as has been said) the sap, and swell the trunk of the tree: Plant them in lines four feet asunder, and eighteen inches in the line; let them be watered, to settle the earth about their roots, and in this situation they ought to remain two years only.

FROM this nursery remove them to another, dressing their roots and bodies as at last removal; and plant them in lines five feet asunder, and two feet in the line, where they may remain three years.

LET them be again removed, and planted in lines eight feet asunder, and six feet in the line, in which situation continue them four years; let these have a plentiful watering, and observe that the waterings be increased in proportion to the age and size of the trees.

THE ground between the lines, from first to last, ought to be well dug every spring and autumn, which will much increase the number, and promote the spreading of the roots, and of course the growth of the plants.

THE trees being now twelve years old, and in good land, will be from twenty to twenty-four feet high, and may either be planted out where they are, to remain for good, or again removed to the fields, or any spot of good land most convenient, and planted at least ten feet asunder, to be ready for whatever design may be in view, or afterwards occur; whence, any time from three to seven or eight years, they may not only be removed with undoubted success, but with such abundance of earth adhering to them, and such strength and proportion of body, as to defy the rudest assaults of the winds, even at first planting, without staking or any other support; which, though an almost universal practice, is, notwithstanding, the result of ignorance, and is only necessary to support the defect of good culture, by propping trees that have been injudiciously managed, as none of the straight growing pyramidal trees (the deciduous kinds more particularly) have the least want of that aid, if the directions here given are attended to.

EVERY gardener, of the finest observation, must be sensible, that the rotting of the wounded parts of old trees is the most general cause of their death; but from this practice no violence is committed, no amputation made, but on the young and tender roots and branches, which immediately heal; from whence nature points out, that this process may be continued (particularly with the Elm) while it continues fresh and vigorous, without retarding its growth in any material degree.

. THAT I have been very liberal, if not extravagant, in ground, by the distances allowed the plants, and that few nurserymen have such an extent of it as to proceed deeply in this plan, is a reflection I am satisfied will be made by numbers; though, that I have not exceeded a proper bounds, long experience has convinced me, and will others who make the experiment as fairly as I have done: But if my assertion should not be thought sufficient without another reason, I shall give one that I hope will convince all, and that, by making proper use of the vacancies, the present system may turn out even frugal. The trees, till they are six or seven feet high, are allowed no greater distance than every honest and ingenious nurseryman will admit to be a proper medium; after which, from the increased distances, the plants being annually pruned as they ought, the ground may be crop'd with Turnips, Onions, Leek, Carrot, Beans, Cabbage, Collyflower, and a variety of other garden herbs, without the smallest injury to the trees, or the herbs receiving any injury from them; particularly the early crops, from which I have frequently had profitable returns: Early turnips particularly, and other tender roots and greens, in severe springs, when they have been totally cut off in the open quarters of the garden, between the lines of trees, from the shelter they afford, I have often found succeed; from which circumstance it is demonstrable, that trees planted at considerable distances, and their superfluous branches regularly pruned off, may be cultivated at a moderate expence. With respect to nurserymen who have small portions of land, by adhering to the practice here directed, they may enlarge their bounds at a small expence, as the annual returns from the kitchen crops amongst the trees, if well cultivated, will go far to pay both the ground rent and labour.

If the land is thin and hungry, or a cold tilly clay, on which you intend to plant the English Elm, the common method of making pits for them, is lost time and money. In such soils the Dutch only will succeed, where it is amazing with how many difficulties it will struggle, and soon become a large tree. But in these unfriendly situations, the English must be courted (as well it deserves) to display its beauty.

To effect this, I know but one certain method, which is, to plant on the surface, or as much above it as you can afford soil, and raise mounds of good earth, sufficient to cover the roots and establish the tree; which, being thus fed, till it acquire its former strength and hardness, will afterwards put up with coarser fare. Besides, the trees thus propagated, will not incline to run downwards, as those planted young ever do, but will spread their roots near the surface, within the influences of the sun and rains, and pick up all the good nourishment the place affords. This elevation of the trees, in parks, clumps, or lawns, has likewise a very agreeable effect.

THO' I have mentioned particular waterings, it may not be amiss, in general, to observe, that all large trees must be watered at transplanting: If in October, once gently will do till spring; from which time, it should be continued till August every month, at least in dry weather, or rather when it does not rain plentifully; but those planted in the spring, will require both more frequent and abundant waterings than the former. I would not however have it understood, that the directions given for large proportions of water to those old trees, should be practised on the younger; to them it should be given frequently indeed, but very

gently, as over-watering most kinds of young trees, is generally more destructive, than giving them none at all: Let it also be an established principle, that, from having begun to water seedlings, or other small and delicate plants, you regularly continue it as the weather requires, otherwise you'll do more harm than good.

I SHALL say no more on the culture of this noble, beautiful, and useful tree, than that it well deserves our utmost care and attention to bring it to perfection, for which it will amply repay us, both in pleasure and profit; therefore, I again recommend, that, at all the sundry removals, but particularly the latter, the utmost care be taken to preserve as much of the old earth as possible to the roots, which will much accelerate their pushing out fresh ones immediately; for this earth being already applied, and fitted to the mouths of the fibres, if divested of it, it will require some time to bring them in appetite again to a new mould, to repair their loss, furnish their stock, and proceed in their wonted œconomy without danger and interruption.

I HAVE often been surpris'd, that some authors of deserved reputation, mention the French and Dutch Elm as trees of neither use nor beauty; and I can account for it in no other way, than their having mistaken some other species of these trees for the true French and Dutch Elm. Having made these observations early in life, the Elm being ever a favourite tree with me, I was determin'd to be satisfi'd in this point, and the most likely way to be so, I thought, was to have them from France and Holland. This I did, and brought the French Elm from Paris, and the Dutch from Rotterdam, which were the mother-plants of all

I have ever since raised of these kinds. The French Elm, planted in such soil as has been here directed for it, I think a beautiful tree; it grows fast, and the wood, though not quite so hard as that of the English and Scots, is yet a valuable timber, and not much inferior to them. The Dutch Elm, tho' inferior in beauty and elegance of form to that, is, notwithstanding, a very valuable tree, and, in this climate, and much of the soil of Scotland, ought to be highly cherished, and become a common plant amongst us, as it will succeed in wet obstinate clay, where no tree I know of equal use, and few but aquatics, will grow freely, but in such places it will soon become a stately tree; and though the wood is not equal to the other mentioned kinds, it is still a useful wood, and is often indiscriminately sold to the carpenter with them, from their near resemblance.

IN Scotland, the dealers in, and manufacturers of timber, are partial, or ignorant with regard to the Scots Elm, believing it better wood than the English: But this, to my experience, is by no means the case; for having cut down many of these trees, I have frequently weighed a cubic foot of the one and the other, cut at the same time, and always found the English the closest and most ponderous.

I HAVE sold English Elms of my own raising, at twenty-four years growth, for a guinea the tree, and these not pick'd from quantities, but a whole line of them, above sixty in number: They were generally about eighteen inches diameter, a foot above ground, and forty feet high.

CHAPTER H.

THE BEECH TREE.

The SPECIES are:

1. The common BEECH.
2. The yellow-strip'd BEECH.
3. The white-strip'd BEECH.

THE common method of raising these plants, is, sowing their seeds in beds, very thick, early in the spring, and letting them stand two years; or, by drawing a part of them the first and second year, leaving the remainder till three years old: But this, however general, is a very bad practice, as the plants thus drawn have most of their tender fibres torn away, (an injury they will not soon recover); and what remains, will be carrot-rooted, and suffer much, by the necessity of shortening these roots (then hard and woody) before transplanting them. I shall therefore leave the beaten path, and direct the practice I have found most successful in the culture of this tree, and bringing it soonest to perfection.

BEING provided in mast from the straightest and freshest trees, as soon in autumn as the husks are quite dry, mix them with sand, and lay them under an old frame, or other covering, to

protect them from frost and wet. This will prepare the seeds for vegetation, and disappoint the mice, who generally have a large share of them when early sown.

IN the beginning of March, sow them thin in shallow drills, about eighteen inches asunder; and if the season is dry, and water at no great distance, give them frequent but moderate waterings, from their beginning to appear above ground, till the middle of August, which will much forward the growth of the plants.

IN March, next season, with a spade made very sharp for the purpose, undermine the roots as they stand in the drills, and cut them over between four and five inches under ground.

THE following autumn, or spring, you may either raise the whole, or give them another cutting below ground, when gently raising such as are too thick, leave the remainder, at proper distances, to stand another season. This manner of cutting the roots dexterously, has, in a great measure, the same effect as transplanting.

THOSE you have raised, after smoothing the bruised and broken roots, and cut away some of the small hairy fibres, must be planted in lines two feet asunder, and nine or ten inches in the line; and if the soil is good, and the plants have grown vigorously, they should remain here only two years, but in poor land they may continue three.

THOSE left in the drills where sown, are, next autumn, or spring, to be treated as these,

I MUST here observe a general error in the management of the Beech Tree at this age, which is, trimming off all their side-branches, and planting only the bare stem. This is doing the greatest violence to these plants, and what, if ever, they will not for several years get the better of, as no tree I know admits less of being pruned at transplanting, particularly when young, they constantly turning hide-bound and stunted when that is feverely done; therefore, nothing but very cross ill-placed branches (and even these sparingly) are to be touched at this time.

FROM this nursery they must be removed to another, and planted in lines three and a half feet asunder, and eighteen inches in the line, where they may remain, if in good soil, three, but in poor land four years; observing always to prune moderately at removal, and leave abundance of small branches to increase their bodies.

AT this period, these plants will be fit for common and extensive plantations; but such as are designed for removal, when large trees, must undergo more discipline.

THESE must now be removed to another nursery, and planted in lines five feet asunder, and two feet distance in the line, to remain in good ground three, but in poor four years.

FROM this remove them again, and plant them eight feet asunder line from line, and six feet in the line, to remain four years.

FROM this nursery, if required of a larger size, remove them to fields, planting them ten feet asunder every way, to be ready for

your future designs; and manage them hereafter as has been directed for the Elms.

As it has been observed, no deciduous tree agrees worse than this with pruning at removal, to which may be added, wounding them, by cutting off large branches, the best method of treating them, is to reduce them to their proper form by regular prunings in the nursery, particularly the season before they are transplanted; by regularly observing which, and keeping them in a proper degree of moisture, they will not be sensibly retarded in their future growth.

THE sorts with variegated leaves, are propagated by budding them on the common kind.

THIS valuable tree, for lofty espalier hedges to inclose and warm gardens, or for hedge-rows soon to shelter barren fields, has hardly an equal, and, by retaining its leaves all winter, affords the same protection as an evergreen: It is therefore amazing it should not be more universally planted in the cold, bleak, and mountainous parts of the kingdom, where it will grow in the poorest, stoniest, sandy, and gravelly grounds, and insinuate its roots into places one would think impenetrable to any plant. It is, besides, a tree of great beauty; and though the wood is not so valuable as that of some others, it brings a price, and is fit for many useful purposes; and for fuel, it is the best of any wood we have in this climate.

CHAPTER III.

PLATANUS; or, The PLANE TREE.

The SPECIES are:

1. The true ORIENTAL PLANE.
2. The Maple-leav'd or SPANISH PLANE.
3. The Western or VIRGINIAN PLANE.

THE first sort is usually increased from layers, though, where the seeds can be procured, the plants raised from them make the finest trees.

If they are propagated from layers, let them be laid down the beginning of March, and in a year's time they will be sufficiently rooted.

If from seeds, sow them in the autumn as soon as the seeds are thoroughly dry, in a moist rich soil, and shady situation. In the winter, screen the beds with pease-straw, rotten tanners bark, two or three inches deep, or some other light covering that can easily be removed in mild weather, to prevent the ground, for want of air, from contracting a mustiness, which might destroy the seeds. In the spring following, before the seeds vegetate, rake the beds gently over with a short-teeth'd rake, sifting a little fresh rich mould on them, in proportion to what has been raked off; and, in dry weather, during the summer months, let

them be regularly refreshed with water. The following autumn, the beds having been made quite clean, and loosened with your finger, so as not to disturb the plants, put a little more good mould about them with your hands, after which they will require no further trouble, but keeping them clean, till they have had another season's growth; by which time, let them be removed to the nursery the succeeding spring.

THE second sort, though by many ranked as a distinct species, Mr Miller (and I believe justly) thinks only a feminal variety of the first; though the leaves are less divided than it, but more than the western kind, this may easily be increased by layers.

THE third sort grows freely from cuttings, which ought to be planted the beginning of March, in shady borders of rich moist earth, two feet line from line, and eight or ten inches in the line; and if they are torn asunder at the joints, with a knob or bur of the old wood left, they will grow more readily, and sooner become strong plants, than the others. These cuttings ought to be a foot or fourteen inches long, buried about eight inches deep, and moderately watered till their shoots are two or three inches long, where they should remain two years. The leaves of this kind are broader, and less indented than the other two sorts; it is likewise hardier, grows faster, and to a greater magnitude in this climate: So that in large plantations, or in exposed situations, I would advise the greatest quantity of them to be planted.

THE seedlings, layers, and cuttings, are now all to be treated in the same manner, and planted out in the nursery, in lines

three feet and a half afunder, and eighteen inches distance in the line: Let them get a plentiful watering at removal; cut away the extremities of their roots, with all ill-placed overcrowded branches, and let them continue here three years.

FROM this remove them to another nursery, and plant them in lines six feet afunder, and three feet in the line, where they may stand six or seven years without removal, if chosen, as this tree naturally produces abundance of roots with little culture. In this nursery let the ground be annually dug, as for other trees, and regularly pruned to the form you would have them: By observing which, after you have planted them out for good, your labour is properly over, as they will require little or no pruning ever after, but advance in a regular and beautiful manner, without the assistance of art.

THE proper season of transplanting this tree is in the month of March, when, and during the summer months, if the season is dry, they ought to be plentifully watered, particularly if the soil is light and thin; for though this is a very hardy plant, yet, by removing them in autumn or winter, if the season should prove very severe, the extremities of the preceding summer's shoot are sometimes blasted, which disfigure them a little the succeeding year.

THE *Platanus* will grow in any tolerable soil, but they naturally delight in a moist deep ground; therefore, when planted on that of an opposite quality, they should be plentifully watered for several summers, which they will gratefully acknowledge, by the luxuriance of their growth.

THIS beautiful and magnificent tree is said to have been first introduced into England by the great Lord Chancellor Bacon, who planted a large parcel of them at Verulam, near London, which were very flourishing there a few years ago. The great esteem the ancient Persians, Asiatics, Greeks, and Romans, (who brought it from the Levant) had for it, is recorded by many historians, as that of its salubrious emissions having prevented the plague at Ispahan in Persia, which, after a number of them were planted, had not come near their dwellings, though for many centuries it had made dreadful ravages in that great city. The story of Xerxes halting his army of seventeen hundred thousand men for some days, when on his march to invade Greece, to admire the beauty and magnitude of one of these venerable Planes, is well known; as is that of the Romans moistening them with wine instead of water. But a relation at large of these, and many other such circumstances, would exceed the bounds of, and be unnecessary in a work of this kind: It is therefore sufficient here to observe, that the high esteem in which these ancient nations held this noble tree, appears to me a strong argument of their refined taste and judgment; and I am heartily sorry to say, that the neglect of its general culture in those kingdoms is a reflexion on ours. It affords the most glorious shade of any tree yet known; and Pliny justly observes, there is none which so well defends us from the heat of the sun in summer, or that admits it more kindly in winter.

THE Italians and Turks used formerly to build most of their ships with this timber; and they had them of so enormous a size, that whole canoes, and other vessels for the sea, have been excavated out of their prodigious trunks. It is hard, close, takes a fine polish, and is valuable for a variety of useful purposes.

CHAPTER IV.

THE MAPLE TREE.

The SPECIES are:

1. The greater MAPLE, in England falsely called the SYCAMORE, and in Scotland the PLANE TREE.
2. The Norway MAPLE, with Plane-tree leaves.
3. The Virginian Flowering MAPLE.
4. The American MAPLE, with Scarlet flowers.
5. The Virginian Ash-leav'd MAPLE.
6. The Common or Lesser MAPLE.
7. The Greater MAPLE, with strip'd leaves.
8. The Norway MAPLE, with strip'd leaves.

THE two first mentioned sorts being the largest growing and hardiest trees, are of course most proper for extensive plantations and exposed situations; for which reason, I shall first direct the culture of them till of considerable size, and then proceed to the other sorts.

THEIR seeds ripen in autumn, when they must be gathered in fair weather, and spread in an airy place till thoroughly dry, which may probably be in four or five weeks time. The general practise is, to sow them at this time; but, from long experience, I have found it better, and have raised more, and finer plants, to mix the seeds with sand, or loose sandy earth, and keep them defended from severe frost, or much moisture, till.

February, or the beginning of March, as the weather is more or less favourable about this time: If not strait'ned for land, sow them in drills, as has been directed for the Beech, but thinner; if otherways, let them be put in beds only eighteen inches broad, with alleys the same wideness, and cover them about three quarters of an inch thick.

THE following February or March, dig the alleys, and cut their roots about five inches under ground, which, with a sharp spade, may with ease be performed; and draw a considerable quantity of the largest plants where too thick, (which, if the ground is good, and has been properly dressed and kept clean, most of them will be); let these be planted in good mellow soil, in drills cut out with the spade quite perpendicular, that the plants may stand upright; let the lines be eighteen inches asunder, and the plants placed at eight or nine inches distance in them; and here they should only remain one year, the ground being tolerably good.

IN the following October, when the plants will be in general two feet high and upwards, let them be raised, both the seedlings, and these that were transplanted; shorten their top-roots, cut off any cross lateral branches, and remove them to another nursery, where they ought to be planted in rows, two and a half feet asunder, and 15 inches in the row, to continue two years.

FROM thence remove them again, at the same season, and plant them in rows five feet asunder, and two and a half feet in the row, where they may continue four years.

THESE, in an ordinary soil, will now be from twelve to fifteen feet high, and, if required of a larger size for future purposes,

may be removed to any convenient situation, and planted eight or ten feet afunder; when, any time after two, and not exceeding eight or ten years, they may be placed where designed to remain: And if, during that time, they have been skilfully pruned, and, by that, brought to their proper form, carefully raised, and moderately watered at planting, which, in a dry summer, may require being two or three times repeated, your labour with them is at an end.

I HAVE directed both spring and autumn planting for this and other trees; the reason for which is, that tho' the autumn is preferable for most of the deciduous kinds, when strong and well-rooted, yet these same kinds, planted in the autumn, or winter, when young, and before they have got sufficient roots, are apt to be injured by frost, and spewed out of the ground in severe seasons.

THE cause of so frequently removing these trees when young, is, that they naturally grow with downright carrotty-roots, tho', after undergoing the discipline here prescribed, no plant roots better, or is more patient of transplanting to a large size.

THERE is no tree, yet known in this climate, so proper to be planted near the sea, as the Great Maple, where I have known it grow luxuriantly, after many other kinds have been tried in vain; and, in a few years, their shelter will cherish and bring forward many hardy sorts, which no art will otherways effect.

THIS tree, however otherways valuable, should not be planted near the house, or by the sides of walks that are intended to be finely kept; for their leaves exude a sweet clammy juice that entices great quantities of insects, who eat them full of holes,

and make them unfightly; besides, the leaves falling early in autumn, turn to mucilage, and putrify with the first moisture of the season, so as they contaminate and spoil the walks, rendering them both disagreeable, and expensive to clean.

I HAVE not had the opportunity of planting the Norway Maple near the sea, but, in many other situations, I have planted them in concert with the common large sort, and found them equally hardy, and of as free a growth: They are a much handsomer tree, and their leaves have not the noxious qualities of the other.

THE third, fourth, and fifth sorts, are pretty trees, and proper for the wilderness, and other ornamental plantations, but should not be planted singly, or in cold exposed situations in this climate, as they commonly suffer much, both by the violence of the westerly, and coldness of the north and east winds. They may be propagated from seeds as the former kinds, when these can be procured; but as they are not so generally to be had in this country, they succeed readily by layers, which, laid down in autumn or spring, will be sufficiently rooted in twelve months.

HAVING carefully raised your layers, and dressed them as directed for others, plant them out in a quarter of good well-prepared ground, in rows, three feet asunder, and a foot distance in the row; let them be watered, to settle the earth about their roots, and remain here two or three years, from whence remove them to where they are meant to remain for good.

THE common or lesser Maple, which produces abundance of seeds with us, is easily propagated from them, in the same way as the larger kind, and may be sown in beds three and a half

feet wide, according to the common practice, and, from the seed-bed, at two years old, planted in the nursery for two years more, in lines, two feet asunder, when they will be fit for the purposes designed. This is a tree of humble growth, seldom rising above twenty-five or thirty feet high, and therefore not generally used in large plantations of timber trees, but is very common in the hedge-rows over most parts in England.

THE large strip'd Maple, is commonly propagated by budding it on the plain kind, and may also be raised from seeds, many of which will be as finely variegated as the trees that produced them; a circumstance very uncommon in other variegated plants, which rarely produce their own likenesses.

THE strip'd Norway Maple, is also propagated by budding it on the plain kind, and is a finely variegated tree, tho' I cannot say that the seeds of them will produce variegated plants, never having been able certainly to procure them of the true kind, tho' I have frequently sown them as such ineffectually.

THESE trees, the first, second, and sixth sorts particularly, will prosper in very indifferent coarse land, but most affects that which is deep and moist, tho' not wet or stiff; in such places they will make surprising progress, and in a few years become stately trees. The third, fourth, and fifth sorts, delight most in a firm dry mould.

THE various uses of this tree to the turner, for dishes, drinking-cups, bowls, and trenchers, and to the joiner for tables, &c. are too generally known to require a particular relation here; but that of the common lesser Maple, is much the best wood of all the kinds we yet know.

C H A P T E R V.

T H E O A K T R E E.

The S P E C I E S a r e :

1. The common OAK.
2. The broad-leav'd OAK.
3. The Virginian Scarlet OAK.
4. The Virginian OAK, with chefnut leaves.
5. The black Maryland OAK.
6. The white OAK of Carolina.
7. The OAK with woolly leaves.
8. The Chefnut-leav'd Eastern OAK, with a thick scaley cup.
9. The broad-leav'd Eastern OAK, whose leaves are finely cut, with a large acorn, and hairy cup.
10. The Champion Chefnut OAK.
11. The red Maryland OAK.
12. The willow-leav'd Maryland OAK.
13. The Burgundy OAK.
14. The gall-bearing OAK.
15. The cut-leav'd Spanish OAK.
16. The fwamp Spanish OAK.
17. The strip'd OAK.

TH E R E are many other kinds of Oaks mentioned in the catalogues of different writers on botany and gardening, but these, here selected, I have found, from experience, the most

distinct species, and finest trees of that tribe I have seen; many of the others having little beauty, and some of them being only feminal variations: I therefore thought it unnecessary to enumerate more, as all the sorts may be propagated in the manner here directed.

THE six sorts first mentioned are trees of the largest growth, and therefore should be planted where such are required; the others, being of more humble stature, may be confined to the wilderness, or smaller designs: But as the wood of the common English Oak is much preferable to any of them we yet know, so the foreign kinds should only be propagated in small quantities, for ornamental purposes, at least till their virtues are better known.

THIS tree is usually planted out for good when very young, from the general belief, that it will not succeed at any considerable age; and indeed, from the common methods of its culture, the observation is too well founded: But by following better rules, which I shall here endeavour to give, and which are the result of very considerable practice, it will transplant with certain success to a large size.

No tree requires more address, to make a handsome well-proportion'd free-growing plant, than the Oak; none is more neglected, tho' none more worthy our attention. It is rare to see a straight uniform plantation of them, but where they are crowded very thick together, or drawn up by the shelter of other plants.

THE common method of raising Oaks, is, by sowing them in beds, very thick, and in that condition letting them stand two,

and sometimes three years. They are naturally carrot-rooted, and run straight down into the earth, with few, and sometimes no fibres; and by standing in this situation for that time, they are drawn up tall and slender; and their roots having become hard and woody, the cutting away of these roots, to a proper length, which they must necessarily be, becomes a very violent operation on the plants; by which means many of them fail, and the remainder, from so severe a check, will be several years in gathering roots, and of course, during that time, will be stunted, cross-growing, and shrubby: But, to remedy these evils, pursue the following system, from the observation of which I have long been successful, in rearing many beautiful, straight, and well-proportioned Oaks.

HAVING provided yourself with acorns in the autumn, gathered from the handsomest and most vigorous trees, in fair weather, spread them in an airy covered place, and turn them frequently till quite dry; when you find they are so, mix them with sand, or loose light earth, and let them be protected from vermin, frost, and moisture; till about the middle of February.

AT this time, or as soon after it as the weather will admit, prepare, by a clean digging and raking, a spot of good natural soil; and, to render the crop equal and uniform, try the goodness of your seeds, by throwing them into a tub with water, when the fresh will sink to the bottom, and the rotten or defective float on the surface. The quality of the acorns being thus ascertained, make shallow drills across the ground, with a small hoe, at eighteen or twenty inches distance; and in these drop your acorns, about two inches separate, covering them, with the back of a rake,

two inches deep ; let the ground be raked smooth, and kept clean and mellow during the summer months.

THE beginning of April, the succeeding spring, cut them under ground as directed for the Beech, and let them remain till the spring after.

FROM this situation, as soon as their buds begin to swell, let them be carefully raised, without tearing their roots or fibres, and ground being ready, separate the straight free-growing plants from the crooked and shrubby ; shorten any downright or bruised roots, but be very sparing of the small fibres ; and plant the straight trees in one quarter of the nursery, in rows, two feet asunder, and nine inches in the row ; and the crooked ones in another, at the same distances : Let these plants be as little time as possible out of the ground ; for this purpose, raise few of them at a time, and if you have the command of four men, they will suddenly dispatch a great number of them, that is, by one man raising the plants, another pruning them, and giving them to the planters, and two planting.

IF the land is good, and the seasons have been kindly, the straight plants may be removed in two years ; but when either of these circumstances is otherways, they may continue three seasons.

THE crooked and bushy trees, having stood two years in the nursery, must be cut over by the ground, and remain two years longer ; and observe, that, as soon as their shoots are four or five inches long, you pinch off all but the most promising one ; from

whence the whole strength and juices of the root will be exerted in the support of this single shoot.

ANOTHER method of raising these trees, with equal success, is, sowing the acorns on beds, in rows, seven or eight inches asunder, and two or three inches in the row, covering them the usual depth, and letting them remain only one year.

FROM these beds remove them the following spring, and having shortened their top-roots, lay them in lines, cut down perpendicular with the spade, eighteen inches asunder, and eight or nine inches in the line, where they may continue two years.

FROM thence remove them, separating, as has been said, the straight from the crooked, and plant them in different quarters, in rows, two feet and a half asunder, and one foot distance in the row; the straight plants to continue here three years, and the crooked, if they have grown freely, to be cut over in one, but if otherways, not till two years; and here they should remain three years longer.

MANY writers of reputation direct sowing the acorns, as soon as thoroughly dry, in October or November, the principle of growth being so strong in them, that they are apt to shoot soon after, tho' not in the ground, and with that shoot will decay. This, they say, is the order of nature, and I readily admit it is so; nor do I condemn their practice: But I have found, from innumerable instances, the method before directed will produce better-rooted and cleaner plants; and how indeed can it be otherways? for, must not the ground, which, as it ought, we must suppose has been well trenched or dug the preceding autumn, mellowed and

enriched during winter with the heavenly influences, and again in the spring dug and laid down sweet and loose,—must not the soil in this condition, I say, nourish every plant in a much higher degree, than that laid down in autumn, hardened and battered with the winter rains? And tho' many of the acorns will vegetate before sowing, yet that vegetation is preserved by the mixture of sand or loose earth, and, before February, will make no advance, tending to impede, but, on the contrary, will forward the future growth of the plant; only let it be carefully attended to, that the acorns have not the smallest degree of moisture about them when mixed, that the mixture is also dry, and that they are kept protected from wet.

GARDENERS, in general, have the specious word *nature* eternally in their mouths, and no doubt there is a great deal in it, when properly understood and applied; but the herd of them knew nothing of either, and the true application of it in gardening, requires good sense, joined to much observation and experience: But be that so, or otherwise, was not nature designed to be modified and improved by art in many things? If it was not, many sound heads have in vain perplexed themselves in the study of gardening.

BEFORE proceeding to the further culture of the Oak, this may be a proper place to take notice of the general, or almost universal ill practice of nurferymen, dibbling their plants of one and two years old, or indeed as large as the dibble, with hard thrusting, will make room to contain them. Dibbling is hurtful, in a high degree, to the whole species of trees and plants; but to the Oak, and all the nut-bearing carrotty-rooted kinds, it is

doubly destructive, particularly in strong stiff ground. Common reason, one would readily believe, should point out the absurdity of this practice to every gardener of observation; notwithstanding which, I do not remember any author who warns us against it, but, on the contrary, many direct it for general practice. If a man, however, reflects but a very little, he must be sensible, that the roots of plants, squeezed into a hole made hard by the strong pressure of a dibble, must necessarily retain the moisture in wet weather, to such a degree, as to endanger the rooting of the roots, and that in dry weather this hole will become so hard, as to prevent the tender fibres from extending themselves, and procuring proper nourishment; so that if the plant lives, its roots are compressed into a small hard cluster of mouldy fibres, which nothing but severe pruning a great part of away, and different removals in good soil, will ever recover to a vigorous state. Nothing can excuse this practice in sensible nurserymen, but its being done at less expence than laying them with the spade; and that they are in some measure forced to it, from the ignorance and avarice of untutor'd upstarts, who assume the name of nurserymen, and take every opportunity that the worst practice presents, so it be cheap, of under-selling the sensible, honest, industrious gardener, and cheating the unskilful purchaser, no regard being paid to the quality of the plants.

NEITHER is the ill effect of dibbling confined to trees alone, but extends to many of the herbaceous plants, and other vegetables, which suffer in the same proportion. I have often made the experiment of this in Cabbages, Collyflowers, Potatoes, &c. planted on the same ground, the same day; and 'tis amazing how much larger those were, put in with the spade or trowel,

loosely, than these dibbled : In short, too much cannot be said against this barbarous method of treating trees ; which, if it prove not their immediate grave, will at least continue to be their prison. But I shall now return to the further culture of the Oak.

THIS tree, having been managed as here directed, will be of a proper age and size for being removed to large plantations for good, and, from the abundance of their roots, and good proportion of their bodies, will resist the most violent winds ; but such as incline to provide large trees of the common English Oak, for future purposes, must proceed farther, as follows :

HAVING fixed on a spot of good mellow ground, that has been well dug the preceding autumn, about the end of March, or beginning of April, give it another digging, level it well, and pick out all remaining stones and root-weeds from it. As soon as their buds begin to swell, raise such trees (which ought to be the straightest and finest) as you intend to cultivate further in the nursery way ; still continue to shorten such roots as tend downwards, and smooth the spreading ones that are long, or have been wounded with the spade in raising them ; and where there are abundance of fibres, you may likewise cut away some of the smallest, which, if the trees are not immediately planted, will decay, and sometimes bring a mouldiness about the principal roots : You must also cut off all ill-placed cross branches from their bodies, leaving only a few of the smaller, at proper intervals, to detain the sap, for the augmentation of the trunk ; and let not a bud of the leading shoot be ruffled, as that is difficult to repair in the Oak, by any other means than cutting over the tree. Let these operations be done in the gentlest manner, not shaking the plants, that as much earth as possible may continue about their roots.

THE trees now properly prepared, plant them in lines, five feet asunder, and two feet and a half in the line; give them a plentiful watering, to settle the earth to their roots; and if you repeat this once a fortnight for three or four times, the season being dry, it will much promote their growth. In this nursery they may remain, in good generous land, four, but in poor and hungry, five or six years: Let the ground be annually dug between the lines, and the trees pruned every spring, with the same care and attention as at removing them. I cannot here leave the article of pruning, without begging to be a little further indulged, in observing, that no circumstance is attended with worse consequences to plantations of trees in general, than the neglect of timely and regular pruning when young; and what must render it quite inexcusable, is, that even in ample plantations, the expence is very trifling, when annually performed. The cutting of young and tender branches can have no ill effect, either on the life or growth of the tree; but the wounds made by lopping off old wood, always much weakens, and often produces a gangrene that proves mortal, in some kinds by excessive bleeding, and in others, by imbibing moisture, and communicating it to the body. These are truths founded on nature, reason and experience, and which ought to warn all planters to a due performance of this operation, as, from the judicious practice of it, joined to the other articles of culture mentioned, the plants are not only preserved in a healthful free growing state, but may be formed to any shape or proportion you please, their nature will admit of; but which neglected a few years, no future discipline will reduce to fine plants. But if Oaks have been neglected, and grown rude, the best season of cutting their large branches is in March; for the young and tender, any time from autumn till spring is equal.

THE trees from this culture will now be finely rooted, straight and well-proportioned, and, in an ordinary soil and situation, from ten to twelve feet high; and those first cut over, will be the largest and handfomest plants.

BUT to make them proper for transplanting at a larger size, remove them again to any convenient spot of tolerable ground, managing the roots as formerly; and plant them in lines, eight feet asunder, and six feet in the line, watering them plentifully when planted; where they may continue six or seven years, by which time they will be about twenty feet high.

If still a reserve of larger is wanted, remove them once more, and plant them twelve feet asunder; give them an abundant watering at planting, and repeat it three or four times, more or less as the nature of the season requires. In this situation they may continue, ready for whatever new design occurs, for eight or ten years, when, by a careful removal, and four or five plentiful waterings the first and second summer, they will grow as luxuriantly as if they had stood in the same soil from the smallest size, and arrive as soon at full maturity, with this advantage, that the trees, from the regular and timely prunings they have had, must of course be formed to their proper shape, and will require little or no further trouble.

THO' most of the deciduous trees, particularly large plants of them, succeed best, being planted in autumn, the Oak is one exception to this rule, and is found universally to remove with more safety, and grow more freely, when transplanted in the spring; therefore this season should be invariably observed, as, in wet, or even moist swampy lands, I have often known large

plantations of them almost totally destroyed by autumnal, or winter planting.

THIS noble tree, the monarch of the woods, the boast and bulwark of the British nation, will grow freely in a great variety of soils, now either altogether waste, appropriated to the production of meaner trees, or other more ignoble purposes. This proceeds from not attending to its nature and properties, by making the experiment of planting it on all the various soils; for though, like the greatest part of other trees, it (particularly at first) affects a found deep mould, it will, notwithstanding, prosper exceedingly on the coarsest moist gravel, loam and sand, or stiff heavy clay and till (which most other trees abhor), and that too when these soils are so sterile and hungry as not to afford grazing for sheep.

THE strip'd Oak, is propagated by budding or grafting it on the common kind, and is a very beautiful variegation, which I have much improved, both in the brightness of the colours, and size of the leaf, by joining it to the scarlet Virginian, and chestnut-leav'd kinds.

THE tenderer kinds of Oaks will be rendered more hardy, and the dwarf kinds improved in size, by grafting and budding on the common sort, which, to those who incline to have all the species of this fine plant in its greatest perfection and beauty, is well worth the trouble of these operations.

THE value and uses of the wood of this tree, are so universally known, that it would be an insult on the understanding of the meanest mechanic, to employ time in relating them here.

CHAPTER VI.

T H E A S H T R E E.

The SPECIES are:

1. The common ASH.
2. The Manna ASH.
3. The Virginian flowering ASH.
4. The New-England ASH, with sharp-pointed leaves.
5. The Carolina ASH.
6. The white American ASH.
7. The black American ASH.
8. The red American ASH.
9. The white-flowering ASH.
10. The ASH with strip'd leaves.

HAVING gathered the keys of the common Ash, in fair weather, about the beginning of November, from handsome vigorous trees, spread them in an airy loft or covered place, turning them frequently till quite dry, which, in a proper situation, they will be in three or four weeks time; then mix them with loose sandy earth, and let them be protected from wet till the following spring, when they ought to be sown about the beginning of April, on well-prepared fresh mellow soil, on beds three and a half feet broad, with alleys eighteen inches between the beds, and covered three quarters of an inch deep. These seeds will not appear above ground till the succeeding spring,

during which time it must notwithstanding be kept quite clean, and as loose and little poached as possible; and in February, before the feeds begin to spring, let the surface of the ground be gently raked over, removing all musty and foggy particles they may have contracted during the winter, and throw a little fresh rich mould over them, to replace what you have taken away, which will much promote the future growth of the plants. In this seminary the trees are to remain only one year.

HAVING prepared another quarter of good ground in the nursery, in the same manner as for the seed, the following February or March, remove them; keep them as short time as may be out of the ground, to prevent the small fibres withering, and cut away only the downright top-roots; lay them in drills, cut down perpendicular with the spade, as directed for other plants; let these drills be eighteen or twenty inches asunder, and plant them at the distance of eight or nine inches in the drill; give them a gentle watering at planting, and continue it three or four times, at proper intervals, if the weather is dry; and here, giving them proper culture, let them remain two seasons.

IN October, as soon as their leaves are tarnished, remove them from this nursery; and having pruned off, close by the body, all the strong and ill-placed branches, still leaving a number of small ones to attract and detain the sap for the augmentation of the trunk, plant them in another quarter of any tolerable ground, in lines, three feet and a half asunder, and fifteen or sixteen inches in the line, where they may remain three years, observing to dig the ground between the lines every spring.

By this time the trees, in an ordinary foil, will be about seven or eight feet high, strong, well-rooted, and of a proper size to make extensive plantations; but where a succession of large ones are wanted, remove them every fourth year, pruning their roots and bodies as formerly, watering them at planting, and three or four times afterwards, in dry weather, every twelve or fourteen days, giving them greater intervals in proportion to their size, as directed for the Elm; from which management, they may be removed at any bulk you chuse them, without any sensible check.

ALL the other kinds are propagated by budding them on the common Ash, which being a large-growing hardy tree, will be a considerable improvement on the dwarfish and tenderer sorts.

THE Ash ought neither to be planted in gardens, near other trees, nor in any mixt plantations. There is no plant I remember, that so soon, and so much exhausts the virtues of the foil; and the shade is malignant to every production of the earth, being thus a step-dame to other trees: Let them be planted in concert, where, notwithstanding these unfriendly qualities, if properly managed, they will yield great returns of profit to the owner in a few years.

THIS tree will grow in very sterile barren foil, and in the bleakest and most exposed situations; but in a deep mould, tho' of no generous quality, and where there is no standing water, it will quickly arrive to a great magnitude.

THE wood of the Ash (next to that of the Oak) is of the most universal use, particularly for all the implements of husbandry.

It has also this singular advantage, that, when young, it is as strong and lasting timber as that of old trees; but the value, and particular uses of it, being so universally known, makes it unnecessary to be related here.

I SHALL dismiss this useful, though not ornamental tree, in mentioning an experiment I made very early in life of its value; by planting a specimen of them in copse, intended principally to supply myself with poles for espalier hedges, and stakes for dead fences, for which purposes no wood is more proper or lasting.

FOR these ends, in very obstinate heavy meadow ground, composed chiefly of sterile red clay and moss, I planted half a rood, or the eighth part of an acre, with Ash trees six years old, and about eight feet high. I placed them in rows, four feet asunder, and two feet distance in the row, where I let them remain untouched, only digging the ground about them every autumn, for four years, when I cut them over five or six inches above ground for the purposes meant, which they then fully answered, reserving twenty of the fairest plants, at proper distances, for trees.

I CONTINUED to dig the ground two years longer, and then left them to nature for five years more, that is, seven from their being cut down. Having more of them than answered my own purposes, or indeed than I could have imagined so small a spot of ground would produce, I thought of making the most of what I had to spare, and accordingly measured off exactly one half of them, which I sold for pollards and hoops, at forty shillings.

I CUT them again in six years more, which, being stronger than the former, I fold for fifty shillings.

IN six years after this, I again cut them over, and though these were much the largest shoots, I fold them at the same price as the last.

THERE remained now twenty trees on the whole ground, intended to stand for timber, ten of which grew amongst the copse I had fold. My meaning was not to touch these till the decline of my life, that I might leave to posterity what observations I was able to make, of the profit a man who begins to plant when young, may reap from it in his own time : But the cross events of fortune disappointed me ; for, becoming security in considerable sums for others, who failed in their affairs, I was obliged, by rigid creditors, to sell my land, at which time my necessities also constrained me to sell my trees of all kinds. I hope the reader will excuse this digression, which I believed necessary, to remove the just reflection every judicious planter would make against me, for cutting down hopeful trees at so early and unprofitable a period, if I could have avoided it. Those trees I fold, of twenty-three years growth, at seven shillings a tree, to a cart-wright, which was L. 3 : 10 s. for the ten trees on the copse ground I had cut and fold three times before.

THUS it appears, that an acre of indifferent ground (for mine was very bad) planted with Ash trees in the manner described, near, or easily carried to any populous town, will yield, in twenty-three years time, L. 115 : 10 s. without any other expence than digging the ground for the first five or six years, and cutting

over the copse, which is very trifling, and which the owner ought, in all events, to do himself carefully for his own sake: Let them be cut, slanting, with sharp instruments, leaving all the wounds smooth and clean, to prevent the wet from lodging in the stocks, from whence it might communicate to the roots, and contaminate the whole plant, and which a common purchaser of the copse would probably pay little attention to. The best season for this work, is the month of February, before the sap begins to rise. I have not mentioned any price for the first cutting, having used them myself: These were planted at eight feet high, and had stood four years from planting, so that, from the lowest calculation, they must have been worth more than pay the whole expence of labour: To which I must add, that, after selling the last cutting of my copse, I was informed by an honest man, a good judge of the value of that commodity, that I had been grossly deceived by the purchaser, and that I should have received one-third part at least more money than I did.

It is necessary to observe, for the benefit of such as incline to follow this practice, which is surely worth attending to, as it might soon become a very profitable improvement, that, after the second cutting, I found I had planted my copse too thick, and that, had they been at greater distances, I should have reap'd considerably more advantage from them: I therefore now, from experience, advise them to be planted in rows, six feet asunder, and three feet in the row.

CHAPTER VII.

THE L I M E T R E E.

The SPECIES are:

1. The broad-leav'd flowering LIME TREE.
2. The red-twig'd LIME TREE.
3. The green-twig'd LIME TREE.
4. The small-leav'd LIME TREE, of a tawny green colour both in the leaf and bark.
5. The strip'd-leav'd LIME TREE.

THE first mentioned sort is the finest plant of the species: The second is next to be preferred; it has also large leaves, grows to be a stately tree, and the shining deep red colour of its bark has a chearful and agreeable effect in winter. The third and fourth sorts are much inferior in beauty, and grow in a loose and straggling manner, nor ever make so straight or lofty trees; they are therefore unworthy of propagation, in comparison of the two former kinds; nor would I have named them, but to warn the planters of Lime trees to beware of the sorts they purchase, as the nurseries in this country generally abound most in these two last sorts, which, perhaps, not being known to every nurseryman, are all indiscriminately raised and sold together, and which, when placed by the sides of walks, or in the straight lines of avenues, from the irregularity of their form, and difference of growth, very much deface such plantations.

THE Lime tree may be propagated by seeds, which are ripe about the end of October, and should, after being quite dry, be mixed with sand, and protected from frost and rain, till the beginning of March; when they ought to be sown in a shady border of rich, moist, loamy soil, in beds three and a half feet wide, with alleys of eighteen inches, and covered three quarters of an inch deep. When the seeds begin to peep, let them be frequently watered, and increase the quantity as the plants advance in growth: Let the beds, in autumn and spring, be managed as directed for other hardy seedling trees; and here let them continue two years.

THESE plants, raised from seeds, make very little progress for three or four years; and as they may readily be increased by layers, which will save much time, and make equally good plants, (since, in that way, they root abundantly, and grow with great ease and freedom) I would advise the practice of it as the best method to have plantations of these trees speedily.

THEREFORE, having provided yourself with stools, or mother-plants, after the same manner as directed for the English Elm, and planted at the same distances, with which, till now, the culture of the Lime will exactly agree, lay down their branches any time from September till April; only observe, that the plants laid down in autumn, will be better rooted, and have stronger shoots than those done in the spring.

A QUARTER of generous fresh ground having been well prepared, about the middle of October take up your layers carefully, without tearing or bruising their fibres; shorten their

roots moderately, and cut away such as cross each other : If the layer is plentifully rooted, and thick-bodied in proportion to its height, so as not be shaken or displaced by the winds, it may be planted at full length ; but such as are tall and slender, (which, even laid by the best hands, will be the greatest part) must be cut over, from six inches to a foot high, more or less in proportion to the quantity of their roots ; plant them (these at full length separate from the others) in lines, three feet asunder, and fifteen inches distant in the line, giving the ground the usual culture of hoeing and digging as for other trees ; and here let them remain three years.

FROM thence remove them, at the same season as formerly, to another quarter of stout ground, dressing their roots, and pruning their bodies, as directed for the English Elm, and plant them in lines, five feet asunder, and two feet in the line ; repeat the proper pruning in February every season, as also spring and autumn digging ; and, in this situation, they may continue four years.

REMOVE them again to another nursery, still in good deep ground, and plant them in lines, seven feet asunder, and three feet in the line, annually giving them the necessary pruning, and digging the ground between them ; where they may remain four years, and no longer.

By this time the trees, being eleven years old, will, if the soil has been middling, and the culture directed given them, be generally above twenty feet high ; but as a succession of the good kinds of large trees, that move with safety, will always be useful

to a man of fortune possessed of land, as also to a nurseryman for gain, I would advise, still to remove a number of these into another nursery, planting them at ten feet asunder, cropping the ground with such kitchen herbs as are best suited to the soil, which will pay both rent and labour, and letting them remain five or six years; by which time they will be from thirty to thirty-five feet high, and will succeed at, and after removal, as well as the smallest plant, by giving them three or four plentiful waterings in dry weather, the first, and, in case of a long continued drought, the second season.

THE Lime most affects a rich-feeding loamy soil, but will grow freely in any tolerable land, of a competent depth, though coarse and heavy; they will also grow in sandy and gravelly land, but not with the same beauty or advantage, as, in such situations, their leaves, in dry seasons, are often infested with insects, and decay early in the autumn; therefore, in thin hungry soil, they ought not to be planted in quantities, though a few of them may be agreeable, even there, for variety.

THE timber of the Lime tree, is much preferable to that of any kind of the Willow, being stronger, and yet lighter; it is used by the carver, by architects for framing the models of their buildings, and by the turner for making bowls, dishes, &c. I am likewise assured, it is very proper for lining of rooms, and that, when painted, it will last long.

THIS graceful and magnificent tree, the greatest ornament of the British gardens and villas, and pride of planters in the last, and great part of the present century, is now in less esteem than

formerly, though for what good reason I cannot easily account, as it has more good properties, the value of the wood only excepted, and that too far from being uselefs, than most trees I know. It produces a large, tall, upright body, smooth shining bark, ample leaf, goodly and extensive shade, healthful odoriferous blossoms, is admirable food for bees, resists the winds, bears lopping off large branches without injury, soon heals of its scars and wounds, continues sound to a great age, and, of all the trees yet known, the English Elm excepted, makes the finest, loftiest, and quickest palifade hedges.

I SAY then, from what causes this tree has fallen into disesteem, is to me surprizing. It were presumptuous and insolent in me, to arraign the taste and judgment of the numerous, learned, and respectable body of planters in Great Britain; nor am I either weak or vain enough to make such an attempt, but I cannot help doing what I think justice to this plant. I have argued with many of them, in defence of its beauty and utility in various respects; the beauty of the tree I have never heard disputed, nor ever found the arguments against it go further, than the defect of shading its leaves early in autumn; but this is only materially so, when they are planted in poor, thin, or hot soil, which they dislike, and which, being frequently practised, I presume is the principal reason for their being discredited; but as the fashions change, and many beautiful plants, as well as other things, have been out and in during my time, so I hope to live and see the Lime again resume its former rank and character.

CHAPTER VIII.

THE HORNBEAM TREE.

The SPECIES are:

1. The common HORNBEAM.
2. The Hop HORNBEAM.
3. The Virginian Flowering HORNBEAM.
4. The strip'd HORNBEAM.

THE common Hornbeam should be propagated by seeds, which being ripe in autumn, after spreading them in a loft till dry, ought to be mixed with sand till the following spring, when they may be sown thin on beds of fresh earth, three and a half feet broad, with alleys eighteen inches wide between the beds, and covered three quarters of an inch deep. These seeds will remain a year in the ground before the plants appear; during which time, the earth must be kept clean and mellow. In February next, loosen the surface of the beds with a short-teeth'd rake, so as not to disturb the seeds, and throw a gentle covering of fresh mould over them; where they may remain for two years, if not too thick, as the plants make slow progress the first season, and are naturally well-rooted.

FROM the seed-bed remove them early in October, or as soon after as the weather will admit, into any fresh spot of ground

in the nurfery you can beft spare, tho' of an indifferent quality; reduce the fuperfluous roots, cutting away fuch as crofs one another, and plant them in rows, two feet and a half afunder, and a foot diftance in the row; to remain three years, digging the ground between the rows annually.

By this time the plants will be fit enough for hedges, where immediate fhelter is not required, or for woods, to be mixed with other young trees; but where you intend at once to have the advantages of warmth and ornament, a little more labour is required.

THEREFORE, where you defire to have Hornbeam hedges planted at feven or eight feet high, remove them from the former nurfery to another, and place them in rows, ten feet afunder row from row, and five feet diftance in the row, training them annually in the regular hedge form, but always obferving to keep them light and thin in the top, when, after four years ftanding, they may be raifed and planted out compleat hedges where defigned to remain, and when they will have fuch abundance of roots as to defy the ftrogeft winds, and require no further expence or trouble than two or three plentiful waterings, and keeping their roots clean for three or four years.

THE ftraighteft plants intended for trees, may, at raifing them from the firft nurfery, be feparated from thofe for hedges, and planted in rows, five feet afunder, and two feet diftance in the row; let them be annually pruned to their proper form, and from hence they may be removed to the places where they are meant to remain, after three or four years ftanding.

THE second and third sorts are easily increased by layers, and make an agreeable variety with other trees in the wilderness.

THE strip'd kind is propagated by budding it on the common, but the colours are not strong or lively.

THOUGH I am no advocate for the Hornbeam tree in ornamental plantations, or in generous soils and sheltered situations, yet its being one of the hardiest trees known, the many good qualities of the wood, and the sudden shelter and warmth hedges of it afford, appear to give it some claim to our attention, particularly in the cold exposed parts of the country.

IT will grow surprisingly in the coldest hills, and in the stiffest, barren, and otherways worthless ground; nor do I know any useful timber-tree, that maintains itself so stoutly against the winds; so that, being of quick growth, and clad in its numerous leaves all winter, it is certainly one of the fittest plants to nurse and rear up other valuable or delicate trees.

THE wood is white, tough, and flexible, is useful for many articles to the turner, for mill-cogs, (in which it excels the Yew itself), stocks, and handles of tools, with many instruments of husbandry; it is lasting fire-wood, and burns as clear as a candle.

THIS likewise, of all trees yet known, best preserves itself from the bruttings of deer; so that clumps of them in deer-parks would be no small improvement, both in point of beauty, and for shelter to these animals.

CHAPTER IX.

T H E W A L N U T T R E E.

The SPECIES are :

1. The common WALNUT.
2. The large French WALNUT.
3. The thin-shell'd WALNUT.
4. The double WALNUT.
5. The late-ripe WALNUT.
6. The hard-shell'd WALNUT.
7. The Virginian black WALNUT.
8. The Virginian black WALNUT, with a long furrow'd fruit.
9. The Hickory, or white Virginian WALNUT.
10. The small Hickory, or white Virginian WALNUT.

MR MILLER, in the Gardener's Dictionary, seems to be of opinion, that the first-mentioned six kinds are only feminal variations, and not distinct species, as in most other sorts of fruit-trees; and says, the trees raised from these different seeds, rarely produce the same kinds of fruit again. This is a point I have not lived long enough to determine; for tho' I have planted the seeds of all the species of Walnuts (or names given them for such) I could procure, marking these species or names distinctly, I have yet reap'd very little fruit from them; but one circumstance I am

well assured of, is, that the fruit of the second and third sorts, commonly passing under the names here given them, and of which I have seen and eat many, are seemingly very different, and much finer fruit than the others: Therefore, to make sure of the best, at least for a gentleman's private use, I advise that these two sorts be inarched on the common Walnut, in which they will succeed and produce fruit in one third part of the time they would do from seeds, tho' the tree will not be either so large or so lasting.

OF all trees the Walnut is one of the most difficult to reduce to any regular uniform appearance; it naturally grows in a ragged disorderly manner, and pruning it being destructive, it despises the art and industry of the gardener: With respect then to its form and growth, we will leave it to nature, and only endeavour to point out some aids that will much assist her in the early and plentiful production of good fruit, and which unassisted nature will be many years in effecting.

INARCHING the particular kinds you chuse, has already been mentioned; but to make extensive plantations for fruit, than which few improvements would in time give greater returns of gain, proceed as follows:

HAVING procured a parcel of the largest and best-ripen'd nuts, of the second and third sorts, from France, provide also a parcel of thin flat stones, tyle-sherds, or slates, from a foot to eighteen inches broad; lay them close together in lines, the length of the quarter in the nursery intended to be planted with the nuts; bury them in the ground about eight inches deep, and plant your

Walnuts six inches afunder, and two inches deep, along the middle part of these materials; the tender roots thus meeting with opposition, and unable to penetrate further, will spread themselves on the surface of the stones, &c. but not having so much nourishment or moisture in dry weather as in the open ground, or as may be necessary to make them grow freely, they will require frequent but gentle waterings, both the first and second summer, during which time they must remain.

HAVING stood here two seasons, as early in the autumn as their leaves are decayed, and the shoots hardened, raise them carefully, and, without the smallest incision on root or branch, plant them again fourteen or sixteen inches afunder, on the same kind of bottom, or any other hard rubbish that will not invite the roots downward. These materials must be sunk three or four inches deeper, and six or eight inches broader than the former, to prevent the roots, having covered their bed, from running deep. At the end of two years, remove the earth from the roots of some of the plants; and if you find they have not near covered their bed, they may continue a third year; but if they have, and are tending downward, they must be removed: During all the time of their continuance here, they will require moderate waterings in dry weather.

REPEAT this practice once again, making their bedding about three feet broad, and the soil above fifteen or sixteen inches deep; plant them at two feet afunder, and, as before, without pruning roots or bodies, further than the small branches near the root; and if these are rub'd off with your hand early in summer, while the shoots are tender, it will be preferable to the most skil-

ful pruning: In this place, if the soil is rich, let them remain three, or, if poor, four years.

By this time the trees will be in a proper condition for removal to where they are designed to remain for good, which, as they are chiefly intended for fruit, ought to be a dry sound land, with a sandy, gravelly, or chalky bottom, but by no means in a deep heavy mould, where the roots would still tend downward, imbibe the crudities of an ingrateful soil, and get below the influences of the sun and rains, which would not only affect the flavour of the fruit, but keep the trees much longer from becoming fruitful.

If they are planted by way of orchard, from thirty to thirty-five feet will be a reasonable distance; but why may we not plant them as they do in Burgundy, in their fields of wheat and other grain, at sixty or seventy feet distance, which is so far from hurting the crop, that they look on them as a great preserver of it, by keeping the ground warm in winter, neither do the roots hinder the plough? and if the Burgundians find their shelter useful with them, how infinitely more so must it be in this cold island of ours? But the advantages accruing from the general culture of this tree in France, are not peculiar to that country alone; for over great part of Germany, they find their gain from it so great, that in many places a law lately subsisted, and I believe does to this day, by which no young farmer is permitted to marry a wife, till he bring proof that he has planted, and is the father of a certain number of Walnut trees. The fruit will ripen perfectly well in all the cultivated parts of Great Britain; and the method of managing the trees, as here directed, being

attended to, will make it higher flavoured, ripen it earlier in the season, and bear a plentiful crop twenty years sooner than it would otherways do cultivated in the usual way. The best manure for fruit-bearing Walnut trees, is, strewing over the surface of the ground with ashes the beginning of winter, the land having been plow'd, or otherways labour'd, before that time.

How much would such plantations improve the beauty and wealth of this nation? and how greatly is it to be lamented, that men of fortune so seldom undertake such noble public works, for a blessing to the poor, the general good of the country, as well as their own private interest? as, by the common culture of this tree for fruit, large sums of money, annually sent abroad, would be saved in a few years, and that too at an inconsiderable expence.

Thus having directed the best practice I know, for suddenly procuring plentiful crops of Walnuts, it remains to consider the most proper manner for cultivating the tree for timber.

The Virginian kinds for this purpose, but particularly the seventh and eighth sorts, are much preferable to the others; they grow faster, and become larger and loftier trees, and the wood is also said to be of a superior quality.

The Walnut tree is more impatient of transplanting than most others; the top-roots, being of a pithy hollow texture, do not agree with cutting; which, if it does not destroy them altogether, weakens them so much, that they make little advance for several years, and indeed never become vigorous or comely trees.

THEREFORE, to have a plantation of them for timber, procure a parcel of their nuts, of the seventh and eighth sorts, from Virginia, which may easily be had at a trifling expence; and having prepared your ground, by a good deep plowing, digging, or, best of all, trenching, the autumn before, in February plant your nuts in drills drawn out with the hoe, and cover them between two and three inches deep; let the drills be five feet asunder, and the nuts planted about eighteen inches distant in the drill; and as many of them are to remain, to fill the land properly with timber-trees, let the ground be kept clean, by hoeing in summer, and mellowed by digging before winter, for two years; after which, you must carefully raise every second plant in the lines, without in the least disturbing what remains, which will leave them at a suitable distance for standing four or five years longer. After the first two years, the ground between the trees may be employed in crops of Turnip, Carrot, Beans, Cabbages, and various other kitchen herbs; which, if properly kept in order, will, from the culture the land receives, improve the growth, rather than injure the trees. From time to time, as they advance in stature, the least promising of them must be taken away, by cutting them below ground, to prevent hurting the roots of what remains; and this must be repeated, tho' not till their branches are near touching one another, as the standing moderately thick will promote their upright growth, till they are left at the distance of about thirty feet.

If you incline to save the plants that were raised at two years old, take them up with the greatest care, without wounding the smallest part of their roots, or bruising their fibres, and immediately plant them out at full length, the same distances you did

the nuts, treating them afterwards in all respects after the same manner as directed for them.

THO' it has been observed, that pruning in general is hurtful to this tree, the branches as well as roots being of a spongy hollow nature, yet, when it has been omitted to pinch off the young tender shoots, some degree of it will become necessary, where branches that cross each other, would destroy themselves, and injure the whole tree; let such then be cut off smooth, and close to the body, about the middle of September, that the wound may heal, and be covered before the winter rains; and that as little of this may be practised as possible, let the plantation be annually examined, and all the young cross-growing branches taken away, to prevent the necessity of lopping old ones, which is doubly hurtful.

THE soil for the Walnut intended for wood, need neither be so warm, or generous, as that for fruit. Indeed, where large growth is the only motive, the whole species delight most in a deep, sound, rich-feeding land, on which, if it incline to marle in the bottom, they will grow amazingly; but, notwithstanding, they will succeed, and make goodly trees, in any ordinary soil that has a competent depth of mould, tho' coarse and stoney: I have likewise seen many stately trees of them on clay.

THE value of the wood, for chairs, bed-steads, tables, wainscoting of rooms, cabinets, gun-stocks, &c. is universally known.

C H A P T E R X .

T H E C H E S N U T T R E E .

The SPECIES are :

1. The common or Spanish CHESNUT.
2. The strip'd CHESNUT.
3. The Chinquapin, or dwarf Virginian CHESNUT.

THIS much neglected, tho' graceful and magnificent tree, by attending to its proper culture, for fruit, timber, and copse-wood, might, in a few years, become among the greatest advantages this country can reap by planting: I shall therefore be particular in directing the best methods I know, of propagating them for these different purposes.

To raise them for fruit, procure a parcel of the nuts from Portugal or Spain; pick out the largest, plumpest, and brownest of them; the goodness of the seed is known by its weight, to try which, throw them into a tub of water; reject such as swim, but those that sink you may be sure are good; preserve them in dry land till the beginning of March, when, having prepared a spot of loose mellow ground, sow them in drills made with the hoe, three inches deep, the drills about fourteen inches asunder, and the nuts six inches in the drill, where, as they shoot freely, I would advise that they only remain one year.

IN February, or early in March following, which, from repeated experience, I prefer to the autumnal planting of these

trees, remove them to another quarter; shorten their top-roots with a sharp knife, smooth and clean, sparing their spreading fibres, and keeping them as short time as possible out of the ground, to keep these fibres fresh, and prevent their moulding; plant them in lines, two and a half feet asunder, and one foot distance in the line, keeping them clean in summer, and pointing over the ground between the lines spring and autumn, when any cross ill-placed branches may be pruned off; and in this situation let them remain two years.

REMOVE them carefully, by taking up their whole fibres, to another fresh quarter of the nursery, still observing to shorten their top-roots, to cut off such as cross each other, and smooth the ends of the spreading ones, which will now be stronger and more numerous; at the same time, prune away any ill-placed branches from their bodies and tops; which being done, plant them in lines four feet asunder and two feet distance in the line, where, managing them in other respects as directed for the former nursery, let them continue three years.

By this time these trees will be of a proper age and size, either for ornamental plantations in avenues, clumps in parks, the wilderness, or in the orchard way for fruit; but it may be necessary here to observe, that the shade of the Chestnut, like that of the Ash, is obnoxious to other plants, and that they should therefore be placed in thickets, or other detached plantations, by themselves.

THE ground intended for a considerable plantation of fruit-bearing Chestnut trees, should have three or four plowings the preceding summer and winter; and if one good digging is added a little before planting, it will be a great improvement to

the soil, as I hold the labour of the spade to be of all others the best. This being done, your trees carefully raised, their roots and bodies properly pruned, plant them in straight rows, six feet distant every way; let the ground be annually dug, to encourage the spreading of their roots, and, at this distance, they may remain till the branches begin to approach each other, when you must take up, by the roots, every second row entirely, and every second plant in the row remaining, which will leave them at twelve feet distance; and the wood of the trees taken up, will be highly useful for many purposes of gardening and farming. Having dug or half-trenched the land, (for deep trenching would increase the growth, but retard the fertility), it may, for some years, if of a good quality, be profitably employed in Potatoes, Cabbages, Turnips, and many other crops, which, by digging in the leaves of the Chestnuts, when rotted, (the best of all manure for them), will, instead of exhausting, annually invigorate the soil, and improve the plantations both for fruit and timber. These trees having stood till their branches begin to meet as formerly, must again be reduced in the same proportion the others were, which will leave them at twenty-four feet distance every way, and at which distance they may remain for good. The wood of this last felling will saw into small boards, and, being now about twenty years old, must be rooted out entirely, to prevent impoverishing the land, and robbing the trees of their proper nourishment, which, as the Chestnut shoots vigorously after cutting over, must necessarily be the case. The timber of these taken up, being of size for several useful purposes, will bring a considerable price from the joiner, cabinet-maker, &c. and the remaining trees, which already have produced fruit for several years, will henceforward bear vast quantities, and make great returns of profit to the owner.

THUS having directed such a culture for the Chestnut, as, judiciously practised, will assuredly produce abundant crops of large well-flavoured fruit, much sooner than the tree abandoned to nature would have done, I shall proceed to those intended for timber and copse-wood, the propagation of which will be attended with little trouble or expence.

LET the field intended for this plantation, which requires not being either warm or rich, be fallowed the preceding summer, and get two or three good deep plowings in winter, to sweeten and pulverise the soil, and to destroy all root-weeds. Having procured and tried your seeds, as formerly mentioned for the fruit-bearing trees, make drills across the ground with a hoe, four feet distance, and put in your nuts, with the point or eye upwards, at fourteen or sixteen inches asunder, filling up the drills, and raking the surface smooth; and for this, and the following year, you may take a line of Beans between the drills, which, having their tops cut off, and being kept clean, will be a protection to the young plants, and encourage their growth. At the end of two years, early in the spring as has been said, remove every second plant in the rows, which will leave them about two feet and a half asunder, and at this distance let them remain three years. With the plants taken up as above, I mean the two years old, you may make any plantation required.

AT the end of the three years, remove by the roots, so as not to hurt the plants that are to continue, every second row of trees, and every second tree in the remaining row, which will leave them at the distance of eight feet by five. The plants now raised will have carrotty roots, and few fibres; so are not worth planting again, but will be useful for stakes and poles.

Left, by rooting out the unnecessary trees, any of those that are to remain should be loosened, or their roots hurt, let the holes be filled up immediately, the ground well dug, any kitchen-crop taken, and the trees remain untouched another year; when, in February, cut them over, reserving only one of the straightest and most vigorous, at the distance of twenty-five to thirty feet: You may still continue to work the ground, and take dwarf-crops between the rows for two years more; after which, they will soon cover it, and must be left to nature. One will readily observe, that when any of the seeds have failed at the due distances here prescribed, these defects are to be supplied by the best plants, taken up at two years old.

THUS you have a plantation, the copse-wood of which only will, in seven years more, that is, fifteen years from the seed, produce more than double the rent and labour, and, every seven or eight years, will considerably increase for forty or fifty to come, when you have a forest of noble timber-trees, that of themselves will be worth more than the value of the land at the highest purchase-price. The timber-trees here will likewise produce fruit, but neither in such abundance, or of so good a quality, as those that have been transplanted standing at due distances, and where the ground has been properly cultivated; for transplanting promotes fructification, as, from the roots spreading near the surface, the juices are better prepared and digested by the sun and air, and, of course, their fruits better matured, and higher flavoured, than those can be whose roots run deep into the cold, sluggish, and unprepared earth, from whence they must necessarily imbibe great quantities of crude

and unwholesome juices, which will naturally be communicated to the fruit.

THE strip'd Chestnut is amongst the most beautiful of all the variegated trees, and, when mixed with other strip'd plants, has a most agreeable and chearful effect, the blotches being of a rich shining gold colour, strongly mark'd. This is usually propagated by budding, or inarching it on the plain sort, though I have raised many of them by common grafting.

THE Chinquapin, or dwarf kind, abounds in the woods of America, where it produces abundance of nuts, which may easily be brought here with safety, by mixing them with dry sand, and which all the nut kinds from far distant countries ought to be, though, by not adverting to this simple and easy preservative, we generally lose the greatest part of them. It grows in its native soil to about fourteen or sixteen feet high, and is hardy enough to bear our severest winters. This may be propagated by its seeds as the common Chestnut, or, when these cannot be procured, by inarching on it, which will increase its magnitude.

THE fruit of the Chestnut tree is not only used for many elegant dishes in France and Italy, but is found strong and healthful food for labouring people, either made into bread, or prepared as they do in various ways abroad: For all which purposes, we might in a few years have abundance of them, as well as for feeding our hogs, which would highly improve both the taste and quality of our bacon, and render it as good as from Virginia, or any other country we know: It would also much reduce its price, and bring it within the reach of labouring men.

THE leaves of this tree make excellent litter for cattle, which, when mixed with their dung, (particularly that of cows well rotted), is an admirable manure for many kinds of flowers, green-house, hot-house, and other delicate plants.

THE best ground for fruit-bearing Chestnuts, is a loose moist (though not wet) gravel or sand: They will likewise succeed in any ordinary mixt soil, which, if it abound with small round stones, should not be taken away, as, from their warmth, they will cherish and forward the ripening of the fruit.

FOR plantations of timber-trees, and copse-wood, you can hardly go amiss, so there be depth of soil, and no standing water; they will grow on obstinate clay, and the bleakest declivities of hills, this tree, where fruit is not aimed at, being more patient of cold than heat.

THE wood is useful for many essential purposes: It makes good tables, chairs, and bedsteads; is the most lasting poles of any put in the ground with the rind on, for espaliers, palisade hedges, dead fences, vine and hop yards, and for pipes to convey water under ground: It will last longer than Elm, or even Oak itself. In Italy, the best casks for wine and other liquors are made of this wood, which has the singular property, when thoroughly seasoned, of maintaining its bulk, without shrinking or swelling, which most other timber does; and formerly was built of it, great part of the ancient city of London, near which were large forests of Chestnut trees, which, whether or not a native of this island, is not well determined.

C H A P T E R X I.

T H E H O R S E - C H E S N U T T R E E.

The S P E C I E S are :

1. The common HORSE-CHESTNUT.
2. The yellow blotched HORSE-CHESTNUT.
3. The white blotched HORSE-CHESTNUT.
4. The scarlet flowering HORSE-CHESTNUT.

THE first mentioned sort, though a native of Constantinople, defies the greatest severity of our winters, and soon becomes a large tree. The nuts of it may be sown as directed for the Sweet Chestnut, and, like it, should only remain one year in the seed-bed.

IN February, or early in March following, having reduced their top-roots, plant them in lines, three feet asunder, and at fifteen inches distance in the line, where let them remain three years.

To make them a proper size for avenues, or clumps in parks, and lawns, remove them to another quarter; dress the roots properly, and prune some of the under branches, with any others that are crooked, too thick, or ill-placed; but beware of the large bud at the extremity of the leading branch, in which is inclosed

Every Good Knows the ^K

the shoot in embryo for the succeeding season: Plant them in lines, six feet asunder, and two and a half feet in the line. In this situation they may continue three, but not above four years, when, in an ordinary soil, the plants will be from twelve to fourteen or fifteen feet high.

THE second and third sorts may be propagated by budding them on the common kind, on which they take freely.

THE scarlet-flowering Horse-Chestnut is a beautiful plant, and produces a very rich and elegant flower. It is a native of America, but is hardy enough to bear our climate, in ordinary situations, when four or five years old, though it is somewhat more delicate than the common in infancy: Therefore, having procured their nuts, (which you may easily do from South Carolina, where they grow abundantly) sow them as directed for the common kind, but in a warm sheltered situation, and in a rich loose sweet mould; and remove them the succeeding spring to a situation and soil of the same quality, where they may remain three years, when they will have acquired strength enough to put up with common usage. This tree, in America, grows to the height of thirty feet, but I have not seen any in Britain of near that size, and I doubt it will never arrive at that stature with us; notwithstanding which, it is well worth our cultivation, and has a fine effect in the wilderness, planted with trees of the same growth.

THIS may also be budded or inarched on the common kind; but they will neither make so handsome plants, nor ever grow to near the size of those raised from seeds.

THE Horse-Chestnut is a tree of singular beauty when in bloom; and the common sort of it, which will succeed in almost all soils, (tho' best in that which is deep) is proper enough to intermix in ornamental plantations, in a sheltered country; but in bleak and exposed situations, it is idle to plant them, as, from the wood being very brittle, every impetuous wind will break and disfigure more or less of them.

THE fruit is so extremely bitter, that even hogs will not eat it, though the Turks mix it with other food for their horses that have coughs, or are broken-winded, for which it is said to be an excellent remedy.

THE timber, except for fuel, answers no valuable purpose I know, further than I have heard from a gentleman of much knowledge and observation on the qualities of wood, that it is very proper for pipes, to convey water under ground, and, in that situation, will last longer than many harder woods.

CHAPTER XII.

THE *LARIX*, OR LARCH TREE.

THE Larch tree is propagated from seeds; but the proper way to procure these seeds good, is not generally known, at least I am certain it is very rarely attended to. The common method is, to gather their cones in the autumn; and having half-roasted them in a kiln, a stove, or on a hearth before the fire; then splitting the cones, and picking out the seeds with a knife or other sharp instrument, they with difficulty get part of them, though, by this practice, many of the plumpest and best ripened seeds are bruised. I proceeded in this way myself for several years, without success suitable to the labour and expence. I sowed the seeds, with attention, in different soils and situations, and repeated a variety of experiments, but still had thin crops in proportion to the quantity of seeds, till at last I discovered my error: I shall therefore, from experience, direct a method, by observing which, these seeds may be procured as good, and the plants be raised in the same abundance, and with the same ease, as the common kinds of Fir and Pine.

I FOUND, that tho' the cones of the Larch tree are at their full size in autumn, the greatest part of the seeds they contain are not then arrived near their maturity, and that they ripen hanging on the trees during even the coldest winter months. These seeds are inclosed in so hard and thick a covering, that the severest seasons

cannot affect them ; therefore I deferred gathering the cones till the months of March or April, when they easily part with the tree, and many of them drop from it, which are still better than those plucked. The cones thus procured, fully ripe, should be spread in a dry covered place, till the weather become warm, in May or June, when they ought to be exposed on glass-cases at the bottom of windows fronting the south, or any other way most convenient, so as to receive the warmest influences of the sun : This must be repeated (taking them into a warm place every evening before the dews fall) for several weeks, when the cones will open, and many of the best seeds come out, by shaking them in a wire sieve ; but as all of them will not, therefore split the cones asunder, by driving a small piece of sharp iron through the center, from the bottom to the top of them : Let these be again exposed to the sun for a few days, when many more seeds will shake out, and all that is good of them separate from the husk, or be easily pick'd off with the point of a knife.

THO' the seeds of these trees in the cone are good for four or five years, yet, when divested of that, they lose their growing quality in a few months ; therefore, as soon as they are got out, let them be mixed with fine dry sand, and preserved in bags till the season of sowing.

IN the beginning of March, or as soon after as the weather will permit, having prepared a shady border, exposed only to the morning sun, of loose, mellow, rich ground, sow your seeds very thin in beds three and a half feet broad, with alleys of eighteen inches ; clap the seeds gently into the bed with the back of a spade, so as, by making it smooth and level, it may receive an equal cover-

ing, and sift over them not more than a quarter of an inch of fine compost earth, mixed with one-fourth part of sea-sand, or, failing that, the finest pit-sand you can procure. If the weather is dry, and not frosty, in a fortnight after sowing, give them gentle waterings in the evening of every fourth or fifth day, and in six weeks they will begin to appear above ground. As these plants come up with the seeds on their top, which the birds are very fond of, care must be taken to guard them from those enemies, who will otherways destroy all or most of them, but which may easily be prevented, by driving a few fork'd stakes round the beds, and throwing a net or other thin covering over them. The plants being fairly above ground, must now be refreshed with a little water every second or third night, for three weeks, when it does not rain; But this must be given with care, and as lightly as possible, with a watering-pot that has small holes in the rose of it; for these plants, tho' afterwards amongst the hardiest trees, are, in their infant state, very delicate; and heedlessly dashing on the water from a coarse watering-pot, would destroy great numbers of them. The waterings, as directed after the seeds appear, must be continued, tho' only once in ten or twelve days, increasing the quantity when the weather is hotter than usual, till the end of August.

THE weeds, at their first appearance, must be carefully pick'd out, as otherways, in a few days, it will be impossible to do it without bringing many of the plants alongst with them.

IT may probably be objected, by such as make no distinction in the quality of plants, that I have directed unnecessary trouble and expence in the culture of this hardy tree, which is now

raised in such abundance with less ceremony: To which I shall only answer, that, in point of expence, this method is much the cheapest, as one pound of seed will produce more than ten pounds in the common wasteful way it is treated; and, what is yet of much higher importance, one thousand plants, thus cultivated, are of more real value than ten thousand, such as are usually procured from ignorant nurserymen.

THE end of March, or beginning of April following, these plants may be removed from the seed-bed to the nursery; and their roots being shortened, laid in rows, about fifteen inches distant, and six or seven inches asunder in the row, watering them at planting, which may be continued once a week, in dry weather, for five or six weeks, when they will be past danger; and here they ought only to continue one season.

AT the same time the succeeding year, remove them to another nursery, but now be sparing of their roots, taking away only such as cross each other, with some of the straggling hairy fibres, and smoothing the extremity of the long ones; plant them in rows, at three feet distance, and fifteen or sixteen inches in the row; water them when planted, keep them clear of weeds during the summer, dig the ground between the rows in autumn and spring, and, in this situation, let them remain two years.

By this time, in an ordinary soil, the trees will be from five to six feet high, and of a proper size to transplant in large quantities, and, in exposed situations, on meagre hungry ground; but where beauty and shelter are immediately required in plantations near the house, provision ought to be made of larger plants:

Therefore, for this, or similar purposes, let such a quantity of these trees as may probably be wanted, be removed to another nursery, and planted at the distance of eight feet by six, still being sparing of the roots, which do not, like many other Forest-trees, admit of being much reduced or wounded; particularly, when large, let them be plentifully watered at removal, dig the ground about them as formerly mentioned, and here let them remain three years.

THESE trees will now be from ten to twelve feet high, and of a very proper size to remove for ornament, shade, and shelter, where meant to remain for good, which may be accomplished without any great labour or expence. The plants, thus far advanced, should be removed earlier in the spring than has been directed for the younger ones, which, in ordinary temperate seasons, may be best performed about the end of February, or early in March. At this time raise them carefully, without injuring any of the principal roots, and only smooth the extremities of the small ones with a sharp knife, letting as much of the earth as possible adhere to them; pour in a large watering pot-ful of water into the pit before the tree is placed in it, another after the roots are half covered, and a third after all the earth is properly gathered about it. If the season is moist, these plants will require no farther trouble; but in case of long-continued hot and dry weather, they ought to be watered once a fortnight in thin dry soil, or every third week where it is deep and sound, and this repeated two, three, or four times, more or less as the weather requires it; but, in giving them water, do not pour it close on the trunk of the tree, but make a drill round it with the hoe, about a foot from it, into which pour the water gently, and draw the earth again over it when the water has soaked in.

MOST of the Larch trees we see, those excepted that are sheltered by higher plantations, decline much from the south-west winds; the great cause of which is, not consulting their genius, but unskilfully pruning them. This plant, established in a soil it likes, (nor indeed is it nice in its choice) will make prodigious shoots; these shoots are extremely heavy and flexible when young, which being the case, when any number of the side-branches are cut away, the length of the leading shoot is increased, the body becomes slender, and the tree naturally bends with its own weight, and grows obliquely; nor in the Larch tree is this to be redressed by any art, as nothing but reducing the height in any tree can affect a cure, and which, tho' to many is an improvement, yet to this is certain destruction: I therefore, from experience, advise, that not a single branch be taken from this tree, except such as by accident may have been broken or bruised, till they are fifteen or sixteen feet high; nor would I chuse any pruning at all, were it not to clear the surface of the ground, so as to admit the rays of the sun, to dissipate noxious vapours: But as this may sometimes be necessary, when they have arrived at the height mentioned, the lowest tire of branches may then be cut off close and smooth about the middle of October, the following year a second tire, and the succeeding a third. This will be clearing the trunk to about four or five feet high, higher than which they should never be pruned, to make them well proportioned straight trees, capable of resisting the winds, which, with this culture, they effectually will; besides, as they naturally grow in a regular pyramidal form, their greatest beauty is lost when divested of their branches.

THIS is a noble and valuable plant; the bright red blossoms it produces in the spring, are both beautiful and fragrant, and the

proper culture of it claims our particular attention, for many reasons. It is a native of the Alpine and Pyrenean mountains, and loves an elevated situation: It will become a stately tree in the poorest hungry sand and gravel, and on the highest and bleakest hills, where there is but a few inches of soil; in short, it rejects no quality of earth that is dry, but in wet lands it will not succeed.

THE many encomiums bestowed both by antient and modern authors on the virtues of this tree, and the great value of its timber, would take up many pages, and exceed the bounds allotted for this work: I shall therefore only enumerate a few of the best attested circumstances, but which may be sufficient to recommend it to all judicious planters and others, lovers of their country.

FROM the wounded bark of this tree, exudes the purest Venice turpentine; and on the body and branches, grows the Agaric, a drug used in medicine. The famous architect, Scamozie, built many of the most superb palaces in Venice of it, and highly commends it; and Vitruvius laments that they had not enough of it in Rome for joists, and other parts that require both strength and beauty in houses, as well as from its property of long resisting fire. The Forum of Augustus was built of this material, as were sundry magnificent bridges by Tiberius. Posts of it driven into the ground become almost as hard as iron, and will bear an incredible weight. It bears the smoothest polishing, and is so exceedingly transparent, that rooms wainscotted with it, will make people at a distance, when candles are lighted, imagine the whole room on fire. Nor was it used for these

purposes only, but in building of ships also; and Witfen, a Dutch writer on naval architecture, mentions a ship, thirty feet in length, to have been found not long since in the Numidian sea, twelve fathoms under water, chiefly built of this timber, and Cyprus, both reduced to that hardness as to resist the sharpest tools; nor was any part perished, though it had lain fourteen hundred years submerged. It makes the best palats for painters to separate their colours on; and it was on boards of the Larch, that Raphael, and the most famous artists of that time, eternized their skill, before the use of canvas was introduced.

Is it not amazing, then, that thousands who have it in their power, will not be at a moderate expence in planting a parcel of small twigs of this plant, on barren heaths, or cold and rugged hills, which, in a few years, would not only adorn, and, by the warmth they would afford, really improve the adjacent country, but, in less than an age, enrich their families?

CHAPTER XIII.

THE VIRGINIAN TULIP TREE.

THIS tree is common in Virginia, and is to be found in most of the northern continent of America, from whence the cones are annually brought in abundance to Britain.

AUTHORS direct these seeds to be sown in pots, and placed on a hot-bed; and when the plants are a year old, each to be planted in separate small pots, and again plunged into another hot-bed; after which, they are still to be kept in pots, and under frames in winter, for three or four years longer, till they have acquired strength. This method I followed in my early practice, and no doubt it will both raise and preserve them alive for that time: But there is no occasion for treating this tree with so much delicacy, even in infancy: I shall therefore direct an easier and cheaper way of cultivating it, founded on experience, which, in an ordinary soil, and sheltered situation, will make much stronger and hardier plants, and by that means sooner prepare them for removal to the places where they are meant to remain for good.

THE beginning of March, prepare a bed of good mellow rich earth, well mixt with old rotted cow-dung, exposed to the sun, and sheltered from cold winds; place an old frame over the bed, and sow your seeds, sifting over them, about half an inch

thick, a foil composed some months at least before, of one load of old pasture-earth, one of well-rotted cow-dung, and half a load of sea or fine pit-sand. Some of these seeds will probably make their appearance in nine or ten weeks, but much the greater part of them will lye in the ground till next spring; I would therefore advise giving the beds no more water than barely sufficient to cherish the plants that have appeared, which, for four or five weeks after, should be screen'd from the sun during the heat of the day, but which afterwards should receive its full influence.

THESE circumstances being observed, no further care is necessary this year, but clearing the ground of weeds as soon as they appear; and in winter, in violent lasting storms, throw double mats over the frame, which must be regularly taken off on the weather's growing mild.

IN March, the succeeding year, carefully pick off with your fingers all mossy, hard, and crusted earth, from the bed; smooth it again, and sift on a quantity proportioned to that taken away, of the same kind of mould as formerly; and about the end of April, or beginning of May, if your seeds have been good, the plants will appear in abundance, when they must be frequently but gently refreshed with water, lightly given as directed for the Larch. From this time, till the beginning of August, they ought to be screened from the mid-day sun; but this I would not do by covering the bed with mats, as is commonly practised, which draws the plants, and renders them tender; but rather do it with part of an old reed fence, or, for want of that, and which indeed is still better, nail some thin

boards together, the length of the frame, high enough to shade the surface of the bed from the meridian sun. By thus shading the plants, and letting them enjoy all the open air, though they will not grow so tall, yet will they be thicker bodied, and more hardy. When this has been performed, no further care is necessary in this situation, but frequent moderate waterings in an evening, and throwing a mat over the frame during any severe winter-storm.

ABOUT the beginning of April, next season, (for this tree is late in expanding its leaves), prepare a spot of ground, in the same manner, and of the same quality with that directed for the seeds; raise the plants carefully with a trowel, without bruising their roots, which are soft and spongy; and if they cannot be immediately planted, mix a pale-ful of sifted mould and water to the consistence of pap, through which draw the plants one by one, till as much adhere as cover their roots and fibres. This will prevent their drying, and in this condition they may safely be transported to a considerable distance, and kept several days out of the ground. The roots of this tree do not admit of being much reduced; therefore, at this time, cut only a little of the top-root smoothly off, but let all the fibres remain, and then, still in a sheltered situation, plant them in drills cut out with the spade, at a foot distance line from line, and six inches in the line. Plant five of these lines, which will make a bed four feet wide; and if you have more beds than one, leave an alley three feet wide between them; let them be frequently (and more plentifully than formerly) watered in the evenings, during the summer months; after which, keeping them clear of weeds, throwing a mat over them, in case of very severe frost, for the first

winter, and loofening the ground between the beds in fpring, they will require no further attention in this plantation, where they fhould remain only two years.

FROM thefe beds the plants may be removed to another nursery of any good mellow deep foil: Be ftill fparing of their roots, and plant them in rows, three feet and a half diftance, and eighteen inches afunder in the row; keep the ground clean and mellow by labour, as has been directed, giving them plentiful waterings in dry weather, during the firft fummer, and let them continue here three years.

THE culture directed having been obferved, thefe trees will now be hardy enough to defy the affaults of our fevereft winters, and, being about fix or feven feet high, will be of a good fize for planting where they are defigned to remain. In a generous deep foil, interfperfed with other trees, but not crowded too near them, they will in a few years arrive at a great magnitude; but in thin and hungry land, they make fmall progrefs, though they will flower fooner.

IN America, they often grow on moift fwampy ground; and in fuch I have planted them here, but without fuccefs, owing, I fuppofe, to our long wet winters rotting their tender roots and fibres.

THEY do not, like many other Foreft-trees, admit of being planted to advantage at a great fize, but they might undergo another remove more than has been here mentioned, to the height of ten or twelve feet, which I have done with great fuccefs.

I know of no tree, that pruning either roots or branches has worse effects on than this, which often kills, or otherways irrecoverably stunts them, as I have often found by sad experience; therefore the plants should be reduced to the form you desire, in the nursery, by rubbing off all ill-placed buds, or, with your finger and thumb, pinching away the improper branches soon after their appearance, while young and tender, more than which pruning they ought never to have.

THIS is a plant of extraordinary beauty and stateliness, and highly deserves a place in all noble and elegant plantations. There is a tree of it in the gardens of the Earl of Peterborough, at Parsons-green, near London, which I saw in full bloom for several years successively: It is above fifty feet high, and the trunk in proportion, and would have been much larger, but that having been planted in a wilderness quarter, it was long neglected, and injured by its branches being overhung, and the roots intangled with other trees, which prevented its receiving due nourishment. Mr Catesby, in his Natural History of Carolina, mentions trees of it in America, thirty feet circumference in the trunk, and the timber is highly valued by the Americans for its strength and duration.

CHAPTER XIV.

THE ACACIA TREE.

The SPECIES are:

1. The common or Virginian ACACIA.
2. The American ACACIA, with triple thorns, commonly called the LOCUST TREE in the West-Indies.
3. The Water ACACIA, from Carolina.

THERE are above thirty different species of this plant, that have been brought from Africa and America, but most of them are tender, and require the protection of the greenhouse or stove, and are foreign to a Treatise on Forest-trees for this climate; therefore I have only mentioned three kinds, which are hardy enough to bear our severest winters, and become large trees.

THE first sort is propagated by sowing its seeds the beginning of March, on a bed of well-prepared mellow soil, shaded from the mid-day sun, which, in five or six weeks, will appear above ground, when they must be frequently watered in the evenings, during the hot and dry weather, and the weeds destroyed at their first appearance.

ABOUT the beginning of April the following spring, remove them from the seed-bed to the nursery, be sparing of their roots,

and plant them in lines, two feet distant, and a foot asunder in the line, watering them at planting, and three or four times soon after if the weather is dry, when they will require no further trouble than keeping the ground clean, and digging it between the lines in the spring of the two following seasons, being to remain here two years.

FROM this nursery they may be transplanted to where they are meant to remain for good; but if desired larger, they may undergo one other remove, and be planted in lines, three feet and a half distant, and eighteen inches in the line, treating them as formerly: But here they must continue only two years; for as these plants do not naturally produce spreading roots, and not agreeing either with these, or the branches being much cut, but rather that they should grow in a ragged disorderly manner, with heavy tops, they do not properly admit of being planted when large.

THE second and third sorts, though they will also rise in the open ground, are yet somewhat shy, and will appear sooner, and make better shoots, being assisted with a very moderate hot-bed, on which they may be sown the middle of February. When the seeds appear, give them very gentle but frequent waterings, and let the frames be raised all the day-time, that the plants may have plenty of air; screen them from the mid-day sun till about the beginning of August, when the frames may be removed till the winter's frost set in, and when they should be again replaced, but the glasses always drawn off in mild weather.

THE succeeding spring, in the beginning of April, remove these plants, and treat them as has been directed for the Tulip-

tree; with this difference only, that if you chuse to remove them twice, they ought only to remain two years after the second transplantation.

ALL the kinds of Acacias are much improved in their form, by thrusting straight stakes into the ground beside them, to which the leading shoot should be loosely tied with bafs.

THE first-mentioned sort of these trees was formerly much used in England for planting avenues, but for which purpose I know few plants more improper, as no art can reduce it to a uniform figure; and the branches of it are so hard and brittle, that numbers of them are broken every violent wind, from whence they have a ragged and disagreeable appearance: All the kinds of them, therefore, ought to be planted in the wilderness, or under the protection of some other plantation, where, by growing in concert with other trees, they will escape that misfortune, and where their negligent wildness of growth, and large bunches of sweet-smelling aromatic flowers in summer, have a pleasing effect, and intitle them to a place in all ornamental plantations.

THEY delight most in a deep feeding moist soil.

CHAPTER XV.

THE WILD CHERRY TREE;
 In *England*, commonly called the BLACK CHERRY;
 In *Scotland*, the GEEN TREE.

The SPECIES are :

1. The common BLACK GEEN.
2. The common RED GEEN.
3. The large HUNGARIAN GEEN.
4. The GEEN TREE, with very small stones, and large black fruit.

THOUGH this plant is not usually classed in catalogues of Forest-trees, yet its stately size, fine form, beautiful and fragrant blossoms, the various uses of the fruit, and value of the timber, certainly intitle it to our attention, and place it in no mean rank, either for ornamental or useful plantations.

It is propagated from the stones of their fruit, which should not be gathered till perfectly ripe, and beginning to decay, when they must be divested of the fleshy part; and in four or five days after, when the humidity is gone, mix them in sand, protected from moisture, till the kernels are firm and dry, which will be in about a month; when, having prepared a spot of fresh mellow light soil, sow them in beds of three and a half feet broad, with alleys of eighteen inches between them. If the following winter is severe, and the frost strong and lasting, during that period throw some Pease-haulm, or other light covering over them, to be regularly taken off on the weather's becoming mild.

In open winters no extraordinary protection is necessary; but after violent and long continued storms, I have discovered many of the stones split asunder, and the kernels thus deprived of their covering, generally decay, particularly if the frosts happen early in winter. About the beginning of April, the plants will begin to appear above ground, when, in dry weather, frequently watering them in the evenings for about two months, will much increase their growth.

THE following February, remove these plants from their seed-bed to the nursery, in any tolerable soil not wet or stiff; and having reduced the top-roots, plant them in lines, two feet distant, and nine or ten inches asunder in the line; give them two or three waterings in April and May, in dry weather; dig the ground between the lines in autumn and spring, and let them remain two seasons.

FROM this remove them to another nursery in October, still reducing the top-roots, smoothing the extremities of the spreading ones, and cutting off such as cross each other, with a few of the undermost branches, or any others that are ill-placed; plant them in lines, four feet distant, and eighteen inches asunder in the line; dig the ground as formerly, and let them stand here only two years longer, if intended soon to bear fruit; but, as forest-trees, without that consideration, they may remain three years.

THESE trees will now be from eight to ten feet high, and of a proper size for planting in woods and wilderness work; but for groves, avenues, or clumps in lawns or parks, for which purposes few trees are more proper, they may again be removed, two or three repeated times, planting them at greater distances pro-

portioned to their size as has been directed for the Elm, till they are above danger from cattle, without protection, this tree being very patient of transplantation when large; only they ought not to continue above three years from each removal, for these purposes.

BUT with respect to those principally intended for bearing fruit, a little more trouble is necessary; for though, by sowing the largest, best ripened, and finest flavoured Cherries, some of the trees, in a favourable soil, will produce fruit as good as their original, yet this is by no means an invariable case; for most kinds of fruit-trees degenerate extremely raised that way, and though this does so in a less degree than many of the other sorts, yet in some degree it will: Therefore, the only way of certainly procuring, and even improving the best kinds, is by grafting, or rather budding them, which is a preferable operation for all stone-fruit, on fresh healthful stocks raised from the finest fruits, of three or four years old, which, being easily performed, ought not to be grudged, to have so certain and valuable a return.

A YEAR after budding, these trees may be removed to another nursery, to stand two years longer before planting out for good, still abating the downright roots, but encouraging those that spread near the surface as much as possible; and here all too luxuriant and superfluous branches may be taken away, and the plant reduced to the form it ought to remain in: From which practice, in two years more, it will be covered with blossoms, and loaded with fruit. But in this place it will be necessary to observe, and caution against a general error committed in the management of this and many other fruit-bearing trees, which is,

pruning them to a considerable height with naked bodies. This impairs the beauty of the plant, as well as the quantity and quality of the fruit, by exhausting the sap that should feed it; for the trunk will be soonest and best fed, and, therefore, the nearer the branches are to the ground, they will the sooner, and in greater abundance, receive their proper nourishment.

THOUGH I have mentioned pruning this tree, yet I must advise it to be done as sparingly as possible, and only while the branches are young and tender, as lopping the old wood commonly occasions a gum and canker, that stunts and at last destroys the whole plant: But a little care and attention from the beginning may easily remedy this, by rubbing off the young buds where improperly placed; and this practice will longer preserve them in strength and vigour.

THE Black Cherry, for improving both the size and flavour of its fruit, should be planted in a fresh, mellow, dry sandy loam, for timber; it will grow to a large size in most dry soils, tho' poor and thin; but in wet ground, or stiff clay, it will not succeed to advantage. It is one of our hardiest trees, of quick growth, and, its many good qualities considered, I have often been amazed that great numbers of them have not been planted universally in all extensive designs.

THE wood is hard, ponderous, and durable; it poliſhes very smooth, and is used by the joiner for cabinets, chairs, and many useful purposes.

To the Black Cherry, being of the same genus, I shall add

THE BIRD CHERRY, in *Scotland* called the HAGBERRY.

THO', in catalogues, this is placed in the third or lowest growing class of trees, that is, from fifteen to thirty feet high, yet I have seen it above forty, and have raised many of them myself above thirty feet, at sixteen years old. It is a plant of extraordinary beauty when in bloom, the blossoms being so thick as to cover the leaves, when the whole tree is as white as snow, and has an admirable effect amongst other flowering plants.

IT grows freely from cuttings, which ought to be planted in February, in a shady border, in drills cut down with the spade, about eight inches deep, and two buds of the cutting left above ground; let the lines be two feet distant, and the plants nine or ten inches in the line; where, keeping them clear of weeds, and digging the ground between them, they may continue two years.

AFTER that time, remove them to another spot, cutting away the superfluous roots and branches, and plant them in lines, three and a half feet distant, and eighteen inches asunder in the line; clean and dig the ground as before, and let them remain two or three years longer, when they will be of proper size to plant where they are to remain.

THIS plant is extremely hardy, and will grow in almost any soil, but chiefly affects a deep, moist, feeding mould, where it will make great advances suddenly. The wood of it is useful for many different purposes in husbandry.

CHAPTER XVI.

T H E P O P L A R T R E E.

The SPECIES are :

1. The white POPLAR.
2. The black POPLAR.
3. The trembling POPLAR, or ASPIN.
4. The ABELE.
5. The white POPLAR, with strip'd leaves.
6. The Lombardy POPLAR.
7. The Carolina black POPLAR.
8. The Balsam POPLAR from Canada.
9. The berry-bearing POPLAR from Canada.

I SHALL begin with the four kinds of this tree first mentioned, that have long been commonly known to us, and then proceed to the others that have but lately been introduced to this country.

THE first, second, and third sorts, are with the greatest ease propagated by cuttings, planted in February or March; and tho' the fourth will likewise grow in that way on moist ground, yet it more readily succeeds by suckers taken from the roots of old trees, of which every one produces great numbers. These cuttings or suckers being planted in the nursery, in lines, two and

a half feet distant, a foot in the line, and eight or ten inches deep, will, in two years, be strong plants, and fit to remove where they are designed to remain: But to be more expeditious, where shelter and shade are immediately required, procure truncheons or straight poles of them, eight or ten feet high; make a hole with a hard sharp stake, from eighteen inches to two feet deep, as the pole is longer or shorter; and in this place it, filling the hole full of water, and pressing in some small mould firmly about it, to keep the plant steady. From this cheap and simple practice these will grow freely, and in a few years become large trees; and thus their culture being so very easy, it is unnecessary to say more on it.

OF all the trees our climate produces, I know none so great and general advantages might be derived from, as planting Poplars in the cold, wet, and uncultivated places of the country; they will grow luxuriantly in the poorest wet bogs, in the hungriest devouring clays, in burning sand or gravel, as well as in the most sterile barren moss, and the quick advance they make in such situations is amazing. I have measured shoots of the white Poplar eight feet long of one year's growth, and have often heard of much more; but there is hardly any land so wet and beggarly as not to produce them, three or four feet annually, for many successive years.

THE shade of this tree is salubrious and friendly, both to animals and vegetables, and their leaves, which are ample and thick, pregnant with rich sweet juices, fall in such abundance, as soon to create a foil that will produce good meadow, or pasture grass, as the situation is moist or dry. To effect this, I would

advise these trees to be planted on such otherways uselefs land, in lines, ten feet distant, and five afunder in the line. In five or fix years, take away every fecond tree, which will leave them at twenty feet by ten; and in feven or eight years more, repeat the fame, which will make them forty by twenty; at this diftance they may remain till fit for the axe.

THE Poplar naturally produces many branches from their trunks when young, which ought to be cut away clofe every third or fourth year, to the height of fourteen or fixteen feet, to admit a free circulation of air to the ground, as well as promote the growth of the tree; and when the foil has thickened, which in a few years it will, fow on it fome white clover and natural grafs feeds, faved from an old upland pasture. In doing this, the land is not to be plow'd, but the furface frequently loofened by a light harrow with fhort wooden teeth, till well pulverifed; then cover the feeds, by drawing fome bufhes lightly over them, and rolling the ground. This may be done any time from March till Auguft, as the fhade of the trees will prevent the feeds from perifhing by drought; but the fooner after March the better, particularly where the land is very wet, as, by early fowing, the roots of the grafs will be better eftablifhed, and not fubject to be fpew'd out in winter, which frequent light rollings early in autumn, when the weather is dry, will likeways much contribute to prevent. The fecond fpring after fowing, when the ground will be well covered with grafs, and fit either for pasture or mowing, the trees may be difbranched to the height of twenty-four feet, when the prunings will be ufeful for fuel, dead fences, and many other purpofes in husbandry. It is remarkable, and what I have often noticed, that, immediately under the fhade and droppings from this tree, the grafs is fooneft eat by cattle.

AFTER these grounds have been pastured for eight or ten years, such of them as are tolerably dry may be converted into corn-land, by taking away the line of trees at twenty feet asunder, which will leave the plantation at eighty feet by forty, a distance that will do little (if any) injury to whatever grows about it, but which, by alternately and judiciously varying the crops, will improve both the corn and grafs for ever.

THE leaves of no tree yet known has so good an effect in compost soil as that of the Poplar, nor will any so soon thicken the earth on which they grow, to which may be added that of its being a very handsome chearful plant.

THUS, at a very inconsiderable expence, large tracts of waste land in these kingdoms, that now produce no useful thing, might, in a few years, be rendered beautiful, warm and fruitful. Should it not then be a reproach to the owners of these uncultivated places, that an experiment so easy and cheap, as putting a parcel of cuttings in the ground in such a manner as here directed, is not tried? the success of which is certain, and which, if judiciously practised by a few, would as certainly be followed by numbers to a very great and general improvement.

THE trembling Poplar does not grow to the magnitude of the other sorts mentioned, and is therefore less proper than they for the purposes described, but is, amongst all the trees yet known, the fittest for planting by the sides of rivers, to prevent their in-croachments.

THE wood of all the Poplars is used for different purposes, by the turner, the cart-wright, and cooper for hoops; and that of

the Abele (which is the best timber) is good both for flooring and wainscotting rooms, being extremely white, and neither subject to split, swell, or shrink : But notwithstanding these good qualities, in grounds intended to produce good and clean grass, I should rather advise the white and Lombardy Poplars, as not subject to produce suckers, which the Abele does in such abundance as to destroy the grass, or other crops where the land is not annually cultivated : For these reasons, this tree ought to be planted at such distances as to run quickly up for timber-trees, without other considerations.

THE white Poplar with strip'd leaves, is increased by budding it on the common white Poplar ; but the variegation is faint, if not planted on a poor thin soil.

THE Lombardy Poplar has been but lately introduced into Britain ; it is a fine chearful pyramidal plant, grows yet faster than the common kinds, and affords an admirable shelter to every thing it surrounds : It is propagated with equal ease as the others, by cuttings, and, so far as I have been able to observe, is as hardy, and will succeed in all the same kinds of land they do ; from whence, if generally cultivated, there appears every reason to believe it will soon turn out to a national benefit.

THE black Carolina Poplar is a very graceful plant, but is far from being so hardy as any of the other kinds, great part of the former years shoot being subject to perish in hard winters, or where they are much exposed ; and therefore they ought to be placed in a well-protected situation, and in a good deep, feeding, moist, but not wet soil : For tho', in their native climate, where

the winters are not so long as ours, they are most commonly found in watery grounds, and by the sides of rivulets, yet, from many repeated trials I have made, I find they will not succeed in such places here; neither ought they to be planted in thin dry land, where frequent waterings in summer will be required to keep them barely alive. The young branches of this tree, which grow in an angular manner, are very singular: Their leaves are broader than any of the other sorts mentioned; and, from their buds in the spring, issues a very sweet balsam.

THE Balsam Poplar was sent in cuttings from Canada to Scotland five or six years ago, and being propagated with much ease, are now in the hands of many. It is, of all the species, by far the most beautiful and magnificent plant. The leaves are very large, of a light chearful green, and the bark of a smooth shining brownish colour. I have seen it in various soils, both wet and dry, of a middling good quality, in all which it much exceeds the other sorts in luxuriance of growth. Whether it will advance with equal facility as the common kinds, in very poor and exposed situations, I shall not yet pretend to determine, as it has not been long enough amongst us to make sufficient experiments; but, from all the observations I have been able to make, it appears a hardy plant, from whence there is reason to hope it may; in which event, it will be an acquisition of the highest importance, both in point of use and beauty to our forests; and as, if I live, trials shall immediately be made in the fullest manner, this circumstance will soon be determined.

THE berry-bearing Poplar was introduced to us at the same time, and in the same manner as the balsam kind. It is like-

wife a plant of much elegance, not quite so broad in the leaf as the other, but of a gay lighter green and whitish bark, deeply furrowed.

IN the beginning of March, let the cuttings of these trees, a foot long, be planted, eight inches deep, in well-prepared soil, of a good quality, in lines, three feet asunder, and the plants sixteen or eighteen inches distant in the line, when, after two years standing, they may be removed to where they are designed to remain.

THOUGH, as has been observed, these plants appear, and I believe are, or will become very hardy, yet I must notice, that, having planted some of their cuttings in rich, and others in poor and less cultivated ground, I have lost a considerable number of those in the poor, while not one of a hundred has failed in the generous soil; from whence I naturally conclude, that in making plantations of them in coarse, barren, or cold situations, the nursed plants are much preferable to cuttings, though this is no argument against their becoming very hardy when advanced in growth. But whatever their success may be in forbidding soils and climates, we have, in the mean time, the strongest motives to encourage them for ornamental plantations in those that are favourable.

C H A P T E R X V I I .

T H E *LOTTE*, OR NETTLE TREE.*The SPECIES are:*

1. The NETTLE TREE, with black fruit.
2. The NETTLE TREE, with purple fruit.
3. The NETTLE TREE, with large yellow fruit.
4. The Eastern NETTLE TREE, with larger leaves and fruit.

TH E first of these trees is a native of Europe, the second and third of America, and the fourth was discovered by the late Dr Tournefort in the Levant, who sent its fruit to the Royal Garden at Paris, where they were raised, and from thence soon introduced to the British gardens. They are all of them hardy enough to bear our severest winters, in ordinary situations, after three or four years old, and, being a tree of admirable shade, beauty, and use, deserves to be generally cultivated.

IT may be raised either from seeds, (which if you can procure, is the best method), or by layers: If from seeds, sow them in the spring soon after they are ripe, (which is commonly in January), in pots or boxes, about a foot deep, full of holes in the bottom, covered with oyster-shells or broken tiles, and three or four inches thick of rough stoney gravel above them, to drain the moisture, and prevent the earth from becoming heavy and sour:

Then fill the pots or boxes, within an inch of the top, with rich loose compost mould; sow the seeds, and sift over them half an inch more of the same quality of earth. Few of these seeds will appear till the following spring; but the pots or boxes ought not to be sunk in the ground, as is too commonly practised by ignorant gardeners, in order, as they say, to keep them moist; and, in fact, by lazy ones, to prevent the trouble of watering them, but which, by detaining the water, rots more seeds and plants than any other circumstance of ill management I know; besides, those that escape are poor, starved, and stunted stuff: Therefore let them be raised or eight inches above the surface of the ground, supported by stones or logs of wood, and placed where they may receive the morning sun only, till autumn, when they should be removed under a south wall, and continue there till the weather turn severe, during which time they ought to be put under a covered frame, but the glasses or other covering taken constantly off in mild weather. About the beginning of April after, remove the boxes to their first situation; loosen the surface gently with your fingers, picking away the foggy or mouldy parts, and sift on a little fresh earth in proportion. About the end of April, the bulk of the plants will appear above ground, when they must be frequently but moderately watered in the evenings when mild, but in the mornings, when inclined to frost, kept perfectly clean during the summer months, and protected as in the preceding winter in severe weather.

THE plants being a year old, raise them carefully out of the boxes, shorten the downright roots, and manage them as directed for the Tulip-tree during their abode in the nursery; with

which culture they will very well agree, till planted where they are to remain for good.

If you intend to propagate them by layers, let this be performed as soon as the leaves begin to tarnish, about the end of September, or early in October. The wood of this tree being extremely hard, will not root sufficiently till the second year, unless the summer is uncommonly wet, or you assist them with regular and plentiful waterings; therefore, if you mean to save a season, let this be particularly attended to.

When you find they have rooted abundantly, in the end of March, or beginning of April, take away the earth from about the layer, of which be very tender, and with a sharp knife cut it off beyond the joint, where, if properly laid, the roots will principally be; prune away all but the strongest and straightest shoot, and plant them in a nursery of good fresh soil, in rows, at two and a half feet distance, and a foot asunder in the row; give them frequent waterings till the roots are well established; keep the ground clean, digging it between the rows in autumn and spring, and let them remain here two years.

These trees may now be either planted out for good, or removed to another nursery, cutting off the extremities of their roots and all ill-placed branches, and placed in rows three and a half feet distant and eighteen inches in the row, treating them as formerly, and letting them remain for three years.

The Nettle Tree will succeed in any ordinary land, but most delights in a deep moist soil, where they will soon become state-

ly trees; and their fine regular spreading heads, of chearful green, renders them extremely proper, either for clumps in parks, groves, single trees, or avenues.

NEXT to the *Platanus* this plant was most esteemed by the ancient Romans, both for its grateful shade, and timber immortal, as they stiled it. Of this the vast sum offered by Crassus to Domitius for half a dozen of them, growing about his house in Rome, is an incontestible proof. It is doubtless amongst the hardest wood of any we know: It was formerly used for pipes, and all kinds of wind-instruments; and the roots make excellent handles for knives, with many different kinds of tools that require strength and solidity.

C H A P T E R XVIII.

THE *LABURNUM*, OR BEAN-TREFOIL.

The SPECIES are :

1. The broad-leav'd *LABURNUM*.
2. The narrow-leav'd *LABURNUM*, with long pendulous flowers.
3. The broad-leav'd *LABURNUM*, with very short pendulous flowers.

THESSE trees are propagated by sowing their seeds (which they annually produce in plenty) in March, on a bed of fresh earth, covering them about half an inch thick; and, in four or five weeks, the plants will appear above ground, when some gentle waterings in dry weather will much promote their growth.

THE following February or March, remove them from the seed-bed to the nursery; shorten their roots, which are naturally caroty, but which are not injured by cutting them freely when young; plant them in lines, two and a half feet distant, and a foot asunder in the line; keep them clean; dig the ground between the lines in autumn and spring, and let them remain two seasons.

FROM hence remove them, in October or February, to another quarter; still continue to reduce the roots that incline down-

wards, and smooth the extremities of the spreading ones; prune off all ill-placed lateral branches, but leave some of the smallest at proper distances; for this tree, making prodigious shoots when the side-boughs are all cut off, bends with its own weight, and is afterwards with difficulty redressed. This being properly performed, plant them in lines, five feet distant, and two feet asunder in the line; manage them as formerly directed, and prune them annually to their proper form; in which situation they may remain three or four years, as your occasions require, by which time they will produce their flowers, and make an agreeable appearance in whatever plantation you place them.

IT seems to me somewhat strange, that the *Laburnum* has not been universally cultivated in large quantities, it being a plant of admirable beauty in May when in bloom, and propagated with the greatest ease, and smallest expence, of most trees. It will succeed in various soils, and even in that which is very poor and hungry; but where there is any considerable depth of tolerable mould, the progress it makes is amazing. Though I do not remember to have heard the quality of the wood recommended by any author, yet I am well assured it is very valuable for sundry purposes, and by some preferred even to mahogany for its solidity and beautiful colour, which is bright yellow, veined with dark purple; and I myself have seen a large table and a dozen chairs of it, in the possession of a noble Lord, which good judges of elegant furniture thought the finest of those kinds they had ever seen.

I HAVE one further hint to give in favour of this plant, which alone makes it claim much attention, and that is, mix-

ing them in all plantations infested with hares, who are so fond of them, that while a twig remains, no other plant will be touched, and though eat to the ground every winter, they will spring with additional vigour the succeeding summer, and constantly supply these animals in luxury. This, to my certain experience, may be depended on; and the produce of five shillings worth of seed, properly raised and distributed, will furnish plants enough to protect 500,000 other trees. Many expensive and laborious experiments have been ineffectually tried to protect young plantations from these rapacious enemies: Here is a cheap and no less certain remedy; and, however simple the discovery may appear, the effects of it will be of the highest consideration to every planter who puts it in practice.

CHAPTER XIX.

THE ALDER TREE.

THIS tree delights in wet boggy land, and will even grow where water stands constantly, but, if planted in dry ground, is most pernicious and devouring, as, by attracting all the moisture and generous juices from the earth, it will soon render it totally barren. From fifty to twenty years ago, vast quantities of these plants were brought from Holland to this country, at a considerable price, and, unhappily for the owners, planted in large tracts of moist land, from whence no returns suitable to the labour and expence have been received. Had the same money been bestowed on planting Poplars and A-beles, they would by this time have highly increased the value of such estates, and become a general improvement; whereas the injudicious choice of Alders has proved a bad example to young planters, and probably deterred many from planting at all, who otherways might have chosen handsomer and more profitable trees.

THEY are easily propagated by layers, or by cuttings of three, four, or five years growth, planted in February or March; but being an ugly melancholy tree, I chuse to say no more of it, as fundry aquatics, of greater beauty and value, will grow abundantly faster in the same situations they affect; and it is only to warn the unexperienced planter against the frequent use of them, that I have mentioned a tree I so much dislike.

CHAPTER XX.

THE BIRCH TREE.

The SPECIES are :

1. The common BIRCH TREE.
2. The Poplar-leav'd BIRCH TREE.
3. The Canada BIRCH TREE.

THE common Birch may be propagated either from seeds or suckers taken from the roots of old trees, but the seedlings make the handsomest and best-rooted plants. I shall therefore first direct their culture in that way, which, though one of the hardiest and most common trees our climate produces, (of which it is a native) yet is it seldom successfully raised from seeds, which is generally owing to too much covering, and which it will by no means bear, as the plants, when they first vegetate, are very delicate, and unable to force their way through any considerable depth of soil; but by observing the following simple practice, you will procure them in abundance :

THE seeds of the Birch are ripe about the end of September or beginning of October, when, having gathered them in a fair clear day, spread them thin on a loft floor till dry; after which, mix them with loose sand, and keep them in an airy place till the beginning of the following March. The ground for sowing them, which ought to be fresh and light, having been trenched or dug the preceding autumn, point it over again, making it as loose as possible, and raking it very fine; divide it in beds, three and a half feet wide; sow the seeds, and clap them into the ground with the back of a spade, without any earth thrown over them.

If the weather is moist and mild, no further care is necessary; but if dry and frosty, which is often the case at this season, throw a little pease-haulm over the beds, for three or four weeks, till the seeds begin to vegetate, which will keep the ground moderately moist, and defend them from being injured by frost, or destroyed by birds, who are very fond of them. About this time uncover the beds, keep the ground quite clean, and give them three or four gentle waterings about noon, from the middle to the end of April, the weather being mild and dry; which repeat more plentifully and frequently from thence till the middle of June, in mild evenings, when they will require no further attention.

THE following March, remove these plants from the seminary to the nursery, shortening their top-roots, and plant them in lines, two and a half feet distant, and about ten or twelve inches asunder in the lines; to stand two years, if the land is good, and the plants have grown freely; but in poor thin soil, where their progress has been small, they may continue three years; in which case, after the second year's growth, cut over such of them as are least thriving or crooked, close by the ground, in March, which will give them straighter and more vigorous shoots.

THOSE taken from the roots of old trees, or seedlings grubbed up from the woods, cannot have so good roots or free shoots as plants raised in a clean well cultivated nursery-bed, and therefore will of course require more time and attention to make them equally good trees: For this purpose, having procured the plants with all the roots possible, shorten such of them as incline to run downward; cut away such as are broken or bruised,

with all the musty parts naturally contracted in the woods for want of air ; reduce likewise the tops of such as are too tall or heavy-headed, and lay them in drills cut down with the spade, at the same distances directed for the seedlings, in depth proportioned to the size of the plants, the most certain rule for which, in this and all other trees, is placing them as deep only as they have naturally stood before ; water them at planting, keep the ground clean, and dig between the lines in the spring. Having stood here two years, cut them all over by the ground, and let them remain two years longer, when they may be removed for good.

THE second and third sorts will bear our winters well enough, when mixt with and sheltered by other plants : They may be propagated either by layers or budding them on the common kind ; but it is uncertain raising them by seeds from America, which do not vegetate, if kept long out of the ground.

THE Birch is a handsome plant ; and though the wood is not amongst the most valuable, yet it is useful for various purposes ; and no tree is more required by the country people, for their houses, or for ploughs, and other instruments of husbandry.

THE late Earl of Hadinton, the greatest, most judicious and successful planter of his time in this country, justly calls the Birch an amphibious plant, as it grows on rich and poor, wet and dry, sandy or rocky situations, nor refuses any soil or climate, and its fragrant smell after rains justly intitles it to a place in the wilderness ; to which I shall only add, that by wounding the tree in the spring, is extracted a large quantity of juice, that, fermented, becomes a spirituous, delicious, wholesome liquor.

CHAPTER XXI.

THE SERVICE TREE.

The SPECIES are :

1. The true SERVICE TREE.
2. The manured SERVICE TREE.
3. The Maple-leav'd SERVICE TREE.
4. The Virginian wild SERVICE, with leaves like the Strawberry tree.
5. The common wild SERVICE TREE.
6. The White BEAM, or AREA THEOPHRASTI.
7. The Quick BEAM, in *England* commonly called the MOUNTAIN ASH, in *Scotland* the ROWAN TREE.
8. The Quick BEAM, with strip'd leaves.

THESE plants, though not usually propagated for common Forest-trees, are yet well worth our attention in all collections for ornament ; and both their sweet smelling blossoms early in summer, and large bunches of bright red fruit in autumn, have a very pleasing effect in the wilderness, or in clumps in parks, lawns, &c.

THEY are all to be propagated by the sowing their seeds ; but the four sorts first mentioned, like many other fruits, seldom

produce the same kind of plants from whence the seeds were taken; and therefore, to preserve the different species, they must be increased by layers, or by budding and grafting them on the common sorts, or Pear-stocks. These budded or grafted will make better plants than the layers, and on the Pear-stocks they will sooner become fruitful, and bear fairer fruit than on stocks of their own species. I shall therefore proceed to the other kinds, of which I have raised great quantities from seed, without any variation from the parent tree.

HAVING provided the berries in October, divest them of the pulp, by rubbing them between your hands in water, and after that with sand, in which preserve them till the first dry weather in spring, and sow them on beds of rich well-prepared loose earth, three and a half feet broad, covering them one inch thick. Few of these seeds will appear above ground till the following spring, but the beds must notwithstanding be kept perfectly clean during the summer months; and as soon in February as the weather will admit, with a short-teeth'd rake, dress and loosen the beds, throwing on some fresh soil in proportion to the hard and foggy parts you have taken off; and by the beginning of April, the weather being dry and not frosty, water them gently in the mornings once a week till July, which will much encourage their growth.

FROM the seed-bed remove them the following spring, shorten their top-roots, and plant them in well-prepared rich soil, in rows two feet distant and a foot asunder in the row, where they ought to remain two years, keeping the ground clean in summer, and digging between the lines in spring and autumn.

HAVING flood here two seasons, remove them to another nursery, cutting away all crofs downright or superfluous roots; but be sparing of the other spreading ones, and only smooth them at the extremities: Plant them at three and a half feet by eighteen inches asunder, treating them as formerly, to remain three years, when they will be of a proper size to remove where they are intended to continue for good.

THOUGH the fifth, sixth, and seventh sorts, will, any of them, answer for stocks to bud the other kinds on, yet of these the White Beam will make the best plant, tho', as has been said, the Pear-stock is better still; therefore, such of these as are intended to be budded, should be pick'd out, the most vigorous plants of a year's growth, and planted on generous soil, at the distance of three feet by fourteen or sixteen inches, budded the second summer after removal, and stand two years longer after budding, when they may be removed for good.

THE Quick Beam with strip'd leaves, must likewise be increased by budding, and succeeds best on stocks of its own kind.

THESE trees in general affect a strong moist soil, though the finest plants of the Quick Beam I have ever seen, were on dry elevated ground: Their wood is much used by the wheel-wright, as well as for many purposes of husbandry, and is excellent fuel: Their berries are the most tempting bait of any fruit for the black birds and thrushes, who will never fail of giving their company so long as they last.

CHAPTER XXII.

T H E J U D A S T R E E.

The SPECIES are:

1. The common JUDAS TREE.
2. The Canada JUDAS TREE.
3. The Carolina JUDAS TREE, with pointed leaves.

THE first of these is a native of the warmer parts of Europe, and abounds in Italy, Spain, and the southern parts of France.

THE second sort is common in Virginia, New-England, Canada, and most of the northern countries of America, where it is called Red Bud, from the beautiful colour of its flower-buds.

THE third sort is a common plant in the woods of Carolina, but differs from the other two in the form of its leaves, which are pointed, the former being nearly round; the flowers of this too are smaller, and the plants, for three or four years, require a little more shelter in case of hard winters, after which they will bear our climate perfectly well in an ordinary situation.

THESE trees may be propagated by layers, which will make handsome enough plants if properly trained; but the seedlings

are still better, and feeds from the places of their native growth are preferable to those sowed in Britain, being larger and better ripened.

As soon as those feeds are either received from abroad, or gathered at home, after having been made quite dry, let them be mixed with loose sand, and preserved from frost and wet till the middle or latter end of March, as the weather is more or less favourable. About this time sow them on a bed of rich mellow dry soil, and cover them half an inch deep. In four or five weeks, the plants will begin to appear, when the bed ought to be hooped over, and, when necessary, covered with mats, first to protect them from the cold frosty winds frequent at that season, and excessive rains which sometimes burst them, and afterwards to screen them from the scorching heat of the sun, which will much accelerate their growth. From their appearance above ground, they must be gently tho' frequently watered in the mornings while the weather continues cold, but afterwards in the evenings when mild. In this situation they will require no more trouble, than, in case of a severe winter, throwing the mats over them in storms, and removing them regularly as the air becomes temperate.

THE succeeding spring, as soon as the buds begin to swell, remove the plants from the seminary to a nursery of the same kind of well-prepared loose soil; shorten the top-roots, and plant them in rows two feet and a half distant, and about a foot asunder in the row; give them a gentle watering, which ought to be frequently repeated in the evenings of dry weather during the summer months, and keep the soil about them clean and

mellow. These trees naturally grow in a wild irregular manner, and, when left to unassisted nature, are rather of the bushy Shrub kind. To correct this defect, place a stake firm by the side of each plant; and as it advances in height, tie the leading shoot to it with a piece of soft bass, which direction it will afterwards retain, and the plants will grow straight and regular. In case the following winter should prove severe, it may be necessary to throw some pease-straw over the ground, to keep the frosts from injuring the roots, and, the succeeding spring, let it be dug into the ground between the rows. At this time let all the low-growing branches of the former year be cut close away, that they may not impede the vigorous growth of the leading shoot, which must be constantly tied to the stake as it advances in height; but tho' the lowest, all the small branches are not to be taken away, that the main one may not be drawn too tall and slender, but advance with bulk proportioned to its height. If these circumstances are attended to, the plants will only require the additional trouble of keeping them clean during their abode here.

THE Judas tree should not remain longer than two years in the same nursery from the seed-bed, and therefore, the succeeding spring, may either be planted out where they are to remain, or (which I would rather advise) be committed to another nursery, and planted at greater intervals, for two years longer, where they may be treated in the same manner as has been directed; by which time, they will be large, handsome, hardy plants.

THO' the above method of culture is the cheapest and easiest for raising great quantities of these trees, yet to such as are

above the regard of common expence, and want to promote their growth as fast as possible, a readier practice may be followed, and which, for three or four years, will make the plants double the size of those raised in the natural way.

FOR this purpose, the beginning of March, sow the seeds thin in penny-pots, and plunge them to the rim in a moderate hot-bed of tanners bark, rather than horse-dung; the heat of the bark being more equal, lasting, and less steam arising from it, than that of the dung: When the seeds have been a week sown, they must be very gently watered every third or fourth day; after the plants come above ground, every second day, and the quantity of water increased as they advance in growth. When the plants are about five or six inches high, which may be about the beginning of May, draw out the strongest of them, leaving the smaller in the situation they were in; plant each of those in a separate penny-pot, and plunge them again into another moderate hot-bed, watering them frequently and plentifully, covering the glasses with mats when the sun shines in the heat of the day, to prevent their being scorched, and admitting a proper quantity of air to them, that they be not over-drawn. In this condition they may remain till about the first of August, when the bark will have lost most of its heat, and when the pots may be taken out of it, but still kept in the frame, though more and more exposed to the open air daily, till the glasses are taken away wholly during the mild weather of the autumn months. On the approach of winter, the glasses must again be replaced on their frames, to protect the plants in severe storms only; but they ought to be fully exposed to the open air, when the season is temperate.

THE following spring, let the small plants that remained in the pots where sown, be carefully shaken out of them, and divided so as not to injure their tender roots and fibres; cut away with a sharp knife the extremities of their downright and straggling roots, and put them in separate pots of the same size; plunge them again with the others that were unpotted the preceding summer, in a fresh tan-bed, till the month of July, by which time they will have made vigorous shoots, and the pots be full of roots; harden them by degrees, and treat them as in the former year; only, as the plants will be much stronger, and of course more hardy, they may be more suddenly exposed to the open air, and need not so much protection the following winter, even in hard weather.

WHEN the sap begins to rise, the succeeding spring, carry these pots to the quarter of the nursery where you intend to plant them, which should be as nearly as you can such a soil as described for the seedlings, and sheltered a little by trees or hedges; make pits with a spade, at three feet distance by two, as deep and something wider than the pots, from which shake them carefully out with their whole bulk of earth, which may easily be done without injuring their smallest root; place them upright, and no deeper than they have stood before; give them a plentiful watering; prune away the under branches, and any others that are ill-placed, and fix a strong stake by each of them that inclines to be crooked, to which tie the leading shoot; and in this situation let them remain two years, digging the ground about them in autumn and spring, and continuing to prune away all superfluous ill-placed branches, when you may transplant them to the places where they are meant to remain for good.

By attending to what has been said on the propagation of those plants, they can be raised with such abundance of roots, as not to be retarded in their growth, or feel the smallest check on their removal.

If I have been tedious in directing the management of the Judas Tree, it is because I think it a plant of singular elegance and beauty, when assisted by proper culture, which is far from being the common case; and I cannot help thinking, it is from not attending to that, we see it so very little propagated, even by men of knowledge and observation in gardening. In its natural state, indeed, it grows in an irregular straggling manner; but by leading the principal shoot, as here directed, it may easily be elevated to the height of twenty-five feet or upwards. The flowers are of a beautiful red colour, tinged with crimson and purple; the leaves, a fine deep green, large, and nearly round. The flowers appear before the leaves are expanded, and, in well-grown trees, are so numerous as almost to cover the branches, which altogether renders it one of the greatest beauties of the spring.

C H A P T E R XXIII.

T H E E L D E R T R E E.

THIS tree is little planted but for the sake of its berries, of which they make wine, and likewise use them for sundry other purposes; but it has other good qualities than these to recommend it, and in bad climates, and cold barren soils, it may become a valuable plant.

IT will grow in wet and dry, cold and hot, and indeed in all kinds of soil, amazingly fast; and in the most forbidding situations, where thorns and the better kinds of hedge plants will not succeed, by putting in stakes of the Elder, of four, five, or six years growth, about three feet high, planted a foot deep, and about a foot asunder, you may in three years have hedges that will resist the wildest cattle, and by their warmth much improve the ground. These hedges being cut close to the body of the plants every third or fourth year, will branch out again more numerously than ever, and afford a constant supply of fuel, which, in many situations, might prove a blessing to the poor inhabitants. It might also be used to much advantage in better situations intended for plantations of the most valuable Forest-trees, by planting them thick in lines across the most exposed places of the field, where, by their quick growth, and the excellent protection they afford against tempestuous and frosty winds, they will highly contribute to the speedy advance of such

plantations; and the Elders may be cut down by degrees, as the other trees advance.

HOWEVER much this plant is generally disregarded, it is notwithstanding a handsome chearful tree, and, when covered with its numerous clusters of white flowers in spring, and purple berries in autumn, has a very agreeable effect in lawns, clumps, &c. But I would by no means advise its being planted in the wilderness or forest promiscuously with other trees, as their creeping roots, that extend a great way, would rob the other plants near them of their proper nourishment; neither should they be placed in any quantity near habitations, where the strong scent emitted from their flowers will occasion pains in the head; but, for the first-mentioned purposes of nursing other plants, disposed at proper distances from them, they deserve attention.

CHAPTER XXIV.

THE TACAMAHACA TREE.

THIS tree grows spontaneously on the continent of America, where the inhabitants wound the bodies of them in the spring, from whence flows a balsam much esteemed by the physicians in those countries; and it is hardy enough to bear our severest winters.

It is easily propagated by cuttings planted about the middle of February, in rich mellow earth, shaded from the mid-day sun, and watered in dry weather, where, in one year, if the cuttings were strong, they will grow upwards of three feet high.

THE succeeding February, remove the cuttings to a nursery of any good middling deep soil; smooth the extremities of their roots; cut off the strong side branches, and plant them in rows three feet distant and eighteen inches asunder in the row; give them a plentiful watering; keep the ground clean; dig between the rows in autumn; and let them continue in this nursery two or three years, when they may be transplanted to the places in which they are intended to remain.

THIS is a quick-growing graceful plant, and justly claims a place in the wilderness, or other ornamental plantations. The

leaves are long, thick, of a bright shining green, with their under sides of a lively silver hue, which, when waving with the wind, makes an agreeable diversity. The buds are covered with a dark glutinous balsam, which smells very strong, and adheres to the fingers on touching them; and they warn us, with the earliest plants, of the approach of spring. They will grow in any ordinary soil, but most affect that which is mellow and deep. Where there are void spaces in the wilderness, occasioned by the death of other trees, this planted, and let grow in its natural manner, which is thick and bushy, will sooner supply these defects handsomely than most other plants.

E V E R G R E E N S.

CHAPTER XXV.

THE P I N E T R E E.

The SPECIES are :

1. The Scots PINE, commonly called the Scots FIR TREE.
2. The manured PINE TREE.
3. The PINASTER, or wild PINE TREE.
4. The large Stone PINE TREE.
5. The smaller Stone PINE TREE.
6. The Cluster PINE TREE.
7. The Eastern PINE TREE.
8. The Swamp PINE TREE, with long narrow leaves.
9. The Jerfey PINE TREE.
10. The Virginian PINE TREE, with long narrow leaves, and a rough cone.
11. The Virginian PINE, commonly called the FRANKINCENCE TREE.
12. The New England PINE TREE.

THERE are many other sorts of Pines mentioned by different authors on Gardening and Botany ; but these, from experience, and what observations I have been capable of making,

are most worthy of general culture in the climate of Great-Britain.

I SHALL begin with describing the common method in Scotland of cultivating the Scots Pine or Fir, from which practice, many millions are annually raised and planted out amongst us; and then, as shortly as I can, hint what circumstances I have long found an improvement on that practice.

THE usual way is, to gather their cones in winter, and sow the seeds about the end of April or beginning of May; but as before that season of the year, the sun has seldom power enough to open the cones, they have recourse to laying them before a hot fire, or upon a kiln, which, if not done with great caution, and the heat made very temperate, totally destroys a great part of the seeds, or in all events, though done with discretion, it weakens the whole. Little observation, and less philosophy, will show this practice opposite to nature.

THESE seeds however, the best they can get, are sown at the season before-mentioned on beds of well-prepared earth, extremely thick, and covered about a quarter of an inch deep, where they remain two years.

FROM the seed-bed, such as are not demanded, the gardeners remove to the nursery, where they are still planted out very thick, and from thence sold the following or second year after, as the demand happens to be more or less.

MUCH the greatest quantity of Scots Firs are planted out in Scotland from the seed-bed, and such are generally (tho' surely

very injudiciously) chosen for the most hungry barren soils, and most bleak exposed situations, where, from the natural hardness of the plant, in kindly moist seasons, they frequently grow; but where, if the following May is accompanied with cold withering frosty winds, and June with drought, (a circumstance, from fatal experience, we too often find the case in this climate), they generally perish.

THIS, however, though a too frequent, is not an universal practice, as several gentlemen, of knowledge and experience in gardening, plant large quantities of them from the nursery at three and four years old, when, if they have been tolerably well cultivated, it must be a very bad soil and season indeed if they do not succeed.

SUCH is the common method of propagating this plant: It remains I should direct its culture in the way I have succeeded better than usual.

I HAVE observed, that the seeds of this tree are rarely, if ever, got amongst us in full perfection, and given my reasons for it. To gather the cones therefore fully ripe, and make them emit their seeds, without committing violence on them, observe the following rules :

THESE cones, as those of the Larch, increase in maturity during the whole winter, and, like them, should not be gathered till spring, though their management afterwards is much more simple, being with more ease divested of their covering.

LET them therefore be gathered from the fairest and most flourishing trees of the red kind (or if fallen from them, they are so much the better) in March or April, and kept in a dry place till June, July, or August, as the weather sooner or later becomes hot : At the most favourable of these seasons, spread them on a mat or canvass exposed to the sun during the heat of the day, taking them under cover in the evenings, and keeping them constantly from the rains and dews. In a few days the cones will expand, and the seeds will rattle within them : When this comes to be the case, put them in a wire-sieve, and shake them above a cloth, on which you will find many of the seeds come out ; repeat the spreading of the cones in the warmest exposures to the mid-day sun for several days, (as the seeds will not all be discharged perhaps for some weeks, and with fundry shakings), till having bruised some of the cones, you find they contain no seeds that are plump and fresh. Having thus procured them, let them be kept in boxes or bags, placed in a dry room, till the season of sowing.

By collecting your seeds in this manner, (and the expence or trouble is not great), you will have them unhurt, ripe and generous, a pound of which will raise more plants than six of that usually bought from the seed-gatherers : Nor is even this the greatest advantage ; for every gardener knows, (or at least ought to know) that on the good quality of the seed depends the future luxuriant growth of the plant, as a diseased or weak parent is not likely to produce a healthy and vigorous offspring. It is much to be wished this circumstance were more attended to than it usually is, both in the animal and vegetable creation.

I PROCEED to the management of the feeds, from the practice of which I have found uncommon success in the culture of this useful plant; and the public may be assured, I shall not give a hint on the subject, the benefit of which I have not been fully sensible of from long and frequent experience.

FROM sowing the Fir feeds so late in the season as they commonly are, they do not appear above ground till the weather is warm, and the greatest drought usually begins in this country. Thus they must either be regularly watered, (which in large quantities is very expensive), or whole quarters of them may perish in a few days. Every nurseryman of the least observation will acknowledge this, having felt it to his sad experience. It has happened often within these twenty years past; and we need go no farther back than the year 1771, for a fatal example of it, when not only the Scots Firs, but all the other evergreen tree-feeds were generally burnt up, nor in many situations did even watering preserve them. Neither is this the only misfortune that frequently attends late sowing: There is another, and a very great one, that never fails, and that neither a kindly season, nor good soil, will prevent, that is, the small growth of the plants; from which, if the succeeding winter is severe, the greatest part of them will either be killed, or spewed out of the ground.

To prevent these frequent misfortunes, I therefore advise to sow the feeds in shady borders of generous loose mould, at the rate of a pound of good feeds in a bed or beds of sixty feet long by three and a half broad, about the middle of March, or

as soon after as the land is dry, and the weather favourable. About a quarter of an inch thick will be sufficient covering for the plants to spring through; but if they are covered at first half an inch, and just as the seeds begin to vegetate, half of that be gently raked off with a short-teeth'd rake, it will be a material improvement, as by that means the surface, which otherways would have been a little hard and battered, will be loose and mellow, nor will the plants meet with any obstruction till their appearance above ground. This circumstance, which, so far as I have seen, is not attended to at all, is yet of great importance in the culture of plants, and should not only be practised with all the evergreen tribe, but indeed with all tree-seeds in general, as it will greatly increase the number, and accelerate both their present and future growth. Many thousands of plants, in stiff ground and dry seasons, are smothered, being unable to struggle with a hard-crust'd surface, for want of this precaution; and however general the neglect of it has been, it is too obvious to require further explanation, as every gardener of common sense, and the least attention, must plainly perceive this is removing obstructions, and assisting nature in her operations.

I MUST here likewise observe an almost universal error in the sowing these seeds, which is, that if the nurseryman has them not as thick as a bed of Cresses, he esteems them an insufficient crop. This, however, is a most barbarous and even dishonest practice, and the bad effects of it have, more than any other circumstance I know, retarded the success of our plantations. The plants thus raised as thick as they can stand, are starved and dwarfish, and, from want of air, so tender, as to be affected, and often to perish, with the first hard weather; or if, from favour-

able circumstances in the soil or situation of the place, they should live, their shoots are poor and languid, their roots caroty and without fibres; in which state they will long continue, if a succeeding hard winter does not quite destroy them. Many gentlemen who have purchased large quantities of firs so raised, imported from the north of Scotland, and sold for less than half the price any man can raise good plants for, have paid dear for their intended frugality, and are now too sensible of the truth of what is here observed. Nor is this practice confined to the north of Scotland only; for, I am sorry to say, it has defused itself over most parts of the kingdom, and at last reached the capital, where several people have started up and assumed the character of nurserymen, unbred to, and unknowing in the meanest branch of gardening. These gentlemen have adopted the system of their northern brethren, and imposed on the ignorant and unwary, by selling their suffocated trash, which well they may, under the rate of good plants; whence they have injured the fair-dealing intelligent nurseryman, whose heart disclaims receiving money at so great an expence as deforming, in place of beautifying and enriching his country. It is hoped the nature of the subject will procure pardon for this digression, which is far from being the effect of ill nature or envy, these invaders being of a species too contemptible to admit of either. Some of them have already paid for their presumption, and it is hoped all of them will in due time, as, from the universal taste of planting in this kingdom amongst men of fortune and education, they will soon become judges of the difference between good and bad plants, and of course discourage the ignorant and dishonest practices of quacks and impostors.

As the plants begin to appear above ground, if water is to be had at no great distance, and the weather is dry, without frost, it will much promote their growth, to water them in the mornings early once every four or five days for five or six weeks, when they will have got roots enough to continue growing vigorously the remaining part of the summer, and require no further labour than keeping them clear of weeds.

FROM the beginning to the middle of April following, transplant them from the seed-bed (cutting away a little of their downright roots) to other shady well-prepared borders, in rows fifteen inches asunder and six or seven inches in the row, and give them three or four plentiful waterings at and soon after planting, if the weather require it. The succeeding October and March, point over the ground between the rows, which will encourage the spreading of their fibres, and let them remain here two years from their removal; at which time, from this culture, these plants will have such abundance of roots, with bodies so thick and well-proportioned, that they will encounter all difficulties, and succeed in the worst soils and coldest situations, much better than seedlings.

FOR the purpose of sheltering suddenly plantations of finer trees, in the garden or wilderness, with large firs, these plants may again be removed to another nursery, and planted in rows three feet asunder and eighteen inches in the row, where, after standing two years longer, and digging the ground as formerly, they will transplant with absolute safety, and grow as freely as the younger plants, notwithstanding the general prejudice against old Scots Firs, which has only a good foundation when they

have not been transplanted seasonably, and otherways properly cultivated.

IN removing these plants, either from the seed-bed or from one nursery to another, while young, I must here advise a simple and easy precaution may never be omitted, which is, to have standing by you a tub with water and earth, mix'd to such a consistence, as that a considerable quantity of it will adhere to the roots of the plants: The moment they are raised, let them be plunged in the tub as deep as they stood in the ground; and if they continue for several hours in this situation, it will be so much the better, as in that time they will imbibe a quantity of moisture sufficient to enable them to proceed in a growing state, and resist the drought till they have struck root, when they will shift for themselves. By attending to this practice, I have often succeeded in the removal of Firs in unfavourable seasons; but where it was neglected, they have generally been cut off.

THO' I have recommended the removal of the Scots Fir or Pine at a year old, yet I mean that should be understood under certain restrictions, and only practis'd when the seeds are early sown on good soil, as here directed, and when from a favourable season they have become good well-grown plants; but if otherways, and these rules have not been observed, but the ground poor, the sowing late and too thick, the plants will be small, stunted, and unable to bear transplantation, so must of course remain another year; but even then, they will be much inferior to those of a year old sown seasonably on good land and moderately thin. There is but one cure I know of for thick-sown stunted plants, which is, going carefully over the beds when a

year old, and drawing them to proper distances. This perhaps a gentleman's gardener of reflection may be prevailed on to do, but many nursermen will, I am afraid, hardly submit to making what they may think so great a sacrifice, as throwing away a great number even of bad plants to procure a few good ones.

It has been an old dispute, which still subsists, whether there are more sorts than one of the Scots Pine or Fir, and 'tis commonly asserted, that the difference we see in the wood when cut down and polished, is owing only to the age of the tree, or the quality of the soil where it grew; but this assertion I am obliged to believe is not just, and proceeds from want of sufficient observation, as I have seen many Fir trees cut down of equal age in the same spot, where some were white and spongy, others red and hard, which to me appears evident, that there are two distinct species of them; and indeed the difference of colour may easily be discovered by any one who walks through a new-plant'd plantation even of young trees. But having dwelt long enough on the Scots, it now becomes necessary to review some of the other and more beautiful kinds of Pines.

THE second, third, fourth, fifth, sixth, seventh, and eighth sorts, may all be propagated after the same manner. Those have carrotty deep roots with few fibres, which makes it indispensibly necessary to remove them at one year old, when their roots are tender, and will more readily admit of being shortened than when older, very few of them succeeding at removal from the seed-bed above that age. This being the case, you must endeavour to make the plants as strong as possible the first year. The seeds of these Pines do not rise near so soon as those of Scots,

and therefore they may with safety be sown a fortnight earlier, that is, about the beginning of March. Thus sowing them as early as the season will permit, is the only certain method of procuring strong plants. The ground then being prepared in a shady well-sheltered situation, sow the seeds in shallow drills made with your hands, a foot asunder, and moderately thin in the drill. This indeed will employ much more ground than sowing them in beds, but the far better quality of the plants ought to outweigh that consideration; for, as most of the Pines come up with heavy tops and slender bodies, they are equally subject to be dashed to pieces by the winter's winds and rains, as sowed out of the ground by the frosts; but by this method of sowing, the earth can be drawn up to the plants with a small hoe from time to time, so as to secure them from all the severities of an ordinary season.

WHEN the buds begin to swell, next spring, raise the plants, cutting away a little from the extremity of their downright roots, and observe immediately to immerse them in water and earth some hours, as directed for the Scots Pine; then plant them in a sheltered shady border in drills cut out with the spade, at eighteen inches asunder, and seven or eight inches in the drill; water them at planting, and continue to do so moderately as the weather requires, till you see them in a free growing state; let them remain here two years, taking care to keep the ground clean and mellow in the surface, and pointing it over between the lines in autumn and spring.

THE four last mentioned kinds are somewhat tenderer for two or three years, but will afterwards bear the greatest severity of

our winters very well: I would therefore advise them to be sown in pots of fine rich loose earth, protected from the sun in summer, and all violent rains for the first year, but exposed to the sun during the winter and early spring months, under the protection of a frame without glasses, over which a mat may be thrown in severe weather, which must regularly be removed on its becoming temperate.

THE following spring, as the buds begin to swell, plant them out either within an old frame without glasses as formerly, or in a bed arched over with hoops, to admit of being covered with mats in bad weather. In these beds or frames, place them in lines, a foot asunder, and seven or eight inches in the lines; for five or six weeks after planting, let them be shaded from the mid-day sun, till well established, and in a free-growing state, after which they will require no attention but in stormy weather, and that the first year only from their removal, as, in the month of May the second year, the frames may be removed during the summer, and replaced in winter, though not covered, but in the event of a very severe storm.

FROM these quarters all the Pines may be removed the succeeding spring, to where they are intended to remain for good, in large plantations; but for smaller designs, and an immediate flow, they may be transplanted with safety, to the height of six or seven feet, and some of them larger, if removed every second year, and cultivated as here directed.

THE first mentioned seven kinds are inhabitants of the mountains, and delight in a hard rocky soil; the four following sorts

affect a deep and moist ground; and the New-England Pine, the most beautiful of all the tribe, loves a generous, deep, but not wet land, either naturally protected from violent storms, or under the covert of some plantation, otherways, as it advances in height, it loses its shining verdure, and becomes ragged and unsightly; but, interspersed with other trees, in a soil it loves, and at a proper distance from them, it grows in this climate luxuriantly, and will soon become a noble plant. It is the most patient of all the Pines in transplanting either young or old, as its roots naturally tend less downward, and produces abundance of spreading fibres. I have removed them at twelve feet high with the greatest success, though even these had not been cultivated as they ought for that purpose.

THE uses of the timber of Scots Pine are universally known. All the other kinds are closer, harder, and more lasting: But that of the New-England is much more beautiful and valuable than any of the sorts; it is of a darker colour, polishes very smooth, and has some resemblance of the Cedar.

CHAPTER XXVI.

T H E F I R T R E E.

The SPECIES are :

1. The Norway, or Spruce FIR TREE.
2. The black American Spruce FIR TREE.
3. The white American Spruce FIR TREE.
4. The Silver FIR TREE.
5. The Balm of Gilead FIR TREE.
6. The Hemlock Spruce FIR TREE.

THOUGH all the writers on gardening I have read make no material distinction in the sowing and future culture of the Fir from the Pine tree, yet, to my certain experience, a very different practice ought to be observed, particularly in some of the sorts, and that for the most obvious reasons. The Pine trees, the New-England only excepted, have downright roots with few fibres. These roots, at transplanting, must necessarily be reduced, which, if done after they become hard and woody, will destroy the greatest part of them. The roots of the Fir tree, on the contrary, spread near the surface, produce plenty of fibres, and do not grow near the size of the Pines in general the first year; from whence, I think, nature plainly points out to us the propriety of their remaining two years in the seminary with safety, and even advantage, which, to the Pines, from the circumstances mentioned, must prove destructive: I shall therefore describe the practice I have found most successful.

ABOUT the middle of March, sow the first, second, and third forts on beds, in a shady well-sheltered border, but much thinner than the Pines, as they are to remain two years.

THE three remaining forts do not rise by a fortnight at least so soon as these do; and as they make very little progress the first year, all art and industry should be used to promote their growth as much as possible, otherways many of them will be spew'd out of the ground, and the weaker plants entirely killed, if the following winter is severe. The best security, therefore, against all these common accidents being to sow early, let them be sown a fortnight sooner than the three preceding kinds, that is, by the beginning of March, the weather permitting. The ground for the seeds of these plants cannot be too rich a natural soil, or too finely prepared; it must also be loose and dry, which, if not of that quality originally, must be rendered so, by mixing it with sand, and elevating the beds six or seven inches above the alleys, to draw away the moisture.

THE Balm of Gilead, and Hemlock Spruce, are a little tenderer at first than the other forts, and will be much aided in their growth, if the beds are hoop'd over, and covered with mats for five or six weeks after the plants appear above ground, both in the middle of the day when the sun is warm, and at night when the air is cold or frosty; and, during that time, they will require a gentle watering every second evening when it does not rain.

AT sowing all the kinds of Firs, neglect not to clap over the beds with the back of a spade. This makes the surface smooth and level, prevents the seeds from being irregularly scattered in

drawing on the earth with the rake, and is in several other respects of advantage.

As these plants bring up the husk of the seed on their tops, the small birds, who are very fond of them, will destroy all or the greatest part, if they are not guarded against. Every gardener has his own way of doing this; but the best method I know, is to procure a parcel of old fishing nets, and spread them over the beds, supported by cuttings of copse-wood, or other prunings of trees, laid across stakes; and those nets are to be purchased at any sea-port town, for a mere trifle.

IN the autumn after sowing, go over your beds, and, with your fingers, carefully pick off all mossy hard-cruited particles, replacing them with an equal quantity of the richest best prepared soil; over which sift some chaff, or rather saw-dust that has lain some time and lost its firey quality. This will keep the plants warm, and prevent the ground from swelling with the frost, which, if it does, is apt to spew them up: It will likewise be necessary, in hard frost or violent rains, to throw a mat over the two last kinds, but regularly uncover them in mild weather.

IN the succeeding spring, and during the months of May and June, the plants will still be much invigorated by frequent waterings, and in autumn let the beds be treated as in the former; for though the seedlings are from this time till spring in a state of rest, and can, from no culture, be assisted in their growth till then, yet the musty parts contracted on the surface, will, by the winter rains, be washed into the earth, which it will contaminate, and communicate diseases to the plants, from which they will slowly recover. This circumstance, though in general little

attended to, is yet of the greatest importance to all feeding trees.

FROM the feed-bed, at two years old, in the spring when their buds begin to swell, these plants may be removed, and treated as has been directed for the Pines of one year's growth; but as all the kinds of them will transplant, at a considerable size, with the greatest success, when properly managed, I shall add a few lines on that subject, as a nursery of the fine kinds of Firs, eight or ten feet high, would be a very valuable acquisition, either to a private gentleman, or a nurseryman; and few men of fortune, I believe, would scruple bestowing a little extraordinary expence to cover a naked field, shelter a new planted garden, or adorn a new-built house with so goodly ornaments.

THESE plants, being now four years old, must be transplanted to another spot of good land, and placed in rows two and a half feet asunder and fourteen or sixteen inches distant in the row; water them at planting, and continue it once a week, five or six times, when it does not rain, keeping the ground clear of weeds in summer, and mellow by autumn and spring digging, in which situation they may remain three years.

FROM thence remove them again in spring at the usual time, shortening their straggling roots moderately, and plant them in rows four feet asunder and two feet in the row, to remain three years longer.

IF required larger, remove them again, and plant them at six feet asunder every way, to remain two, but not above three years more; by which time, in good land, and under the culture here directed, the three first mentioned kinds will be from fourteen

to sixteen, and the Silver Fir from ten to twelve feet high. Thus managed, these trees will rise with such abundant balls of earth about their roots, as will prevent their receiving the least injury at removal, nor will their future growth be in the smallest degree retarded by it. Particular directions for their transplantation would here be unnecessary, as the rules prescribed for large English Elm, and other deciduous trees, will answer for them, and most others, with respect to making the pits, and preparing the soil: Only it may be necessary to observe, that these, and other large Evergreens, in general require more frequent tho' gentler waterings, at and soon after transplanting, than the deciduous kinds;—to which I must add, that they ought not to have a single branch taken away at this time, but, the year before, should be reduced to their desired form, which is only pruning off their under-branches a foot or eighteen inches above ground; and, after having stood two years longer, they may be further reduced, by annually taking away a tire of branches, till their trunks are cleared the intended height, which I think (in woods for timber only excepted) ought never to be done above ten or twelve feet from the surface, their greatest beauty consisting in the graceful wave of their luxuriant branches from the top to near the bottom.

THE three first-mentioned Spruce Firs will grow tolerably well in dry, gravelly, or rocky ground, but much more affects that which is deep, where, though very coarse, and barren in the production of vegetables, they will grow freely.

THE Silver Fir, which I have ever thought the most magnificent tree of all the Evergreen tribe that our climate produces in full perfection, it is in vain to plant in hot, dry, or rocky

situations, where they commonly not only lose their top-shoots, but their under-branches soon become ragged, and, in place of that lively shining verdure peculiar to them in a soil they affect, they become of a pale languid hue; nay I have known trees of them above twenty years planted out in such soils, entirely destroyed by a hot dry summer. At the same time they are in other respects amongst the least delicate of any plants in the choice of their food, as the largest and most flourishing trees of them I have ever seen over this island, in general grow on sour, heavy, obstinate clay, of all different qualities and colours; and though for ten or twelve years they do not advance so fast as several of the other Firs and Pines, yet in twenty they will outgrow them all, and continue that advantage till they arrive to their greatest magnitude.

THESE trees, like the other more common sorts intended for timber only, should not, as they commonly are, be planted close together in thickets, but require a free circulation of air, otherwise their intermingled branches will destroy one another.

THE Balm of Gilead Fir, though it is described as growing to a large size in America, and is ranked in our catalogues with the tallest trees, yet I never saw them in this country of any great magnitude. It requires a generous deep-feeding soil, and sheltered situation, to which, from its singular beauty and elegance, it is justly intitled, and it claims our culture and care.

THE Hemlock Spruce Fir is a pretty plant, but delicate, and, to succeed well with us, must have a good soil, and warm situation: It will likewise be improved by tying its leading shoot, to a stake annually as it advances.

THOUGH I have directed the spring as the most proper season for planting Firs and Pines, which, for seedlings, and tender sorts, it is,—yet I must beg the Reader's further indulgence a little, in recommending what will be found the greatest improvement ever was practised on most of the Evergreen species, if generally attended to. The experiment is cheap and easy, and I want no more than the trial to have it approved by all the planters in Great Britain. It is no more, than, in place of the spring, to plant all the hardy kinds of them that have arrived to a foot in height and upwards in August, as soon as they have perfected their shoots. Many thousands, for a succession of years, have I planted at that season, without once having failed in my most sanguine expectations; but before that trial, in unkindly springs, and dry summers, I have lost great numbers, though all possible care had been taken; and I dare say, every extensive and ingenuous planter will acknowledge his case has been similar to mine. Though experience is the only unerring guide in operations of Gardening, yet there appears good natural reasons in favour of this season: The shoots of the plants are now ripened,—the ground is still warm, and pregnant with vegetation,—by working the earth, that vegetation is as it were artificially put in fresh and more vigorous motion,—rain at this time is seldom or never wanted;—all which circumstances conjoined, must prove highly favourable to new-planted trees. From this happy temperature of the earth and season, the trees strike root immediately as if in a hot-bed, and have nothing to oppose them till the frost comes on, before which they are sufficiently established, and strengthened to resist its power. To all these advantages, the expence of watering in the spring and summer months is saved, the winter rains having provided against the common danger of suffering from dry weather; and

lastly, this is, properly speaking, saving time, being a much more convenient season of the year than the spring for an extensive plantation, as then, from the great variety of operations to be done both in the gardens and fields, it is with difficulty they can all be duly attended to, and properly executed.

I NOW conclude this (I am afraid too tedious) discourse on Firs, with observing, that I have often been surpris'd the Scots Pine or Fir should be the only Evergreen indiscriminately used to any great extent in every soil and situation, thought incapable of producing the better kinds of Forest-trees. I acknowledge they are applied with great propriety in mountainous, rocky, chalky, sandy and gravelly places; but in hungry deep till, and clay, the Spruce Fir will much surpass them in growth. And this being a tree of much greater beauty, more valuable timber, and propagated with the same facility, Why do we not encourage it in ample plantations where the soil invites? as few plants would contribute more to our pleasure and profit, in many extensive, though now cold and gloomy, tracts of land. For Evergreen hedges in cold situations, to shelter gardens or other plantations, I know no plant on earth so proper as the Norway Spruce Fir: They are strong fences, grow amazingly fast, sheep or cattle do not annoy them, and, by clipping them in moist weather, when they begin to shoot in the spring, thin at top, and gradually thicker to the bottom, they will continue many years beautiful and verdant.

ALL the kinds of Firs are injured by lopping the old wood, and therefore ought to be pruned when the branches are young and tender. The best season for pruning them, is as early in autumn as the sap is at rest.

CHAPTER XXVII.

T H E C E D A R T R E E.

The SPECIES are :

1. The CEDAR of Libanus.
2. The red Virginian CEDAR.
3. The white-berried Virginian CEDAR.
4. The CEDAR of Bermudas.
5. The TREE, or Swedish Juniper.

THE cones of the Cedar of Libanus were formerly brought to Britain from the Levant; but the English trees have since produced abundance, and those of a better quality than the foreign. The late Mr Philip Miller, (whose memory I shall ever revere as my worthy friend, and most indulgent communicative master), who, from his naturally acute and ingenious observations, as well as having four of the finest plants in England under his direction, now growing in the Physic-garden of Chelsea, must have had access to know the nature of this tree better than most men,—justly observes, That they are more apt both to produce and ripen their cones in hard than mild winters; and of the English producing more and better seeds, I have certain demonstration, having, from his bounty, annually received a present of a considerable quantity of his cones for above twenty years, which never failed, though those from abroad, purchased at a high price, often did.

THESE noble and magnificent trees at Chelsea having been for several years under my almost daily view, I could not help con-

ceiving a high regard for this plant; and from the favourable opportunity I had of procuring its cones, (then not so plenty as now), I have raised many more of them than any man ever did in Scotland, and was the first who made them frequent in this part of the kingdom; from which circumstances, and making different experiments on their culture, I imagine I am able to direct it properly; nor indeed does that require any great penetration, as, after three or four years growth, they are very hardy.

THE way to get out the seeds, is by splitting the cones thro' the centre with a sharp piece of iron length-ways, and picking them out with your fingers, which may easily be done, after exposing them for some hours on the hearth before a warm fire. If the cones are two years old, they will emit their seeds more readily than those lately gathered, and the seeds be equally good.

THE best soil to raise these plants on, is rich old cow-pasture earth, which, if not naturally of a light quality, mix with a fourth or fifth part of sea-sand, or that taken from the sides of rivulets, well blended together for some months before it is used. I have mentioned this tree as very hardy at three or four years old, neither is it delicate from the beginning; but at the same time, it is absolutely necessary to give them abundant nourishment at first, in order to make fair and vigorous plants; for if they once become dwarfish, stunted, or lose their leading shoot, no art will afterwards restore them to a good figure: Therefore, the raising a number of plants, which any tolerable gardener may easily do, is not the only thing required; it is raising them of a healthful comely figure, and this cannot be done without some skill and attention. In order to effect it, observe the following rules:

HAVING prepared the foil as before mentioned, in a sheltered situation exposed only to the morning sun, place an old hot-bed frame thereon, and put in it the depth of seven or eight inches of this mould, in which sow the seeds the beginning of March, in shallow drills made with your finger, a foot or fourteen inches asunder. About a fortnight after sowing, the weather being dry, give them a very gentle sprinkling of water every second evening while it continues so. In about six weeks the plants will appear above ground, when, if the nights are frosty, which is often the case at this season, let a mat be thrown over them in the evening, and taken off next morning or forenoon, when the sun dispels the frost. After this time, the weather being mild and dry, the waterings must be regularly though gently continued; and now it will be safest to do it in the mornings till the frost is over, after which they will receive more benefit from it in the evenings.

THESE Cedars come up, and continue the first year, with remarkably tall and thin bodies, and with heavy tops, inclining to hang downwards: They have downright roots, with few fibres; and their roots penetrate less into the earth at first than any plant I know, in so much that I have seen great numbers of them laid flat, and beat entirely out of the ground with the rains, even in the summer months. To remedy this common misfortune, no method is equal to drawing up the mould about their stems, at sundry times as they advance in growth, which will not only preserve, but much invigorate the plants. This being attended to, they will require no further care till next season, but covering the frame with a mat in violent rains or severe frost, never omitting to uncover them in mild weather.

THE following spring, prepare another spot in the same manner as for the seed, but let the compost soil be twelve or fourteen inches deep, having cut off the points of their downright roots with a very sharp knife, which, being tender, would otherwise tear their fibres; immerse them in such palp as has been directed for the Pines and Firs, about half an hour, and plant them in beds eighteen inches by a foot asunder. If these beds are hooped across, and a mat thrown over them during the heat of the day, till their roots have struck, and their leaves begin to expand, it will much accelerate their growth; and during any severe storm the succeeding winter, this ought still to be repeated. It will likewise be necessary, the first summer, to draw a little earth to the stems of the plants, as mentioned for the seedlings, and to give them frequent gentle waterings during the growing season. By next spring the Cedars will be out of danger, the hoops and mats will be of no further use, and the plants require only common culture in all time coming.

THESE plants being now three years old, will be hardy enough for removal to a common nursery, in any ordinary soil or situation, where, about the beginning of April, they should be planted in lines two and a half feet asunder, and fourteen or sixteen inches distant in the line. At transplanting, continue to reduce the downright roots, and shorten the smaller fibres moderately, which will occasion their producing many more new roots, so as afterwards to rise with bulks of earth closely adhering to them;—it will be necessary to steep them in palp as formerly, to water them at planting, and to continue it every fourth or fifth evening for six weeks, the weather being dry. Here let them continue two years, when they may be removed to the places in which they are meant to remain; or, if desired larger for

future designs, they may again be transplanted to another quarter, and placed in rows five feet asunder and three feet in the row, to continue three years longer; and they will afterwards succeed equally well as the youngest plant, by seasonably repeated waterings.

THE above culture I recommend as best for private persons, who have them to remove only from their nursery to the adjoining fields; but for nurserymen, who often send them to a great distance, I would advise a parcel of them to be put in pots nine inches diameter, at three years old, where, after keeping them three years longer, they may be shaken out of these pots with their whole bulks of earth entire, and, being wrapt in a piece of mat, may with safety be transported to the remotest corners of the island, and will keep several months out of the ground without suffering any injury.

WHEN the plants begin to grow freely, the leading shoot always inclines to one side: To remedy this, you must thrust in a stake by the side of each plant, and tie the leader close to it, till you have got them to a considerable height, otherways their branches, which naturally expand a great way, will prevent their growing tall.

To whatever height you intend clearing the trunks of those Cedars, (which ought never to be great, as much of their beauty consists in being clothed with their noble verdant boughs to near the surface), let the branches be cut off when young and tender, as no tree I know resents lopping their old wood so much. Mr Miller, in the Gardener's Dictionary, mentions two

of his four trees having been so used, to admit the rays of the sun into a green-house, whereby they were so much checked, as, in above forty years growth, to be little more than half the size of the other two: And I myself have experienced a circumstance entirely similar; for, having planted two Cedars about twenty-four years since, then three feet high, which for sixteen years grew amazingly fast, and promised to be noble plants, an ignorant gardener unadvisedly cut off several of their oldest under-branches, since which they have advanced little or nothing in height, have lost their leading shoots, and become ragged and bushy.

THOUGH these trees, when young, require all the culture and shelter here directed to make them handsome and vigorous, yet, when five or six years old, no plant will better endure our most severe seasons, or grow in more forbidding, poor, and hungry soil, the largest trees of them now known in the world being in the coldest and most exposed places, covered great part of the year with snow; from whence, it cannot be doubted, but that they might become a great ornament, and valuable improvement, if generally planted in Great-Britain.

MANY pages have been wrote by learned men on the virtues of the wood of this tree, as, that it is proof against all putrefaction of animal bodies,—that it yields an oil famous for preserving books and writings,—that the great Sesostris King of Egypt built a vessel of Cedar, two hundred and eighty cubits long,—that in the temple of Apollo Utica, was found fresh timber near two thousand years old,—and that the statue of the Goddess in the Ephesian temple was of this material, as was most of the timber-work of that glorious structure, &c. &c.

THE red and white Virginian Cedars are easily propagated, by sowing their berries in the spring on beds of good mellow light soil, exposed only to the morning sun, and otherways sheltered by trees, hedges, or walls. These seeds will remain a year in the ground before they appear; during which time, the beds must be kept clean, and the surface sweet and loose: It will likewise be necessary, in extreme drought, to give them now and then a gentle sprinkling of water, which will keep the berries in vigour, as otherways I have known many of them perish, and the remainder come up weak, late, and irregular in the spring, after a very dry summer. As the plants make small progress the first year, they may remain two years in the seed-bed; they must, both the summer seasons, be frequently refreshed with water, and let the surface of the beds in autumn be dressed as has been directed for other seedlings.

THE spring following, remove them to another well-sheltered spot, of the same quality as for the seed, and plant them in lines, eighteen inches asunder, and nine or ten inches distant in the line; give them the same kind of culture formerly directed for Evergreens of that age, and let them remain two years.

FROM thence remove them to another quarter of the nursery, in any ordinary soil and situation, cutting away the extreme parts of their roots, with any of the crowded or ill-placed branches, and plant them in lines, three and a half feet asunder, and two feet in the line; let them be watered at planting, and frequently after it in dry weather, till past mid-summer, keeping the ground entirely clean; and here they ought to remain three years, when they will be of a proper size to be planted out for good.

I WOULD likewise advise nurferymen to pot fome of thefe plants, as directed for the Cedar of Libanus, to transport to any great diftance; they are alfo very proper to mix with myrtles, annual flowers, and other potted plants, to adorn the borders of the flower-garden or court.

THE Tree, or Swedifh Juniper, may be treated in all refpects as the red and white Cedars.

THE Bermudas Cedar is more delicate and flower of growth, when young, than the forts mentioned; it will therefore be an improvement to fow their berries in pots, to keep them in the fhade during the fummer months, and under a frame the following winter. In the fpring, when the feeds begin to vegetate, plunge the pots into a moderate hot-bed till the month of July, from whence they will advance more in one feafon, than two in their natural ftate, and make better plants.

THE fucceeding fpring, plant each of them in halfpenny pots, and again plunge them in a hot-bed till July, when, in mild weather, they may by degrees be inured to the open air, and next fpring put into penny pots, where they fhould remain two years, when they ought, once more, either to be fhifted into two-penny pots, or planted in a well-fheltered place of the nurfery for three years, by which time they will refift our fevereft winters very well. Though this procefs may to fome appear troublefome, it is only fo in a very trifling degree to a good gardener, who has proper conveniencies for executing his bufinefs; and the Bermudas Cedar, being a plant of great beauty and elegance, is well worth beftowing a little extraordinary pains in bringing it foon to perfection.

THE two Virginian kinds, and Swedish Juniper, will grow by cuttings, from which I have raised many handsome plants : This may either be done the beginning of April or end of August, the latter of which seasons I have found most successful. Being then provided with branches of one or two years growth, cut or tear them asunder at the joints, leaving a knob of the old wood at them, and clear off the leaves or small twigs as far as the cuttings are to be buried in the ground, which, if they will admit of it, may be about six inches ; plant them in lines eighteen inches distant, in a shady border of rich loose earth, and refresh them with water as the season may require. The following summer, let the ground between the earth be kept loose and mellow, by frequent stirring with a trowel ; water them every third or fourth evening in dry weather, and the second spring they will be sufficiently rooted to transplant to the quarters of the nursery, there to be treated as the seedlings.

THE Bermudas Cedar will likewise grow by cuttings, tho' not so freely in the open ground ; but ten or twelve of them put in a penny pot, and plunged into a hot-bed of tanners bark, will root liberally in one summer ; and if taken out of those pots the succeeding spring, put in separate ones of the same size, and again plunged in the hot-bed another summer, they will be larger plants than the seedlings at four years old, and may afterwards be treated as has been directed for them.

I HAVE often heard gardeners, of more than common ingenuity, boast they have raised abundance of good plants from cuttings of the Cedar of Libanus. This knowledge I have been dull or unlucky enough not yet to arrive at. I have tried every

method for this purpose I could devise, but never could procure nor ever saw a healthful shapely plant of them so raised: I can make them live, but in plants as well as animals something more than bare existence is surely wanted.

THERE are various other sorts of Cedars, but the rules here laid down for the culture of those mentioned are sufficient to lead to the whole, by only observing, that such seeds or plants as are brought from warm and temperate regions, require more aid and protection for some time, than others from more inhospitable climates.

IN the culture of all the Cedars, as well as that of Libanus, let it be an invariable rule, to prune and reduce them to their proper form when the branches are young, from whence their wounds will immediately heal; but which if neglected till old and woody, so great an effusion of sap will flow from them in hot weather, as to render the trees weak and unhealthy, if it does not destroy them.

THERE is perhaps no species of trees succeeds in a greater variety of soils, or in more opposite climates, than the Cedars do: They grow in all extremes, in the moist Barbadoes, the hot Bermudas, and the cold New-England; they thrive in the bogs of America, and the mountains of Asia. We have now many goodly thriving trees of them in Britain, and, from the almost incredible value of the wood, joined to the extraordinary beauty of the plants, we have every encouragement to make more extensive and general plantations of them.

CHAPTER XXVIII.

THE CYPRESS TREE.

The SPECIES are:

1. The common upright CYPRESS TREE.
2. The male-spreading CYPRESS TREE.
3. The Virginian or deciduous CYPRESS TREE.
4. The American CYPRESS TREE, commonly called the
WHITE CEDAR.

THE first, second, and third sorts, are propagated by sowing their seeds in sheltered shady borders of fine rich loose earth, about the middle of March, which in five or six weeks will appear above ground, when they must be regularly watered in the evenings of mild dry weather, every third or fourth night, and this continued, giving them little at a time, till the middle of August; and if in the beginning of winter some saw-dust is sifted over them, as directed for the Firs, it will much contribute to their preservation in the event of severe weather.

THE following spring, these plants, which, well managed, will be six or seven inches high, must be removed to the same kind of soil and situation they were in the seminary, their downright roots shortened, and planted in lines eighteen inches asunder and eight or nine inches in the line, where, as their roots naturally incline more to run deep than spread on the surface, and as they

are plants of free growth, they should remain no more than one year, when they ought to be upwards of a foot high.

THEREFORE, the succeeding spring, plant them in the common nursery, in lines three feet asunder and eighteen inches in the line; water them at planting, and repeat it once every week, the weather being dry, till they have struck root and begin to grow freely, when they will require no further trouble than keeping them clean, and pointing over the ground between the lines in autumn and spring.

HAVING stood in this nursery two years, they may be removed to the places where they are designed to remain, which may be fully more proper at this age than when older. These trees lose their greatest beauty when much pruned; but their tops being very heavy, and branches flexible, the winds take much impression on them, in so much that I have known quantities blown entirely out of the ground that were moved about six feet high two years before: It is therefore better to give them a firm establishment in the earth while the plants are young, and when there will not be the same necessity of taking away so many of their boughs as they would otherways require.

THE method mentioned is the easiest and quickest way to raise large quantities of these plants; but as it is no uncommon thing for a hard winter to destroy whole beds of them, at one, and even two years old, it becomes necessary in some measure to provide against such misfortunes, by sowing part of your seeds in pots.

For this purpose, being provided with soil of the quality formerly mentioned, sow them at the same time in your pots, and cover them about a quarter of an inch deep; place them in a sheltered situation, so as to receive only the morning sun till ten or eleven o'clock; keep them regularly though moderately watered, and in October remove the pots under a frame, so as they may be protected in severe weather.

The succeeding spring, shake them out of these pots, and plant them in others of fourteen or sixteen inches diameter, each of which will contain from sixteen to twenty plants: Let them be placed in the shade till in a free growing state, in winter removed under a frame, and afterwards treated as directed for the others of the same age.

The American Cypress is somewhat tenderer and slower of growth than the fore-mentioned sorts, and they continue a year in the ground before they appear; I would therefore advise all these to be sown in pots, and treated the first season as the other sorts: But the succeeding spring, when the seeds begin to vegetate, having cleared the surface of mouldy particles, and replaced that by sifting on fresh earth in proportion, plunge the pots into a moderate hot-bed till June, and afterwards gradually inure them to the open air, placing them so as to be protected during the hardships of winter.

The following spring, put sixteen or twenty of these in other pots, in the same manner as the former kinds; only plunge them again in a hot-bed for about two months, and protect them during the succeeding winter as before. In these pots they may

remain another year, without any more trouble than keeping them clean, and refreshing them with frequent waterings; after which they may be removed to the nursery, and planted in lines three feet asunder and eighteen inches in the line, where they should remain three years, and then be transplanted to the places where they are meant to continue for good.

THESE trees require a particular address in pruning them; for if they are trim'd close up to any considerable height, their bodies will be so slender as to bear no proportion to their weighty tops: The best method therefore of ordering them, so as both to preserve their beauty and accelerate their growth, is, to cut away from the top to near the bottom all ill-placed forked branches, (of which this plant produces many), reserving only, at proper distances, such as are vigorous, and radiate directly from the body. This is an easy operation, and will require very little repetition, the tree not being disposed to put out young branches from the old stem. By pruning them judiciously in this manner, their thick branchy trunks will counterpoise their heavy heads, and render them able to resist the winds.

THE first and second sorts affect a dry, sandy, or gravelly soil; the third, in Virginia, is generally found in moist swampy places, and sometimes in constant standing water; but the American sort I have always found succeed best in a good deep-feeding earth, neither too wet nor too dry.

THE Cypress has not only a fine effect when mix'd with (tho' not crowded near) other trees, but is of most plants the properest to place round or near buildings, where their upright pyramidal

growth has a very picturesque appearance without obstructing the view, and their dark-green leaves make a most agreeable contrast with the white of the building. The Italian villas owe no small part of their beauty to the proper distribution of many Cypress trees, adjoining to the temples and other ornamental works of architecture in their gardens, as we see by the landscapes of those villas.

LIKE that of the Cedar, many are the encomiums bestowed, both by antient and modern writers, on the virtues of this tree, and the excellency of its wood, a few of which only shall here be mentioned. It is recommended for the improvement of the air, and a specific for the lungs, as sending forth great quantities of aromatic and balsamic emissions; for which reason, the antient physicians of the Eastern countries used to send their patients troubled with weak lungs to the island of Candia, at that time abounding with these trees, where, from the effects of the air alone, few failed of a perfect cure. The vast armadas which Alexander the Great set out from Babylon, consisted only of Cypress, as did the doors of St Peter's church at Rome, which lasted from Constantine the Great to Pope Eugenius the IVth's time, eleven hundred years, and being then changed for gates of brass, were found entirely fresh. It was in coffins of Cypress the Athenians used to bury their heroes, and the Mummy chests brought from Egypt are mostly of this material. That lasting bridge, built by Semiramis over the Euphrates was of it, and Plato chose to write his laws on it, in preference to brass itself, for its diuturnity. In short, it is by all writers allowed to be a most valuable timber, is proof against all putrefaction, and the very chips or cones of it, being burnt, extinguish moths, and expel gnats and flies.

CHAPTER XXIX.

THE *ARBOR VITÆ*, OR, TREE OF LIFE.

The SPECIES are:

1. The common *ARBOR VITÆ*.
2. The Chinese *ARBOR VITÆ*.
3. The *ARBOR VITÆ*, with strip'd leaves.

THE first of these may be propagated either by seeds, layers, or cuttings; but as the seeds lye a year in the ground before they appear, which makes that culture tedious, and as the layers and cuttings make very good plants, that method in general is rather to be chosen.

If you increase them by layers, let that operation be performed in the month of March, watering them, more or less as the weather requires, during the spring and summer months, which will much assist their rooting abundantly, and by the following spring they will be fit to take off.

If they are to be raised from cuttings, the culture directed for the red and white Virginian Cedars will best agree with them, and therefore need not to be repeated.

THE plants having got sufficient roots, transplant them to a border screen'd from the mid-day sun, in lines two and a half

feet afunder and one foot in the line ; water them at planting, and continue to do fo once in five or fix days during the fpring and fummer months, the weather being dry ; keep the ground clean and loofe about them, and point it over in autumn and fpring ; in which fituation let them remain two years.

FROM thence remove them to any ordinary quarter of the nurfery ; cut away a little of the extremities of their roots, with fuch as are ill-placed and crofs each other ; plant them in lines three and a half feet afunder and two feet diftant in the line, ordering them as in their former quarters, and let them continue here three years, when they will be of proper fize to tranfplant where they are to remain : But if large plants are wanted at a future period, to make an immediate appearance in fingle trees, in groves, or in the wildernefs, they may again be removed to another nurfery, and planted about five feet afunder every way, to ftand two, three, or four years longer, this tree being as patient of removal when large as any Evergreen, which I fpeak from experience, having tranfplanted them at ten and twelve feet high with all the fuccefs that could be defired.

THE Chinefe *Arbor Vite*, though afterwards a hardy plant, is, when young, a little more delicate and flower of growth than the other, neither does it root well by layers in lefs than two years, or take freely by cuttings in the open ground ; and therefore it may be advifable to fow fome of their feeds, in doing of which, the culture directed for the American Cyprefs, is in all refpects the beft I can prefcribe for them.

It may likeways be proper to raife part of them by layers, which, having flood two years, will be rooted. In the begin-

ning of April, let them be planted in penny pots, and then, to forward their growth, plunge them into a moderate hot-bed of tanners bark till the beginning of August; after which, inure them by degrees to the open air, and place them under some protection during the succeeding winter. The following spring, take as much earth out of the pots as can be done without injuring the roots, replacing it with fresh rich mould; and in these pots let them remain a second year, watering them in dry weather every third or fourth day, when they may be taken out with bulks of earth closely adhering to them, and afterwards treated, in respect of foil, as the common kind; but, to preserve their beautiful verdure unfulled in a severe winter, I would advise them to be planted (though not near, yet) under the protection of other trees.

THIS tree may also be propagated by cuttings, putting ten or twelve of them in a penny-pot, plunging them into the barked as for the layers, and afterwards giving them the same management.

THE sort with strip'd leaves may be increased by layers or cuttings as the common kind, but must be planted on thin dry land, to preserve their variegation strong.

FOR the pruning these trees, I can prescribe no better method than has already been mentioned for the Cyprifs, to which they have a near resemblance, and with which they will perfectly agree.

THE common kind will grow in very indifferent ground, but most affects a deep found earth, where they will soon make great

progreſs; and though in winter their leaves are of a dull tany colour, yet, in the ſpring and ſummer months, they are a very chearful green, and the plants have a moſt agreeable negligent appearance.

THE great value of the wood for bowls, boxes, cups, mortars, peſtles, and various works of the turner and cabinet-maker, are generally known, and being a tree that bears our ſevereſt winters, and ſoon arrives to a middling ſtature, it juſtly claims a place, and the more frequent uſe of it would become an improvement in our extenſive plantations.

THE Chineſe fort, from the obſervations I have made, will not, I believe, grow to ſo great a magnitude in this climate as the former; but being amongſt the moſt beautiful of all the Evergreens, it well deſerves encouragement in the garden and wilderneſs.

CHAPTER XXX.

THE *ILEX*, OR EVERGREEN OAK TREE.

The SPECIES are:

1. The Olive-leav'd EVERGREEN OAK.
2. The narrow-leav'd EVERGREEN OAK, with ferrated leaves.
3. The Holly-leav'd EVERGREEN OAK.
4. The round smooth-leav'd EVERGREEN OAK.

THERE are several other varieties of this plant; but these being only feminal, are not worthy of being enumerated.

I KNOW no tree more difficult to transplant than the *Ilex*, as the roots of it, when not interrupted, run as straight down into the earth as a carrot, and with as few fibres; so that for hedges, or large plantations, I would advise their acorns to be put in the places where they are designed to remain.

IF for hedges, let a border be well trenched, levelled, and raked the beginning of March, and make a shallow drill with a small hoe, placing the acorns in it at the distance of three or four inches, and covering them about two inches deep, keeping the surface mellow and clear of weeds. These plants make very little progress the first season, and will not then bear being cut under ground, but will make large amends ever after, by luxu-

riant growths in any tolerable soil they affect. After standing two years, carefully draw out, so as not to injure what remains, the plants that are too thick, leaving them from a foot to fifteen or sixteen inches distant. In the following spring, the hedges will require some correction: At this time go over them, first pruning off any spreading or cross-hanging branches near their tops, and afterwards let their sides be clip'd to the bottom with shears; but this must be cautiously done at first, and not too close to their bodies; after which, by digging the borders for a few years, and shearing the plants annually, observing always to keep them light and thin in the tops, there is no plant I know will so soon make warm and lofty hedges, to the height of forty or fifty feet, or so much improve a cold climate, and promote the growth of other trees.

If you intend large plantations of these trees, either by themselves, or mix'd with others, cultivate the ground well by labour, and put four or five acorns in patches together, at such distances as you intend the plants should stand. The second April after, draw all but the most thriving one; and the third, you may begin pruning off any ill-placed branches, and part of the others where too thick.

THE plants of two years old you have drawn, having shortened their roots, and plunged them in palp for some hours, may be committed to a shady border in the nursery, and laid in lines two feet asunder, where, in a kindly season, and by giving them frequent gentle waterings, some of them will succeed, and in this situation they may remain three years.

I HAVE been not a little diverted, to hear writers on this plant fagely advising to raife their seedlings with bulks of earth. It will indeed require much care to do a thing nature has in a great measure denied, as bulks of earth cannot possibly adhere to plants destitute of fibres, which those, when young, without the assistance of art, almost totally are ; to culture, therefore, we must have recourse to raife them with bulks.

FOR smaller plantations, and to be provided in plants that will remove with safety, sow these acorns in drills two and a half feet asunder and three or four inches in the drill, on good generous soil ; let their growth here be promoted all you can by seasonable watering, and keeping the ground clean, sweet, and mellow : The second spring after, with a spade, clear away the earth from one side of the line of plants, about five inches deep, and, with a sharp knife, at that depth cut the roots across, at the same time clap your left hand on the plants, to prevent their being in the least disturbed, and immediately replace the earth that was thrown up, pressing it gently down with your hands. This practice ought to be repeated for three or four years, making them annually thinner as they increase in size ; and, from its being well performed, I have had great success in removing numbers of those trees.

YOU may likewise raise the Ilex, by sowing their acorns in pots, where, after remaining three or four years, they may be shaken out with the whole bulk of earth about them, and planted with absolute safety where they are to remain : But this is an expensive and tedious method, as such will make little progress compared with those in the open ground ; besides, the roots of

these plants, raised from seeds in pots, and that must remain so long in them, being all compressed in one cluster, from which they cannot afterwards be disentangled, will never produce such luxuriant trees as these that from time to time have had their roots properly pruned, and room to extend themselves in the open ground. Notwithstanding, from what I have said of this practice with the Ilex, I would not by any means be understood to reflect on potting many young and tender plants, whose roots are not so obstinate, but may be increased, and, by proper pruning, disposed in pots as well as otherways; so that in many cases, for particular trees, it is of much importance in their culture.

THESE trees, being established in the ground, are (unlike many of the Evergreen tribes) very patient of cutting, so that, from three or four years old, they ought to be regularly pruned, and brought to a handsome form, which they will easily receive. I had lately in my property five of the largest Evergreen Oaks in Scotland; which standing near a south wall, when about twenty years old, began to darken it, and tho' I would sooner have forfeited the advantage of twenty times as much walling, than hurt these trees, I made the experiment of pruning one of them that I had on purpose let remain almost in the state of nature. This experiment I tried with great severity, by cutting away all the large branches from the trunk, and several of the principal arms where the tree divided; from whence I could discover no material check in its future growth, but the wounds healed suddenly.

AFTER the plants drawn from the lines that were cut below ground have stood three or four years in the nursery, and the

untransplanted remainder as long, remove them to their proper stations for good, as, considering their being so very hard in the root, and unwilling to push out fresh ones, any further process in the nursery way will be unnecessary. Let them be plentifully watered at removal, and that regularly attended to once a week in dry weather, during the warm summer months.

THOUGH the attentive culture of this tree in such a climate as ours, when disposed in proper situations, must be productive of many advantages, yet I would not advise their being planted near the house or gardens, as in April and May they cast their old leaves, which occasions a prodigious litter, and are in that cheerless season ragged and gloomy.

THE land they chiefly affect, from the relation of reputable writers, is a hazelly loam. This is a species of earth few plants will disagree with, but is very far from being universal; and luckily the Ilex will succeed in a variety of less desirable soils: Therefore I must affirm, from experience, that such as are meant for transplantation, though they ought to be cultivated in a generous mould, which will soonest procure them sufficient roots to bear removal, yet these roots being procured, (which will not fail if the directions here given are attended to), they will afterwards grow freely in very ordinary land, in that particularly which is deep, though very coarse and stubborn (but not wet) most vigorously. They are indeed a little delicate at first, but soon become amongst the hardiest trees; and these I have mentioned lately in my possession, stand on a lean hungry gravel, that had been long and constantly employed in raising nursery crops, a circumstance unfavourable to their vigorous growth.

If the land you intend for large plantations, or to inclose with hedges of them, is poor or stiff, I would advise, after digging or trenching it well according to its quality, to lay some rich mould on the poor, and some loose on the stiff surface of the borders for hedges, or other spots allotted for the timber-trees, the beginning of winter, and point it slightly in before sowing in April.

THE wood of the Evergreen Oak makes excellent stocks for tools, mallet-heads, axle-trees, wedges, palifadoes,—and supplies the greatest part of Spain, and the south of France, with the best and most lasting charcoal yet known.

C H A P T E R XXXI.

T H E C O R K T R E E.

The SPECIES are :

1. The broad-leaved Evergreen CORK TREE.
2. The narrow-leav'd CORK TREE, with smooth edges.

THE best English writer on this subject, has directed these plants to be propagated in all respects like the Evergreen Oak. About London indeed, which, from a variety of concurring circumstances, is a very different climate from any other part of Great-Britain, that practice may answer; but in the remote counties of England, and in Scotland, to my certain experience, it will not succeed, so as soon, if ever, to make thriving plants; for they make very little progress the first summer, and the following winter generally sweeps them out of the ground, or otherways destroys them: But in the manner I shall here direct, I have raised many vigorous plants of them.

TRY the quality of your acorns as has been directed for the common Oak, that, from planting no unfound seed, there may be no blanks in the crop. In the beginning of March, prepare a shallow box, or boxes, according to the number of plants you intend to raise; let the bottom of the boxes be bored with holes half an inch diameter, at four or five inches asunder, and covered with oyster-shells or broken tiles; put five inches deep of

fine rich light mould in them, on which place your acorns about four inches afunder, and cover them with two inches more of the fame kind of mould; place thefe boxes on a moderate hot-bed, of which tanners bark is the beft; and in ten or twelve days after, when you find the earth beginning to dry, give them a very gentle fprinkling of water, which repeat every fourth or fifth day. In a month after fowing, the plants will begin to appear, when the quantity of water muft be increafed, how much, or how frequently, the condition of the earth will beft direct you. In this hot-bed the boxes may remain till the beginning of July, from whence they may be taken, and placed in a fhady fheltered fituation during the remaining fummer months; but obferve, before removing them from the hot-bed, that they be gradually inured to bear the open air, by taking off the glaffes in mild or moift weather, when the fun is not fcorching, and late in the evenings, or all night, when the feafon is quite temperate and ferene. On the approach of winter, let the furface of the boxes be cleared of all mufty particles with your fingers, and replaced with a greater proportion of the fineft rich mould; after which place them under frames till the fucceeding fpring, and only cover them with the glaffes in violent rains or hard frofts.

FROM the middle of April to the beginning of May, as the weather fooner or later becomes favourable, let thefe boxes be removed to a well-fheltered, but fhady place in the nurfery, and placed on ftones or logs of wood fome inches above the furface of the ground, which not being obferved, is apt to occafion fuch a ftagnation and corruption in the mould, as frequently to deftroy the whole plants, or at beft to ftunt them beyond recovery. During the fummer months, let them be regularly refreshed with

water as the season requires; and in the autumn, (though it may often not be necessary), I should chuse to make sure work, by removing them under the protection of a frame, which may be covered in the event of a very rigid winter.

IN the beginning of April following, the plants being now two years old, must be taken out of the boxes, when, from the interruption the straight roots have met with in not running downwards, by carefully undermining them with a trowel, they may generally be raised with earth adhering to them. This being done without wounding the smallest fibre, put them in penny pots filled with rich loose mould; plunge the pots into a moderate hot-bed only for six weeks or two months, till they have pushed out fresh fibres, and are in a brisk growing state. When this is the case, harden them gradually, and remove the pots to a north border during the remaining part of the summer. From this time these plants will require no more than common culture, and, having stood two years in the pots, may be shaken out of them with their whole bulks, and either planted where designed to remain for good, or in the nursery two or three years more, for future designs, from whence they will remove with ease and safety.

THOUGH this process, to a lazy gardener, may seem troublesome, yet it is not very expensive; and I am certain I have not directed the least superfluous labour for these plants in this country.

THE Cork Tree, in the places of its native growth, is described by many travellers to grow in bleak mountainous situations,

and poor, rocky, sterile soils, with their roots running above the surface; but these soils and situations must have some happy animating qualities belonging to them, unfelt in our northern regions, where we must make them much more familiar to us than they yet are, before we pretend to accommodate them with such lodgings; and therefore, to have them grow freely, and to any considerable magnitude, we must give them a good solid generous soil, and a situation defended, either by nature or art, from the cold easterly and northerly winds.

THE uses of cork, which is the bark of the tree, need no explanation. That of its body is hard, lasting, and beautiful, and, like the Ilex, makes excellent charcoal.

Z

CHAPTER XXXII.

T H E H O L L Y T R E E.

The SPECIES are :

1. The common HOLLY, with red berries.
2. The smooth shining-leav'd HOLLY, with red berries.
3. The yellow-berried green HOLLY.
4. The white-berried green HOLLY.
5. The green Hedge-hog HOLLY.
6. The yellow-blotch'd Hedge-hog HOLLY.
7. The gold-edg'd Hedge-hog HOLLY.
8. The silver-edg'd Hedge-hog HOLLY.
9. The yellow-blotch'd HOLLY.
10. The white-blotch'd HOLLY.
11. Broderick's HOLLY.
12. Eales's HOLLY.
13. Sir Thomas Franklin's HOLLY.
14. Hertfordshire white HOLLY.
15. Bridgman's HOLLY.
16. Longstaff's best HOLLY.
17. Bradley's best HOLLY.
18. Wife's best HOLLY.
19. The British HOLLY.
20. Bagshot HOLLY.
21. Glory of the East HOLLY.
22. Glory of the West HOLLY.

23. Aslet's HOLLY.
24. The Union HOLLY.
25. Fine Phyllis HOLLY.
26. Painted Lady HOLLY.
27. Fuller's cream HOLLY.
28. Milk-maid HOLLY.
29. Capel's motled HOLLY.
30. Partridge's HOLLY.
31. Mafon's copper-colour'd HOLLY.
32. Box-leav'd HOLLY.
33. Whitmell's HOLLY.

HOLLY BERRIES are usually gathered at the same time with Haws, early in autumn, soon after turning red, but they are by no means ripe at this time, and should hang on the trees till December at soonest; or, were it not for the birds, who greedily devour them, I would not advise pulling them till February or March, during which time they will improve in maturity.

THE common method of raising these plants, is by sowing their berries whole, either as soon as they come from the trees, or the following spring; but this is a very ill practice.

THESE berries contain four seeds in each, from whence, by sowing them whole, if the seeds were good, there must necessarily be four plants interwoven in a cluster together; and it is great odds, if, in dividing them when raised, two or three of the four are not torn asunder, and the remainder much injured.

THEREFORE, to prevent the ill consequences arising from that practice, as soon as your berries are gathered, throw them into a tub with water, and rub them between your hands till you have divested the seeds of their thick glutinous covering, which is soon executed with little trouble. This being done, the good seeds will sink to the bottom, when you must pour off the water, with all the pulpy substance that floats, and spread the seeds on a cloth in a dry airy place, rubbing them between your hands often, and giving them a fresh cloth daily till the seeds are separated and quite dry. If this is done in autumn or winter, mix the seeds with sand, and keep them from wet till spring; but if they have not been gathered till spring, let them be immediately sown.

ANY time the weather is most seasonable in March or April, will be a good time for sowing them, which must be done as regularly as possible, and much thinner than is usually practised, on a spot of well-prepared rich loose mould, in beds three and a half feet broad, with alleys of eighteen inches between them, covered three quarters of an inch thick; and as these seeds will not vegetate till the succeeding spring, let the ground be kept clean, sweet and mellow, till autumn, when the surface of the beds must be loosened with a short-teeth'd rake, and a little fine fresh mould thrown over them, which may again be raked off in the spring, before the seeds are in any sensible motion.

THE following year, in the beginning of April, draw out a considerable number of your Hollies, then one year old, and leave the remainder so thin as they may receive all the influences of air, sun, and rain; let these drawn be planted in a shady border,

in lines eighteen inches afunder and five or fix inches in the line, giving them frequent moderate waterings, and pointing over the ground in autumn and fpring. The reason of allowing fo large a fpace to thefe plants, which are, and will be for two years very fmall, is to give room to dig the ground between the lines, as the beft means both to promote the growth of the plants, and to encourage the fide-roots to fpread, fo as to rife with bulks. In this fituation they may remain three years.

THE plants remaining in the feed-bed, being two years old, ought to be removed; and having cautiously fhortened their downright, and fmoothed the extremities of the fpreading roots, plant, and otherways cultivate them in the fame manner as the former, only in this nursery they ought to continue but two years.

IN tolerable foil, and a protected fituation, thefe Hollies may be planted for hedges where defigned to remain, cutting them over by the ground, and watering them; but in poor unfheltered land, they will fucceed much better, by giving them more ftrength from age and further culture.

THEREFORE, to do this effectually, remove thefe plants to another quarter of well-prepared frefh earth, and plant them in lines three feet afunder and eighteen inches in the line. At this time let them have a plentiful watering, keeping the ground as formerly, and here let them continue untouched for two years. The third fpring, throw out a trench of earth from one fide of the plants, and with a fpade made very fharp, cut clean over all the downright roots at ten inches or a foot below the furface, and

likeways shorten all straggling ones that extend far from the sides ; then replace the earth, and dig it well about them. Having stood here another season, cut them over by the ground, and the following, which will be the fourth year, they may be removed where you intend, without the loss of one in a thousand.

The beginning of April, having prepared the borders where you design planting your hedges, let the Hollies be carefully raised with bulks of earth about their roots, which will naturally adhere to them if the culture directed has been observed. There will be no occasion for much pruning of the roots at this time, only with a sharp knife cut off and smooth any that have been broken or bruised with the spade in raising them ; keep them as short time as may be out of the ground, and plant them at eighteen inches distance, the same depth they formerly stood ; give them a plentiful watering, which ought to be repeated once in ten or twelve days, for three or four times, if the weather is dry. The plants having been cut over the year before, will have made shoots from a foot to eighteen inches high ; these you may reduce to an equal height, about six or eight inches above the former year's cutting ; and thus you have a hedge formed, that requires no further trouble than keeping the roots of the plants clean for a few years, and annually clipping them, which, in an ordinary soil, will, in ten years, defeat the attempts of the strongest bull to injure it.

I HAVE likewise planted the Holly and Thorn mix'd in hedges with most desirable success, every third or fourth plant being a Holly. The Thorns, for four or five years, will advance

fastest, after which the Hollies will annually gain ground, and at last totally extirpate the others, whence, by planting both, you will soonest have an appearance, and afterwards, by an agreeable metamorphosis, have an entire Holly hedge.

HAVING mentioned the Holly only for hedges, of which it makes the strongest, warmest, most lasting, and beautiful, for outward fences, of any plant this climate produces; yet I am far from meaning to confine it to that formal purpose alone, as I know none will more adorn, or be otherways more useful, not only in the garden and wilderness, but the more extended woods and forests. For these purposes, at the last removal directed for the hedge plants, let such a proportion as your designs require be selected from them, of the tallest and cleanest shoots, of which cut away all but the leading one, and plant them in another nursery of fresh earth, in lines five feet asunder and two and a half in the line; cultivate the ground about them by digging and dressing it, and annually prune the trees to their proper form; in which situation they may continue seven or eight years, raising part of them from time to time as your plantations require.

THE general neglect of cultivating this beautiful plant, both in the hedges and woods, is most amazing, when its many uses and good qualities are considered; and I can account for this disregard in no way but one, which is, not attending to its proper culture, from whence many of them usually fail at planting out, and what remains makes little progress for a long time. Their common treatment is removing them from the seed-bed (where they are almost universally too thick) at two, three, and

sometimes four years old, and dibbling them, (still immoderately thick), where they often continue four, five, or six years, if not demanded while they are worth the having. By this means their roots are bad, their bodies tall and slender, and their tops heavy, so that the gentlest breeze of wind will shake them to their foundation, from which every fibre they push out is immediately destroyed, and the plants must of course perish: But by following the practice here directed, the winds make no impression on them, nor is there in nature a hardier tree, one that roots better, is more patient of cutting both in the root and body, or that may be planted with more undoubted success, from one to twelve or fifteen feet high.

THE Holly tree, in a soil it affects, will grow upwards of fifty feet high, and even to a considerable size, on as great a variety of soils as any plant I know. It refuses not the poorest, hot, sandy, gravelly, and rocky ground, nor the coldest spoutty clay and till; and its beautiful shining leaves, almost covered with rich scarlet fruit, which the severest winter does not discolour, makes it in a particular manner, at that season, a most grateful and desirable sight.

THO' I have justly reported this as one of the hardiest plants, when it has been properly cultivated, and once got good footing; yet where hedges of it are planted on extremely poor and hungry land, particularly what is stiff, if a small mixture of rich sandy or gravelly soil (but by no means dung) were mixed in the borders, it would much promote their rooting at first, which being once put in a free-growing state, they will afterwards require no further assistance from art.

I MUST not here omit taking notice of a very wrong, though prevailing custom, which is, clipping these hedges the beginning of winter. This has various ill effects, as it not only robs them of their beauty and verdure in that gloomy season, by cutting away the fresh tender shoots, and mangling the leaves, but likewise exposes the naked hearts of the plants to all the rigour of the storms, unprotected as they are of their natural cloathing. Let this, therefore, never be performed later in the season than July, after which the young shoots will again shelter the inward parts before the severe weather comes on.

ANY description I am capable of giving in praise of Holly hedges, will fall infinitely short of the impressions every man of taste must conceive, who shall see old fences of them that have been properly trained. Sorry I am, I cannot gratify the public in many examples of this kind; but happily there is one in Scotland that will justify the highest encomiums of the ablest writer on that subject, which is to be seen at Tynningham, in the county of East-Lothian, the seat of the Right Honourable the Earl of Hadinton, and to a view of them I appeal, as the clearest evidence of the incomparable beauty, lasting strength, and magnificence of Holly hedges: But how much nobler an appearance this plant will make standing unconstrained by shears, detached and at freedom in the woods, loaded as they annually are with berries, (which clipping prevents), is easy to imagine. These hedges were planted by the late Earl of Hadinton, the greatest, most knowing, and most successful planter of his time, and who, to all appearance, from a very poor and unpromising soil, exposed to, and close upon the great German ocean, has raised very extensive and flourishing plantations of the most valuable Forest-trees. What I have said on the

hedges at Tynningham will not, I hope, be deemed a digression from my subject; tho' probably it may, that I would here humbly recommend to the present Earl, the proprietor, that, as an example to this and future ages, he would please allow, at least some part of these hedges (which at present I think are not lofty in proportion to their thickness and strength) to run up to twenty-five or thirty feet in height; cut thinner and thinner as they approach the top, which in a few years would make them the most glorious sight of the kind that can be conceived, and this may be done without in the smallest degree impairing their strength.

THE great variety of variegated Hollies for the wilderness or Evergreen garden, are likewise all highly worthy our attention, not clip'd or reduced to any exact form, but, after having been properly pruned, to increase their stature, growing in their natural luxuriancy of branches and fruit. The variegation of trees in general, no doubt proceeds from some weakness or disease; they are commonly dwarfish, and when planted in strong land, lose much of their beauty, and often turn plain: But in the Holly it is quite otherways; they grow to a large size, and the most generous soil does not in the least diminish the mixture of their colours, but makes them more brilliant; so that the various kinds of them, disposed with good taste, afford, at all seasons of the year, a gay and refreshing entertainment.

THERE have been many directions given, with much solemnity and assurance of success, for variegating Hollies from their seeds, all which that I ever read or heard of, with many experiments of my own, I have tried ineffectually; from whence I can safely conclude, they are all quackish impositions, and that, to make

good plants, they can only be increased by budding or grafting them on the plain green kind, in both which ways they will readily succeed; but their variegation by other means, is a sport in nature no art has as yet been able to imitate.

I HAVE raised the different kinds of Hollies from layers, and even from cuttings: But I recommend neither; they are not only extremely tedious methods, but I never was able to make good plants from them.

THE timber of the Holly is exceeding hard, and of all strong wood the whitest: It is useful for many lasting purposes; the mill-wright, turner, and engraver, prefer it to any other; it makes the best handles and stocks for tools, flails, bowls, bolts for doors, nay they even make hinges of it instead of iron, and it is so heavy, that, like iron, it sinks in water.

C H A P T E R XXXIII.

T H E Y E W T R E E.

The SPECIES are :

1. The common YEW TREE.
2. The YEW TREE, with a broader and more shining leaf.
3. The YEW TREE, with strip'd leaves..

THE first and second sorts are indiscriminately propagated together : They may be raised by sowing their berries in beds three and a half feet broad, with alleys eighteen inches between them, on any spot of well-prepared fresh ground. If this is done the beginning of winter, as soon as the berries are ripe, having first divested them of the pulp in which they are inclosed, some of them will appear the following spring ; but as these will be much the smaller part, to have a plentiful and regular crop all appear at the same time, I rather advise the seeds to be mixed with earth till spring, and managed in the seed-bed for two years, and three more in the nursery, as has been directed for the Holly.

THE Yew may likewise be propagated by cuttings of one or two years growth, planted in a shady border the beginning of April or end of August ; let them be laid in lines eighteen inches asunder, covered five inches deep, and watered at planting ; rub off the leaves as far as the cuttings are buried, and, in two years, they

will be well rooted, and fit for removal. The branches being torn afunder at the joints, are better than plain cuttings.

THE plants from feeds being five, and the cuttings two years old, (though still small), remove them to another nursery, shortening their downright roots, and lay them in lines two feet afunder and nine or ten inches in the line, to remain three years.

FROM thence remove them again, and plant them in lines four feet afunder and two feet in the line, giving them a plentiful watering, which should be repeated, if the weather is dry, once a week, three or four times; and here they may continue, if the land is rich, four, but if poor, five or six years, during which time they may be pruned, so as to elevate them for trees, or clip'd into the form of hedges, suitable to your intentions. Let digging between these plants, at least in the spring, never be omitted, as nothing will so much contribute, not only to increase their growth, but multiply their roots.

IF desired larger, you may once more remove them to another quarter, and plant them at eight feet distance by six, continuing the same culture as before; from whence you may remove them, any time required, within seven or eight years.

No plant is more patient of being transplanted old than the Yew; it naturally produces great quantities of small roots, to which the earth adheres so closely, that, with plentiful waterings, you may at once form compleat hedges of seven or eight feet high, that will not in the smallest manner be retarded in their growth by removal, but have the same freshness and verdure the first season they ever had,

THERE is not in nature a hardy plant so tough and obedient to the shears as this, or that makes so close and warm a defence against the cold piercing winds, (the Holly only excepted, which making a great deal of litter in the spring, is not so proper for the inward divisions of the garden), and therefore none comparable for making small inclosures in the kitchen ground or nursery, to protect and forward vegetable crops, or young and delicate trees and shrubs. Of what mighty advantage such fences would be to men of fortune beginning their improvements, may easily be imagined: What pity then is it, and how blameable are nurserymen whose circumstances will admit, that they do not afford these aids, either for the public good, or their own private interest!

WITH all these advantages, I must acknowledge the Yew a very uncheerful plant; and the old practice of planting great numbers of them, cut in no less various than ridiculous figures, in the courts and fronts of houses, made them doubly mournful, which no doubt has increased the disregard for some time shown them: But for the purposes mentioned, they cannot be too much encouraged; neither do I think they ought to be entirely banished the wilderness or forest, where a few of them in their natural form, interspersed with others, will appear with a reverend tho' gloomy magnificence, and are the finest foil imaginable to the rest of the plantation, which, contrasted with them, will appear with additional cheerfulness and lustre.

I HAVE formerly mentioned the ill consequences of clipping Holly hedges in autumn. This ought to be yet more particularly attended to in the Yew, which will suffer more by that practice, in so much that I have known, in severe winters, whole hedges of them become quite brown, and so weakened, that no-

thing but cutting them close to the trunk will again restore their thickness and verdure.

THIS tree, when shooting in spring, or loaded with berries in autumn, is noxious to cattle, which therefore, at these seasons, are to be kept from approaching them; but our species is not the true *Taxus*, or Yew of the Ancients, to which they ascribed so many deadly qualities. Mr Evelyn, in his *Silva*, mentions a tree of it growing in his time in the Medical Garden at Pisa in Tuscany, of so baneful a nature, that the gardeners could not clip it for above half an hour at a time, from their heads aching excessively. The leaves of this tree are described to be more like the Fir than our Yew, and this account of it is given by Doctor Belluceus, President of these gardens. I acknowledge the emissions of our Yew, when clip'd, to be no regale, but luckily it has not the malignant effects of the Tuscan.

THIS tree grows to a large size, is hardy in respect of cold, and will succeed in the most barren and mountainous situations, where the greatest storms will make no impression on it. Since the use of bows has been laid aside, the wood is in less estimation than formerly; but it still gives a high price for the cabinet-maker. Posts of it put in moist ground, will continue found for ages, and for axle-trees no wood is so strong and lasting; to which I shall only add one very material quality more, though not related by any writer so far as I know, and which is, that the wooden parts of a bed made of Yew, will most certainly not be approached by bugs. This is a truth, confirmed to me by the experience of trees I had cut down and used myself in that way.

CHAPTER XXXIV.

THE *LAUREL*, OR CHERRY BAY TREE.

The SPECIES are:

1. The common LAUREL.
2. The white-strip'd LAUREL.
3. The yellow-strip'd LAUREL.
4. The Portugal LAUREL.

THE common Laurel is to be propagated either from seeds or cuttings; but as those from seeds make the most uniform stately trees, and soonest produce their fruit, so, where they are required of large stature, I would advise that method which I shall first describe:

IN the beginning of winter, soon after the berries are ripe, sow them in a shady border of well-prepared fresh loose mould, in beds three and a half feet broad, with alleys of eighteen inches between them, and cover them an inch and a half, or two inches deep. In the beginning of the following March, before their vegetation, rake off as much of their covering as may be done without disturbing the berries, and replace it with fresh earth to the depth of about three quarters of an inch. About the middle of April, when the seeds will be in a growing state, the weather being dry, and not frosty, refresh them with frequent

gentle waterings in the morning ; and continue this, more or less, during the summer months, as the season shall require, changing the morning to evening's watering as soon as the danger of the frosts is over.

THE succeeding spring, the ground being good, and the former summer having been favourable, as soon as their buds begin to swell, remove them from the seminary to the nursery, and lay them with the spade in lines two feet asunder and nine or ten inches in the line, the same depth they formerly stood ; water them at planting, and if you repeat it three or four times at the distance of ten or twelve days, the season being dry, it will much forward their growth : Let the ground between the rows be pointed over in autumn and spring, and cut away any cross lateral branches during their abode here, which ought to be two years only. If these berries have been sown in poor land, the plants of course will have made small progress ; in that event, and that they are not too thick, they may remain in the seed-bed two years.

To raise them from cuttings, plant them in a shady border of moist (not wet) earth, in lines two feet asunder. The beginning of April, or middle of August, let the cuttings be a foot or fourteen inches long, one half of which should be buried in the ground ; let the whole leaves be rub'd off, which otherwise generally wither and hang on great part of that season, and from thence taint the plant. Here they may remain till the second April following, giving them the same culture as the seedlings.

WITH respect to cuttings of these, and all other trees, I must here take notice of one circumstance I have never read in any author, or ever seen attended to in practice, but which is of the highest importance in the culture of every plant raised from them; and that is, indiscriminately taking all branches of a proper age and size, without considering the manner and disposition of their growth: But nothing is more certain, than that a clean perpendicular shoot will produce a straight handsome plant, an ill-formed brushy one continue its original likeness, and those that spread and hang over in a horizontal way, will ever after continue to grow in that direction. I have planted perhaps as great a number of cuttings, and of as many various kinds, as any man of my age has done; and after having consider'd what I thought was the order of nature, I determined to try this experiment, and, for a succession of years, planted the three different kinds mentioned in separate lines, when, after many years growth, the distinction was as perceptible in the trees, as in the branches hanging on their mothers; so that what the poet says of education—"Just as the twig is bent, the trees inclin'd." may here be applied, and is at least as visible in trees as men. This leads me to observe, that both authors and gardeners in general make distinction, and give seedling-plants of all kinds a great preference to cuttings. That many plants are better being raised from seeds than propagated in any other manner, I know experimentally to be true; but that several kinds, which root freely, are little, if any thing inferior, when the cuttings are properly chosen, I also know; and the general observation made to their disadvantage, is owing to overlooking their quality at cutting them. Is it not strange then, that we have not been universally warned to attend to a circumstance so seemingly consistent with reason and nature? But I return to the further culture of the plants.

THE seedlings and cuttings may now be treated in the same manner, and removed to another nursery, where, having shortened and cut away all ill-placed roots that cross each other, and likewise pruned off superfluous branches, carefully preserving and encouraging the principal leading shoot, plant them in lines four feet asunder and two feet distant in the line; take care of cultivating the ground as formerly, and prune them annually in such a manner as will most elevate them in the pyramidal form: In this nursery they may continue three, or not exceeding four years. I have spoken hitherto only with regard to such as are intended for tall standard trees; but here let it be observed, that such as are meant for covering of walls, forming hedges, or other such purposes, may either be applied in these ways from the former nursery, or trained here so as at once to answer your future designs. This tree is commonly dwarfed and disfigured by letting it grow rough too long, after which they are not to be redressed or brought to a proper figure, being much injured by cutting their old wood.

For making large plantations, these trees will now be of a competent size; but if a reserve is wanted for distant designs, remove them to another spot, and plant them in the quincunx order, at six feet asunder every way, observing the former culture; where, after standing two years, they may be removed with safety five or six years longer.

THE two sorts with strip'd leaves may also be increased by cuttings; but their variegation being very faint, in a luxuriant soil they will soon turn quite plain, and ought therefore to be planted in a poor, hungry, dry sand or gravel. In order to blend their colours better than they naturally are, make them more

glaring, and of longer continuance, remove them annually in poor land for five or six years, budding a richly-variegated leaf on the green, or rather a variegated stock, which will much brighten, and also longer preserve their colours, than if raised from cuttings.

THE Portugal Laurel will not rise to half the magnitude of the others, nor is it so easily reared in the pyramidal form, but is a beautiful and elegant plant, of a very chearful shining verdure. It may be propagated either by seeds, layers, or cuttings, as the former, but, when young, are somewhat more delicate, and will be improved by a higher culture, better soil, and more sheltered situation for four or five years, after which 'tis abundantly hardy.

THE beauty of the common Laurel is hardly known amongst us, having formerly been mangled on walls and in hedges, or clip'd to bushes with shears, which, from the largeness of its leaves, is of most plants the least proper to use in that manner: It will grow to the height of between forty and fifty feet, and succeed in very poor barren soil. Of all the Evergreens familiar to this climate, I have ever esteemed it amongst the most graceful: It has all the beauty of the Orange tree without its fruit; and I cannot conceive a richer appearance in nature, than a number of lofty Laurels, that have been properly trained, planted near a house, either in single trees, in groves, or interspersed with other Evergreens in the wilderness way.

IT unites perfectly well, by grafting or budding it on the common black Cherry, and, from that, is considerably increased in magnitude, and rendered yet more hardy.

CHAPTER XXXV.

T H E B A Y T R E E.

The SPECIES are :

1. The common BAY TREE, with male flowers.
2. The common fruit-bearing BAY TREE.
3. The broad-leav'd berry-bearing BAY TREE.
4. The gold-strip'd BAY TREE.

THERE are several other species of the Bay tree, but being tenderer plants, commonly potted and kept in the greenhouse during winter, they are foreign to the design of this Treatise.

THE three first mentioned sorts may either be propagated from seeds or layers, and will make good plants in either way. Their berries are commonly ripe the end of January, or beginning of February, when they ought to be gathered and preserved in dry sand till the beginning of March. The weather then being favourable, or as soon after as it becomes so, prepare a shady border of rich, loose, undung'd soil, made smooth and fine with the rake, and well protected by hedges from the north and east winds; here drop the berries in lines fifteen inches asunder and about four inches in the line, sifting over them an inch thick of the finest and richest mould you have. As soon as you perceive the plants begin to heave up the earth, refresh them

frequently, but moderately, with water, in the mornings when cold, but the evenings of mild weather, and continue to do so all the summer months; clear the ground of all musty particles in autumn and spring as directed for other seedlings, and let them remain here two years, watering the second summer (though more plentifully) with the same attention as the first, it being of the utmost consequence to promote the vigorous growth of this plant in its early stages, which, being then starved from want of proper soil and culture, will become hide-bound, and hardly ever after make a straight handsome tree.

SUCH as you intend to increase by layers, may be laid down in March, or August, the latter of which is much the best season, as these done in March will be but indifferently rooted by the succeeding spring; but the others will be prepared by the earth to root vigorously early next season, and by the second spring make strong healthy plants.

THE Bay will also grow by cuttings, the young shoots being torn asunder at the joints, and planted in a shady border; but by this method, in the open ground, their advance will be very small, and require standing four years at least before removal, from whence they grow thick and brushy, nor ever make so handsome plants as either the seedling or layers; but I have raised thousands of them in frames to the greatest advantage, and with much facility, as follows: In the beginning of April, prepare a moderate hot-bed of tanners bark, and cover it eight inches deep with such soil as directed for the seedlings. In this plant the cuttings five inches deep, and eight or nine inches

afunder, rubbing off all their leaves ; let them have a gentle watering every evening while the bed continues warm, which may be discontinued gradually as that warmth decreases, and cover the glasses with mats during the heat of the day ; when the bark has lost its strength, and the cuttings have made young shoots, let them receive all mild gentle showers, and the evening dews. About the beginning of August, the glasses may be taken off the frames, and replaced again when the weather begins to be frosty, but kept open every mild day. In the beginning of April following, or as soon after as the weather becomes temperate, remove both the glasses and frames ; continue frequent and plentiful waterings during the summer months as the weather may require, and the succeeding April you will have strong well-rooted plants, fit for removal. From this practice, I have raised clean-bodied Bays three feet high in two years, which unassisted nature will not effect in four.

THE plants now raised in these three different ways, may all be treated in the same manner, and removed to the nursery ; when, having cut away their superfluous roots and branches, attentively encouraging the leading shoot, plant them in a well-sheltered quarter of light mould, in lines three and a half feet afunder and eighteen inches in the line : In this nursery give them all possible culture, by digging the ground in autumn and spring, and keeping it clean, loose, and mellow in summer, so as to increase their roots, and prune them annually in April to a pyramidal form. Here let them continue three, but not exceeding four years, when they may be removed to the places where

they are designed to remain for good ; and tho' these trees may be removed at greater ages, yet I have found from experience, that this is the most proper time in order to raise them to their greatest altitude.

THE gold-strip'd Bay is of much humbler growth, and is tenderer than the sorts before named. It is commonly kept in pots, and housed in winter with hardy green-house plants, tho' I have preserved it in the open ground, for many years running, under the protection of other hardier Evergreens ; but in severe winters it has been tarnished, sometimes lost its leaves, and even the young and tender branches have been destroyed, yet the succeeding summer repaired these misfortunes. It is a very strong rich variegation, and ought to be in all good collections of Evergreens. The best method of increasing this, is by budding it on any of the plain kinds.

THE Bay tree delights most in a warm, dry, sandy, or gravelly soil, where it will grow to the height of between thirty and forty feet ; but to preserve its fine verdure, it should be planted in situations defended from the destructive north and east winds, to which if much exposed, it will sometimes suffer in a very severe winter, but generally recovers in summer, even after appearing quite dead. This plant should not have a branch taken from it but in the spring of the year, as unskilful, untimely, and late cutting it, has destroyed great numbers that otherways would have defied the severest winters, many examples of which I have seen.

THE shade and flavour of the Bay has in all ages been esteemed salutary to human bodies; and its aromatic emissions were in the greatest reputation with the antient physicians, for clearing the air, and resisting contagion, besides, for their virtue against lightning: And we read, that the Emperor Tiberius, who was much afraid when that happened, used to creep under his bed to avoid it, and shade his head with its boughs. Many other physical virtues of its leaves, berries, &c. are ascribed to it; but a relation of them is none of my present business; only, as a plant of elegance and beauty, and that yields a most refreshing and healthful perfume a great way around it, I think it cannot be too much encouraged in our climate, where few (if any) of the large-growing plants have these agreeable effects in so high a degree.

CHAPTER XXXVI.

THE *ARBUTUS*, or STRAWBERRY TREE.

The SPECIES are:

1. The common STRAWBERRY TREE, with round fruit.
2. The STRAWBERRY TREE, with longer flowers and egg-shap'd fruit.
3. The smooth-leav'd STRAWBERRY TREE.
4. The cut-leav'd STRAWBERRY TREE.
5. The red-flowering STRAWBERRY TREE.
6. The STRAWBERRY TREE with a double flower.

THE five sorts first mentioned, are to be propagated either by seeds or layers. The method by seeds I shall first direct. These seeds are commonly ripe from the middle of November till the end of December, as the summer and autumn have been more or less kindly: But one caution is necessary to be given in gathering them, which is, not to do it all at once, otherways a great part of them will be good for nothing, as there are many ripe and unripe fruit on the tree at the same time. The ripe berries are easily discovered from those that are not, by becoming, from the richest scarlet, of a deep brownish tawny colour: Therefore, from the first time you discover any of them of this hue, examine your trees every two or three days, and gather them as long as there are any remaining. These berries retain their

growing quality a very short time. The common practice is to separate the seeds from the pulp immediately as they come from the tree: But having long been possessed of a parcel of large *Arbutus's*, which bore fruit annually, and from which I have raised many plants, I have experience of their culture, and know this is not the best method; but advise the whole berry to be preserved entire, and mix'd with dry sand till the season of sowing, when, by softly rubbing them between your hands, they will readily separate from the pulp, and with that and the sand may be sown together.

ABOUT the middle of March, prepare a moderate hot-bed of tanners bark; and if the quantity you intend to raise is large, lay on six inches deep of the finest rich loose mould, and sow the seeds on it, covering them not above the sixth part of an inch deep; but if your quantity is small, you may sow them in pots, and plunge them up to the rim in the tan. In five or six weeks the plants will begin to appear above ground, when they must be frequently but very lightly sprinkled with water, from a small watering-pot with a fine rose; for, being then very tender, if the water is carelessly dashed on them, many will be destroyed. Let the bed be shaded with mats during the heat of the day; and when the plants have been a month above ground, they may receive the evening dews, and gentle showers, more and more as they advance in strength, till about the beginning of August, when, having been well managed, the glasses ought to be taken off, that the plants may enjoy all the heavenly influences in mild weather; but as soon as winter approaches, it will be necessary to have the glasses at hand, to replace in severe weather, but attentively giving them all the open air when otherways.

THE succeeding spring, about the beginning of April, prepare another hot-bed, which need only to be arched over with hoops, and covered with mats; raise the seedlings (which, with regular care being taken, ought to be six or seven inches high) with a trowel, with all the earth possible adhering to them, and put them in penny pots filled with such soil as formerly mentioned; plunge these to the rim immediately on removal into the hot-bed; water them, and continue constantly to do so gently as you see the surface become dry, and let them remain in this state till the beginning of August; but harden them gradually, by exposing them to the open air all the preceding month in moist calm weather. At this time take them out of the bark, and place them in any warm spot, under the protection of hedges, till October, when they may be exposed to the winter sun in any situation most convenient, where a mat can be thrown over them during a severe storm. The following spring, take all the mould (now exhausted) from the surface, till you approach the roots, and fill the pots again with rich earth; remove them to a shady border till autumn, watering them in dry weather every second or at most third evening, and then expose them again under a wall or hedge to the winter sun.

HAVING now stood two seasons in the pots, let them be shaken cautiously out of them with all their bulks of earth, which may easily be done, as by this time the under part of the pots will be full of roots and fibres; pick away as much earth from the outer part of the bulk, without breaking the whole, as you can, not disturbing the roots, and cut off with a very sharp knife such as from confinement may be mouldy or musty; plunge them in water and earth for an hour, and then place them in two-penny

pots, where they may continue two or three years as your occasions require; but keep them the first season under shade and shelter, and water them regularly and plentifully in dry weather, after which they will require no extraordinary protection, or further trouble, than watering, with other potted plants, as the season requires; only observe, every spring, to take away all the earth that will come from the surface of the pots, and replace it with that which is fresh and rich.

THESE plants being now strong and hardy, may be removed to the places of their abode for good, which ought to be either by nature or art, a generous dry soil, and under the covert of other trees at a proper distance; for though I never knew any strong plants of the *Arbutus* killed in a good soil and situation, except early in life, in the year 1740, yet, as I should not chuse running the smallest risque of losing whole plantations of so lovely trees, and waiting ten or twelve years to see them again in any degree of perfection, I would warmly advise, that every nurseryman, at least such who have the advantage of protection, should keep a large store of well-grown plants of them, from three to six or eight feet high, in pots, lest some fatal storm should again rob us of those in the open ground, and which would in some measure repair that misfortune.

THE reason of directing the confinement of these plants so long in pots, is, that their roots are naturally loose and straggling, with very few fibres, from whence great numbers of them never miss to fail when removed to the open ground; but being contracted in their bounds, and assisted by the heat of the bark, their dispositions are changed, and they produce roots and fibres in great abundance.

IT must also be observed, that this tree is not fond of being much pruned at removal, which therefore ought to be performed either a year before or after that operation.

THE fort with double flowers is more dwarfish and tender than the other kinds: It does not readily succeed either by budding or common grafting, but may be propagated by inarching a branch of it on any of the other forts, which ought to be free-growing healthful stocks, otherways they will not unite well, or be long-lived.

THE *Arbutus* is certainly amongst the most elegant and beautiful plants our country produces in a vigorous state; and, to a person fond of Gardening, who passes the winter in the country, I cannot think any tree more worthy a careful culture in so cold and inhospitable a climate as Great-Britain usually is in the winter months. To pop in from the open fields, or even from plantations of other trees, to a grove of these protected from storms, their leaves shining with the most chearful verdure, their blossoms smiling as in spring, and their boughs loaded with the richest scarlet-coloured fruit, must inspire any one capable of being affected by the beauties of nature, with the most lively and agreeable ideas.

THESE trees will not succeed in moist, heavy, or clay land; they will grow tolerably well in a thin and sandy soil, though not rich, but they most affect that which is deep, loamy, and generous. They will rise with us above thirty feet high, in a favourable situation sheltered at some distance by other trees.

CHAPTER XXXVII,

T H O R N S .

Their CULTURE from the SEED, till they arrive to the size of becoming Fencible Hedges at transplanting.

The SPECIES are:

1. The common HAWTHORN.
2. The double flowering HAWTHORN.
3. The Glastenbury THORN.
4. The Cockspur, or Virginian HAWTHORN.
5. The Virginian HAWTHORN, with long strong thorns.
6. The Virginian HAWTHORN, with a plum leaf, and black fruit.
7. The common HAWTHORN, with white fruit.
8. The American HAWTHORN, with yellow egg-shaped fruit.
9. The American HAWTHORN, with yellow round fruit.
10. The Maple-leav'd HAWTHORN.
11. The Pyracantha-leav'd THORN.
12. The Cockspur HAW without Thorns.
13. The narrow-leav'd HAWTHORN.
14. The Gooseberry-leav'd THORN, with yellow fruit.
15. The common Nottingham MEDLAR.
16. The large Dutch MEDLAR.
17. The Neapolitan MEDLAR.
18. The Virginian MEDLAR, with shining leaves.

19. The Dwarf MEDLAR, with red fruit.
20. The Dwarf MEDLAR, with black fruit.
21. The large red Virginian AZEROLE.
22. The AZEROLE with yellow fruit.
23. The PYRACANTHA, or EVERGREEN THORN.

THE usual method of propagating the common white Thorn, with which I shall begin, is so universally known, as to render it unnecessary to be related here; and the more so, as it is very faulty, and will admit of as many improvements in its culture, as any plant hitherto mentioned in this Treatise. These plants, from the seed-bed, are commonly sold at so low a price, that the most skilful nurseryman cannot afford good Thorns for double the usual rates. From this cause, which is styled self-defence, they are generally sown extravagantly thick; and nothing is more common, than to hear nurserymen exulting in their knowledge and success, by having more plants on the same quantity of ground than their neighbours, unmindful that they are boasting of their shame, that the plants are good for nothing, and that an experienced judicious planter would not take a present of them for his own use. But as the noblest and most useful improvements in agriculture, in a great measure, depend on the best methods of cultivating this common hardy plant, I shall treat it with more distinction than it has hitherto been, and feed it with better fare. The practice I shall here direct I do not mean to insinuate to common nurserymen for sale, as the reasons above given make their compliance impracticable, till one or other bolder than the rest, or rather private gentlemen, lead the way,

which they will no sooner do, than find their account in it, become sensible of the true value of Thorns from their good or ill quality, and encourage those nurserymen only who have skill and honesty enough to bestow a good culture: To private gentlemen therefore, and their gardeners, I mean principally to communicate these, the best instructions I am able to give, for the most successful and speedy manner of raising the stoutest, hardiest, and lasting Thorn hedges.

THE berries, which are most commonly gathered too soon, should remain on the trees till the end of October, that they become of a blackish colour, and their flesh begin to decay. They are usually kept in sacks after gathering, and buried in heaps on the gardener's receiving them: But this is a material blunder, as, from the thick pulp in which the berries are inclosed, they become extremely hot; whence some of the ripest kernels, not yet hardened, vegetate, and of course perish. Many crops have I known fail from this ignorant practice, when the owners could assign no cause for their loss. Let your Haws then, as soon as gathered, be spread on an airy floor for five or six weeks, till the seeds are dry and firm; from this plunge them into tubs of water, and divest them totally of their pulp, by rubbing them between your hands with a little sand; which being done, spread them again on the loft three or four days, till quite dry, and mix them thoroughly with fine loose sandy mould, in quantity not less than the bulk of the seeds, and lay them in a heap against a south wall, covering them over three or four inches deep, with soil of the same quality as that with which they are mix'd; and in this situation let them continue till the second spring, as the seeds, tho' sown, will not appear the first year.

IN order that the berries may be as equally mix'd with the soil as possible, it will be necessary to turn over the heaps once in two months, blending the covering with the berries, and, at every turning, give them a fresh covering in the winter months. For want of this precaution, in not mixing the seeds properly, and divesting them of their pulp, we universally see, that seldom one half of the seeds appear the season of sowing them, but continue in the ground, though fresh and sound, another year; and then, if the former year's plants are not all raised, which is rarely done, the remainder, by coming up under their shade, are starved, and good for nothing. But I shall now proceed to such a practice (having attended to what has been said) as will obviate these unlucky circumstances.

THE berries of the Thorn begin to vegetate with the earliest plants, and, in the natural season of their growth, will spring, if kept in any considerable quantity together, without the assistance of earth; whence it becomes indispensibly necessary, to be prepared, the first dry weather in February, to sow them. This being come, separate the berries from the loose soil in which they were mixed, with a wire sieve, without which it will be impossible to sow them in an equal manner. The ground ought to be of a good natural quality, dry, and not lately acquainted with dung, which, unrotted, has very malignant effects on many plants, and on none more than the Thorn; but good fresh land being well prepared, divide it in beds three and a half feet broad, with alleys of eighteen inches between them; push over a little of the surface of the beds to the alleys, as is practised for small kitchen-garden seeds; sow them with great care, so that they may not rise in clusters, and that the plants, as near as

can possibly be computed, be not clofer than an inch to each other ; let the feeds be foundly clap'd into the earth with the back of a spade, draw the soil back again you had pushed off, and add to that covering, from the alleys, to the depth of half an inch only ; for no plant is more delicate, when rising, than the Thorn, or more readily smothered by too-deep a covering.

THUS managed, the Thorns will all appear the season of sowing, which is properly saving one half of their berries, and procuring an equal crop of strong plants.

THE succeeding spring, draw out all the largest plants where too thick ; shorten their roots, cut off so much of their tops as to leave them about two inches above ground when planted, and lay them (but beware of dibbling) in lines a foot asunder and four inches distant in the line, to remain two years.

AT the same time, I have directed Thorns to be sown on beds in the common way, though much thinner. Sensible that I shall not prevail on many gardeners at once to relinquish these prejudices that custom has confirmed, yet some I have the happiness to know of more liberal sentiments, and who want no more than a reasonable hint to try any experiment that has a seeming tendency to promote, by a better culture, the growth of our hedges and Forest-trees : To these therefore, and to such as are not straitened for ground, I, from the most solid foundation, advise the following practice :

Sow the berries thin, or rather drop them in drills, made either with your fingers, or with a very small hoe, at eight inches

afunder the first two drills, and double that distance between them and every following two, being careful they are no deeper covered than directed for these in beds; let the ground be kept very clean and mellow about them till the succeeding spring, and draw them, where too thick, as formerly; after which, cut the remainder with a spade, about five or six inches below ground, and let them remain another year, having pointed over the ground between the lines.

THAT this practice is no vague opinion, but much preferable to crowding them in beds, carries the clearest demonstration alongst with it, to every man of the least attention, who does not choose to shut his eyes, and who will only look at these plants on the edges of beds next the alleys, where he will universally find them of double the size, and more abundant in roots than in the middle of the beds.

NOTWITHSTANDING the preceding directions, both for preparing and sowing the berries, are the best rules I know to procure strong well-grown plants, yet, when numbers only are desired, without regard to saving time, or their future quality, many more may be procured with less trouble and expence, by sowing their seeds immediately after being ripe, or the following spring, of which the latter is the best season, as, from that time, the surface of the ground will be but one winter battered with the storms, in place of two. These seeds may be covered at sowing, double the depth of those that are to appear the first season. In autumn, rake from the beds all mossy corrupted particles, and, in the following spring, before the vegetation is brisk, reduce the covering with a short-teeth'd rake to half an inch.

From this practice, all the found feeds will appear at once ; but the plants will not be one fourth-part of the size, or have near so good roots as those whose berries have been preserved as directed, and sown on fresh loose soil, where they are to appear that season. From the small size of these plants, it will be necessary they remain in the seed-bed two years.

THORNS may also be propagated to much advantage, and two years time saved, by cuttings from their roots. For this purpose, at removing a nursery of these plants, cut off all unnecessary roots that are straight and clean, of one, but not more than two years growth ; let them not exceed the length of four or five inches, and, either early in October, or February, lay them in drills cut out with the spade, with their tops a quarter of an inch below the surface ; let these drills be a foot asunder, and lay the roots in them three or four inches separate, as not a single fresh and sound root will fail that has been planted with care and attention. If the land has been well prepared, of a good quality, and kept clean and mellow, the plants will be from eight inches to a foot high the first season ; and the following spring, having pointed over the ground between the lines, they ought to be cut with hedge shears, within two or three inches of the surface, when, by continuing a proper culture during the ensuing summer months, they will in general be eighteen inches high, and most abundantly rooted at two years old.

I AM very far from meaning to divert any one's attention from following the justly established principles of raising plants in general from their feeds, fully sensible of its preference to all other practices in most cases ; but as there are few rules without some

exceptions, this appears to me one; the saving of time has been observed: To which I shall add, that these plants, in place of one strong perpendicular shoot, (which is commonly the case of young vigorous seedlings), push out a number of shoots very much equal in strength, and continue to grow in that manner, without a few branches running away with the juices that ought to nourish many in much the same proportion; whence, from experience, I must affirm, that for the most equal, close, and impenetrable hedges, plants raised from young and tender roots are the best; but for single trees, meant to grow in the most comely form, and aspire to the greatest altitude, those propagated from seeds are no less preferable.

ALL those Thorns may now be treated in the same manner; and in October should be planted out in lines, at least eighteen inches asunder and six inches in the line, their roots having been shortened, and their tops cut off, so as to stand four or five inches above ground when planted. In this nursery they should remain no more than two years, and the ground ought to be dug both in autumn and spring between the lines; it will likewise much increase their rooting abundantly, as well as promote vigorous clean shoots, that, the year after having been planted in this nursery, they be again cut over an inch or two above the former cutting.

IN autumn, remove these to another quarter, and plant them in lines four feet asunder and two feet distant in the line: Let them now be cut to the height of a foot or fourteen inches, and, about the end of June, clip them straight in the sides and thin in the tops. Having stood here a year longer, cut them again

to the height of two, or two and a half feet, as, from a favourable or bad season, their shoots have been more or less vigorous, and clip them as formerly. The ground having been of a good quality, and properly cultivated, the third season, they will admit of being cut at three and a half feet high about mid-summer, and raised the following autumn, when they may be planted handsome hedges about four feet high, that will at once afford both pleasure and shelter.

BUT to bring them to the last degree of perfection, let these be once more removed with bulks of earth, which they will naturally have, if carefully and skilfully raised. For this purpose, let a trench on each side be dug up considerably deeper than the spreading roots, and, with a sharp hedge-bill, cut across all the downright ones, which, from the former transplantations and proper dressings, will not be many or strong; but while this is performing, let the plants be held steady from the opposite side, which otherways, by shaking, would occasion much of the earth to moulder away. This being done, lay them softly down on one side, and with a sharp knife smooth the extremities of their roots, equally shortening those that are downright or too spreading. Let straight trenches now be ready to receive them at eight, or, where land can be spared, ten feet asunder; in these trenches let them be placed the same depth they formerly stood, and at four feet distance in the line, giving them an abundant watering; cultivate the ground about them, which may be crop'd with various kitchen herbs, and here let them remain three years, clipping, and in all shapes dressing them to their proper form, as if planted out for good.

EARLY in October, while the ground is warm, begin planting these hedges where they are meant to remain. To effect this properly, throw out a trench as formerly, but both wider and deeper than to contain the roots: If the ground is poor and thin, lay a stratum of any middling fresh soil at the bottom of the trench six or eight inches deep, or, where your situation will admit, the more the better; and having levelled the trench to a depth suitable for receiving the plants, let the earth settle for some days, that it may not afterwards subside in any material degree. In the mean time, before raising the hedges you intend, go over them with a light sharp hedge-bill, and cut out all such branches, particularly towards the top, as are too thick crowded together; cut them to your desired height, not exceeding six feet high; then raise, and plant them as directed for the former removal, at such distances as to join entirely close together; let them have a plentiful watering at planting, and repeat it three or four times during the dry spring and summer months, when, after being established one year, they will resist the rudest attempts of the wildest animals in this country.

THE wind is the great enemy of new-planted Thorn-hedges at any considerable size; but, by the judicious performance of what has here been directed, from which the root will be a full balance for the body, it cannot possibly have the smallest ill effect. Every gardener of common understanding, in order to save several years growth, justly enquires after old hedges, (I mean such as are not, from age or other circumstances, in a decaying state), in order to cut them over to effect that desirable end. I need not mention, that such grow more in one year than a young Thorn in three or four; and if they grow freely without any preceding culture, when cut over, and removed at the same time,

(which by the bye must be no small violence done them at an advanced age) I am at a loss to find out a reason why, having been cultivated so as to give them ten times the number of roots they possibly can have in their wild state, without wounding them, the common destruction of old trees, and brought them to such a proportion of body as those roots will keep sufficiently steady, I say, these circumstances considered, from what foundation can a doubt arise, that Thorn-hedges immediately fencible will not succeed? Strange, that in a country which boasts of abounding with the best gardeners in Europe, such simple essays of their art (and which could not fail of answering the intention) should not be frequently executed for the benefit of such as are willing to bestow a little more than common expence, and chuse (if I may be allowed the expression) to overtake time, or at any rate to repair what has been lost, by the immediate possession of what, to a sober virtuous mind, is amongst the most agreeable and rational enjoyments!

I CANNOT leave this subject, without taking notice of, and warning against the baneful practice of almost universally clipping our hedges thick, and broader at top than bottom. This, in my time, has rendered of little benefit the greatest part of the fences within my knowledge, which, properly trained, would have been the highest ornament, and most solid improvement our fields are capable of receiving. How a practice so glaringly opposite to nature, and even common sense, should be adopted in a country devoted both to the study and practice of planting, is strange to imagine! but unluckily it requires no proof that such is the case. The under parts of the hedges so trained, are quite deprived of the benefit of the rains and dews, these indif-

pensible supports of their strength and verdure, and are in some degree smothered, from whence the weakest branches annually perish, till at last the bottom becomes quite naked, which no future care or industry can repair but by cutting them over, or at least reducing their height, and pruning them close to naked trunks. This, tho' a certain, is yet a tedious cure; and to expose one's fields to their original cold and defenceless state, after for many years bestowing as much as, properly applied, would have made them continue beautiful and fencible for ages, must be a mortifying circumstance to any man, but, the shortness of life considered, doubly so to one advanced in years; Let it then be invariably observed, from the first clipping, till your hedges arrive at their intended height, that you make them gradually taper from the bottom, till they become quite sharp at top, in form of a razor. This too is saving money, as the apparatus of standing-ladders, scaffolds, &c. necessary for cutting the tops of high hedges, becomes expensive, and, with the hands required constantly to move them, will cost much more than clipping both the sides, which can easily be performed, to the height of fifteen feet, by a man standing on the ground, with the assistance of spring-shears.

MANY have been the arguments with men of more words than reflection and observation, whether or not it is necessary to continue the practice of clipping hedges till old, where ornament is not required, and that are only the boundaries or divisions of corn or grass fields. Good gardeners, I am well persuaded, never disputed on this subject; for if the greater warmth hedges afford to the grounds around them constitute their greater value in this cold climate, I should think no sensible man can hesitate to give an extraordinary preference to those that are clip'd;

the reasons for which are too apparent to require further explanation. I have never seen hedges, growing for a number of years rude, that were either warm in winter, or close at bottom, which proceeds from a very natural cause. The Thorn tree, when under no discipline, grows in a loose ragged manner, with heavy and spreading tops, which, for want of air and moisture, destroy many of the under branches, and when planted in loose or wet lands, the winter winds displace and disfigure them extremely; so that, all circumstances considered, I could never discover any well-founded argument against clipping them but the expence, which, if annually done after a proper manner, in the months of July and August, will be small in proportion to the pleasure and benefit you will otherways derive from them.

DIGGING and keeping clean a border on each side of your hedges, at least for a few years, will also be well-bestowed labour, as it will much accelerate their growth, and contribute to their speedily thickening at bottom.

MANY improvements may likewise surely be made on common practice, in the disposition and manner of planting our young Thorn hedges. Some lands indeed are so thin and meagre as not to produce tolerable fences without a greater depth of soil, but hardly any are so bad (very wet grounds excepted) as not to nourish Thorns in such a degree as to become fencible, by an addition of soil, though of the same quality, well blended together, and exposed to the summer's sun and winter's frost.

WITHOUT proceeding immediately, however, on this subject, I cannot help taking notice, that the common method of laying

our Thorns on the sides of banks above ditches, and raising bulwarks of turf over them, is an absolute opposition to every principle of nature I am capable of discovering. I have often been told, but was never in the least convinced, of the utility of this practice; nor can I possibly believe, that a plant compressed in this manner, without its roots readily partaking of the heavenly influences, can be equally nourished with one growing on a level loose surface that freely enjoys them all. But without further endeavouring to demonstrate the absurdity of hedges in this situation, let us see the effects of it, and let any considerable extent of such that are warm, sightly, and fencible, argue in their defence. On this appearing, I shall gladly acknowledge my error: In the mean time, I can shew, in most counties of the kingdom, large tracts of land so inclosed, and where, in the most considerable estates, there is not a single park that will confine cattle, without many gaps being made up with paling, or dead brushwood, the last of which increases the evil, as nothing is more contagious to the living branches than being mingled with dead ones; neither can hedges so planted be with ease clip'd from the bottom of the ditch, or when any of the plants perish, can they again be properly inserted. But what is worst of all, if the soil is not an obstinate clay or till, the earth annually moulders away; so that, in a few years, one side of their roots are left naked and exposed to the weather, whence too, from the weight of the tops, the winds often bring down both hedge and bank. In short, from the general survey I have made over most parts of the kingdom, I cannot help thinking that method of inclosing has more retarded the advantages which must have arisen to judicious farmers from a better system, than all the other blunders I know put together. It has likewise, by exhibiting a bad

example, deterred many from inclosing at all, and put others on building stone-walls at great expence, though neither so beautiful, nor improving to the fields around, as lofty hedges well trained. I shall therefore endeavour to give some few hints, that, if skilfully executed, will certainly promote their usual growth and thicknes, and that at little, if any greater expence than attends the common practice.

IN order to inclose a dry thin soil, mark out the sides of your ditch four feet wide; raise the turfs from the surface sixteen inches square; leave a scarfment of eight inches within the top of the ditch, and lay them with the green side downwards; three rows of turfs will exhaust the surface of the ditch, when lay a line of Sweet Briars three or four years old, (that have been transplanted), from a foot to eighteen inches asunder, and cover them with the best earth below the turf, laying the remainder, so far as good, immediately beyond their roots, so that a deep border of the best soil that the place will afford, to be afterwards planted with Thorns, may be formed. Procure turf from the adjacent grounds, till you raise the bank eighteen inches higher, and lay another line of Sweet Briars, placing them so that every plant may be above the interstices of the former line. These being also properly covered, finish your ditch to the depth of four feet, and as narrow at bottom as a man can stand to heave the soil over the bank: Proceed then to compleat the bank, which, for an immediate outward fence, ought to be four feet high; and lay the highest row of the turfs with the green side upwards, which will soonest make them unite, and consolidate the whole. The common practice is to make these banks slope in the same proportion the sides of the ditches do; and the argu-

ment for it is, that they stand the weather better. But if the turfs are well laid, and soundly clapped together with the back of a spade, there is not the smallest danger of their failing at that height, and therefore I would advise them to be laid without six or eight inches of being perpendicular: My reasons for which are, that I mean this bank, with the Sweet Briars planted on it, as soon as possible to hang over that side of the ditch under it, to prevent violent rains from washing it down, and which, by giving it the usual slope; cannot so soon be affected. It will also be a better defence against cattle, who often make attempts to get over ditches and banks that have too easy a slope; but from this position they have no footing, and when the Sweet Briars are grown two years, cattle in the bottom of the ditch cannot raise their heads without being opposed by them, which they will not attempt a second time. A sheep-park thus inclosed, will, in three or four years, confine these animals no less effectually than the highest wall, as they, and indeed horses or cows, cannot bear the touch of them. No person in ordinary circumstances need scruple the expence of the Sweet Briars, as there is not any plant more easily or expeditiously raised; but if you have them not, and do not chuse the trouble or delay of raising them, they may be purchased for a few shillings *per* thousand. The Briars abound with so great a quantity of penetrating roots and fibres, as soon to render any bank they are placed on impenetrable as a wall; and there is no plant yet discovered so proper for filling up the gaps of old hedges of all kinds, where plants of the same sort with these hedges will not succeed. But I shall proceed to the inner side of the bank.

HAVING furnished this with the best earth you can procure, slope it so gradually as that the rains may not wash it down, to

about three feet below the level of its top, which is allowing a foot of forced soil above the surface, for a border to receive the Thorns. This border should be at least two feet broad within the hedge, and made hollow, the better to retain the moisture. On this plant your Thorns in thicknes proportioned to the size of your plants; for the common run of Thorns three or four years old, six inches distance is the general rule, but for stout ones that have been twice removed, and consequently have a-bundance of roots, a foot will be close enough. These Thorns ought not to be planted upright, but should be laid as near as may be in a horizontal position, so that the top of the one extend as far, and be just above the root of the other. This method of planting, in place of a few vigorous rambling shoots from the top of the plant, which is usually the case with such as are planted perpendicular, will make them brush from the bottom like a fan, and in two years, by keeping them as has been directed, they will be so close that a small bird cannot get through them. But let it be observed, I do not mean this to be practised in the nursery, nor even in the field, for such as are above six or seven years old, or that are planted above the height of two, or two and a half feet high, as this oblique position, in large brushy plants, will not admit of their roots having the same stability to resist the winds as those placed upright.

THE different sizes of Thorns, to procure fencible hedges sooner or later, has already been mentioned; and it must be left to every man to judge for himself, what money or labour he chuses to bestow: Therefore I shall only say, that an old Thorn is hardier than a young one, and will succeed in coarse obstinate grounds, where the other will perish; to which I may add, that

the difference of expence between those of three and six years old is nothing, as, allowing the oldest to be double the price, they will go double the length. In unkindly soils, what I have here said, I know experimentally cannot be justly refuted; but it may be returned, that small Thorns planted in good soil, at the same distances they ought to stand when older, will in time make equally good hedges. This I must grant; but the difference of expence can bear no proportion to the advantage of having a good fence three or four years sooner, and saving the expence of culture for that time, which for small plants is much greater than large ones; so that in the main, I cannot think any circumstance, but that very bad one of poverty, should justly excuse a man who plants small Thorns, where large ones are to be had at a moderate price.

THE same rules directed for training Thorns in the nursery, to be afterwards planted at the sizes of fencible hedges, are to be continued progressively, when planted out for good in the fields ever after.

IF it is objected, that I have excluded Thorns from being planted in the banks above ditches, and yet directed Sweet Briars there, to the reasons already given I shall only add, that the Sweet Briar is an exceeding hardy plant, and will succeed in many soils and situations where Thorns will not; and what is more material in the present case, is, that being a dwarf light shrub, they never arrive to such a size or weight, as to be affected by the winds in any degree that will in the least loosen or shake the banks, which is too frequently the case with Thorns.

OF all the devices yet fallen on for planting hedges, none are so natural, and effectual for the inward divisions of dry ground, as that of doing it on the surface of a well-dug, or trenched border, thickened where the soil is thin, or mellowed by labour and warm loose earth, where cold and stiff. Next to that, both in point of beauty and utility, is on the top of a sunk fence built with stone; but even there, though for several years they will grow much about as fast as on a level bottom, yet, when the roots approach the wall, they are of consequence retarded in their progress on that side, and will not afterwards grow with the same luxuriance as on the surface unconfined on both sides.

IN wet lands, not only ditches, but double ones, and deeper than those directed, are indispensibly necessary, as the first capital improvement that can be made, which ought to be so disposed as to receive small covered drains from all the wet quarters of the adjacent fields, at the nearest distances may be, to convey the whole water away; and which, in many situations, may save a great expence, by shortening the unnecessary distances of these drains.

MANY hard-laboured Treatises have been written, and plans drawn, directing the manner of draining grounds, but, for general practice, they are all ineffectual, and of little other use than to amuse the ignorant. The different kinds of drains for different soils, accommodated to the materials those soils produce, or that are conveniently to be had, may be directed; but no language can convey such rules as will instruct the unexperienced in the knowledge of an universal system, as the same plan will

rarely answer any two fields of a hundred, and therefore, without getting a particular plan of every spot, we get nothing, a generally useful one being impracticable. Nature must dictate the courses we are to follow, good sense pursue those dictates, and experience conduct the different manners of operation.

WHERE double ditches are determined, the breadth of the bank between them must be proportioned to what plantation you there intend; but in general they are made too narrow, from whence the bank becomes dry, and the plants of course are not properly nourished. For a hedge only, the bank ought to be nine feet at bottom, and eight at the top; for a hedge and one line of trees, sixteen, that is, planting the trees at eight feet from the hedge, and four from the edge of the bank; and for two lines of trees, one on each side of the hedge, twenty-eight feet. This I think is the meanest allowance ought to be granted; but where what is commonly called stripes of planting are required, either for the benefit of the wood, or the improvement of the climate by shelter, the plantation ought to be broader or narrower as the inclosures they surround are greater or less.

LET the quality of the soil be considered in the construction of ditches, and more care given to the perpendicular height, where the land is loose and sandy, or spongy and mossy, than where well tempered and solid, or obstinate clay and till. A ditch, on soils of the latter qualities, four feet wide, will admit of being the same depth; of the former, three feet depth to the same breadth, will in general be as much as it will bear, and so in proportion as the ditches are broader or narrower. In spouty and mossy soils the Sweet Briars will be doubly useful, as they

will there succeed better than most other plants, and consolidate the banks sooner and more effectually.

THE fences in Windsor Forest, for containing the deer, and preventing their depredations in the adjoining fields and plantations, are highly characterised by some authors, and held by many improvers as the best model for hedges in general. But I am sorry I cannot agree with their sentiments, those I am well acquainted with having lived a considerable time in the neighbourhood of them: They are constructed by throwing up double ditches, with the contents of which they form a bank between them; on the top of this bank, they plant a hedge-row of white Thorn, Crab, Maple, Hazel, Elder, Elm, and Oak trees; the banks they cram full of black Thorns, Brambles, and common Briars; below which, and a little above the ditches, they form a dead hedge, by driving stakes in the ground, interwoven with black and white Thorns, Brambles, Briars, or whatever brush-wood they can most conveniently procure, to protect the plants till they become fencible. That these kinds of bulwarks may frighten deer, or even lions, wolves, and tygers from approaching them, I cannot doubt, as they present a most unnatural, gloomy, and horrid prospect, and which, in my opinion, highly deform a spot, otherwise abounding with the sweetest, richest, and most magnificent objects I ever beheld. One great argument used in defence of these fences, is, the profitable returns they yield for fuel, in a country where they have no coal nearer than London; but I should think very little ingenuity might contrive how to raise more and better fuel on the same quantity of ground, without shocking the sight, a great part of that being employed in trumpery that yields very little good fuel: In short, I cannot

think them calculated for any thing, but a savage uncultivated country, where there is danger of being invaded by wild beasts, whose incursions they might probably repel.

WHERE hedges of uncommon strength are required, I know nothing so effectual as double lines, planted in the triangular manner; so that the plants in one line may be directly fronting the interstices of the other, whence animals attempting to force their heads through any weak part of one line, are met in the nose, and repulsed by the plant opposite. These plants too, growing in concert, afford a mutual aid by sheltering each other, and will for several years grow faster than a single line.

STANDARDS of all kinds in hedges are highly destructive, as, by hanging over, they smother the plants below, shake them, and in all respects rob them of much nourishment.

HEDGES that have grown any considerable time wild and uncultivated, must necessarily become ragged and open. To remedy this, the common way to make them become immediately fencible, is plashing them; and where they are not above ten or twelve years growth, I have known such become tolerable fences, when not too much wounded, (the common error) but done with skill and attention, being regularly clip'd afterwards; but if they are not taken about that age, the severity of the wounds, necessary to make them comply to their proper stations, are so great, that in a few years many of them die, and becoming full of gaps, are more unsightly, and less fencible than ever; whence the advantage is of short duration, and the remedy becomes worse than the disease. But the only method of cure

I can devise, and which I have often successfully practised for old overgrown Thorn-hedges, is to prune them close to their bodies, and cut them over smooth, a good deal slanting, to the height of about four feet, and supply the gaps with old Hollies, if to be had, or, failing those, with strong plants of Sweet Briar, both of which ought to be divested of great part of their branches, which will make them push out a greater number of young ones more vigorously, resist the winds, and sooner become strong equal fences.

IN supplying these vacancies, however, a little extraordinary labour and attention must be bestowed, by cutting down the roots of the old Thorns with a pick-ax, afterwards smoothing them with a hedge-bill, and making the hole as large and deep as the spaces will possibly allow them to be; to which, if fresh soil is added in place of the exhausted earth taken out, your greater success, from saving time by more liberal shoots, will largely repay the expence.

To describe the various methods that have been practised by inclosing grounds with hedges and ditches, would be both tedious and unnecessary; nor would it be difficult to direct a yet greater variety of ways hitherto unpractised, further than from making experiments, many of which I have tried; but the few rules here recommended, as they are the most natural and simple, so I have ever found them the most successful, and believe saying more on the subject would be superfluous.

THE following thirteen kinds of Thorns are worthy of being cultivated in all good collections of flowering plants, where,

from the beauty and fragrance of their blossoms in spring, joined to the rich glow of their fruits in autumn, they have a most chearful effect, properly disposed in the wilderness, or in groves near the house.

THEY are all, except the double-blossom'd sort, to be propagated from seeds, where these can be procured ; but as some of them are apt to vary from the parent plant, when increased that way, I should rather advise their being grafted or budded on the common kind, from whence they will not only sooner become fruitful, but ever after continue to be so, wherein their greatest beauty consists.

THE Medlars and Azeroles are cultivated, both for mixing with other trees in ornamental plantations, and for the sake of their fruit in the kitchen garden, where they are planted in standards and espaliers. They will succeed by grafting, or budding them on the common Hawthorn, but will be improved both in the size of the plant, and flavour of the fruit, by doing them on the Pear-stock. To enlarge the tree, a deep moist soil is necessary ; but where fruit is the motive, a generous dry mould and warm situation is required.

LET the stocks for the Thorns, when grafted or budded, be in a free-growing vigorous state, and about the bulk of one's finger, three or four feet above ground, which will be a proper height for these operations. The Pear-stocks, for the Medlars and Azeroles, must be proportioned to the uses you intend them for : If for dwarfs, espaliers, or walls, graft them within three or four inches of the ground ; but if for standards, the same height as

for the Thorns will be better, as otherways (they growing in a loofe straggling manner) it will be difficult to raise them with straight clean bodies.

THE *Pyracantha* or Evergreen Thorn is a trailing plant, and cannot be raised to a tightly standard, but is very proper for covering walls near the house, where the shining verdure of the leaves in winter, almost covered with large bunches of rich scarlet-coloured fruit, is extremely beautiful. They are easily propagated from seeds sown in February, in the same manner as the common Hawthorn, but in a shady border, part of which will rise the first, and the remainder the second spring, and these make much better plants than those increased by layers.

I HAVE ever thought we pay too little respect to the common Hawthorn in our ornamental plantations, as, in the season of its bloom, I know few trees exceed it either in beauty or fragrance; I would therefore recommend it more in wilderness work, as well as single plants in lawns, where a considerable number of them, judiciously interspersed with others, would highly decorate those scenes. The Thorn too, unconfined, and its natural luxuriance of growth encouraged, becomes a stately tree; and the wood, which is extremely hard, and finely variegated, particularly towards the root, is not inferior to Box for many curious and useful purposes.

CHAPTER XXXVIII.

ON the PROPAGATION of TREES by LAYERS.

THE manner of preparing mother plants or stools, from which you are to propagate trees by layers, has already been directed under the article of the Elm Tree. These directions having been observed, and strong clean shoots produced, early in October begin the operation, with all the hardy deciduous trees that are most proper to be cultivated in that way, and which are mentioned under their respective names. In the first place, cautiously bend down all the principal branches around the stool, without wounding them, if possible, to comply, (tho' often directed and practised); let them be at such distances from one another, as to admit all the smaller collateral side-branches to be laid between them, and let them be firmly peg'd down to the ground with hook'd sticks, as otherways, if the shoots are strong, the pressure of the earth alone will not prevent their starting up again. If the principal shoots have no side-branches fit to lay, that is, if they are not about a foot in length, let all under that be pruned close away, and the main shoot be only laid; all the very small twigs from the side-branches must likewise be cut close, or rub'd off, as the fewer shoots the layers produce, they will be the straighter and more vigorous. But before proceeding to cover them, I shall mention the different ways necessary to be practised with the branches, in order to facilitate their rooting.

SOME tye a piece of wire hard, round the twig, at that part where the roots are desired, and prick it above the wire, through the bark with an aul, in several places.

WHERE the wood is very hard and unwilling to root, the branches are sometimes cut by a slit upwards from a joint, as is practised in laying Pinks and Carnations, which is called by the gardeners tonguing the layers: But this severity I would seldom chuse to practise, as trees disposed to root by layers at all, may be prevailed on to do so by gentler means, when these means are skilfully applied. The plants raised in that manner, are long of recovering their wounds, and not only very apt to be torn afunder at taking them from their mother, but for a long time after on removing them.

TWISTING the place you design to peg down into the ground is often done, but with several kinds of hard wood it does not answer properly; with all the soft kinds it is an excellent practice.

THERE are other different operations performed in laying trees; but the specimens given are the best I know, but one, which, though very simple, I have successfully practised during the greatest part of my life, and that is, scratching off the bark as deep as the wood, where the roots are wanted, about two or three inches in length, and two thirds round in stout branches, or less in small ones.

HAVING treated the branches in one or other of the ways described, proceed to putting them in the ground, by pegging down that part where you have made any incision, and with both your hands pressing it into the earth, till it become sharp.

at the joint, and the branch from that be quite perpendicular ; for if they are only bent in the form of a club, they will not by any future culture make stately or handsome trees. Let them be covered about four inches deep, and their tops cut over two or three buds above the surface ; and then raise up the earth round each of the stools a little higher than the bed of the layers, hollow'd within, in form of a basin, the better to contain the rains that fall, or the water given them by hand, which in dry weather should not be spared, as nothing will contribute more to their rooting abundantly.

It will likewise be proper to go over the layers about the middle or towards the end of May, and rub off all the buds and tender shoots but the most promising one, as, by a greater number of branches, the kindly effects of the rains and dews are prevented, and the large shoots smother the small ones.

THE autumn, as has been said, is the best season for laying all hardy deciduous plants ; for such as are delicate, the spring is a much safer season, as, immediately after the operations necessary to be made, a hard winter succeeding might most probably kill such totally : For the same reason too, I prefer laying the tender Evergreens at that time also, rather than the usual seasons of August and September. But for the hardy kinds, I know no other season needful to be observed, than that in which one can best spare time, as the sooner you lay them, you will the sooner raise them.

THOUGH some little incision is necessary on the layers of most hard-wooded trees, yet in the Lime, and many other soft pliable plants, nothing more is wanting than a proper covering, and attention to the other circumstances of culture directed in general.

C H A P T E R XXXIX.

O N G R A F T I N G A N D I N O C U L A T I O N.

OF all the aids Nature has received from Art in the productions of the vegetable world, none has perhaps been more astonishingly great and useful to mankind in the improvement of gardening, than what has been derived from the culture of trees and generous fruits, by grafting and inoculation. By this happy discovery, we can not only preserve every species bountifully bestowed on us by the great Author of Nature, which otherways, by inattention and sloth, and without exerting that knowledge, would, many of them, have degenerated, by barely sowing their seeds, but we have it also in our power, by the practice of these means, ever to improve the quality of those, the noblest gifts the earth affords us.

I SHALL therefore mention the different ways of grafting that are or have been usually practised, as, in certain cases, all of them may be useful, where overgrown stocks, or such as are not of a proper age and size for one manner of operation, may be accommodated to another; and then notice the ways I have found best suited to these different circumstances. But some time before proceeding to the execution, let the materials be provided in the following manner :

THE grafts of all hardy trees are the better to be cut three or four weeks, and laid in a shady border six or eight inches deep, before grafting: Such, which the gardeners call thirsty grafts, are ever found to unite sooner, and more certainly, than when the circulation of the sap is equally brisk in both the graft and stock; and I never had more success, than with grafts that were so much shrivel'd in the bark, and seemingly withered, as to be thought only fit for the fire by such as were unskill'd in the art.

WHERE your stocks are strong, that is, not less than half an inch diameter, a stout stumpy graft with thick-set plump buds, is much to be preferred to a slender one, for the luxuriant growth of all hardy Forest-trees; but where blossoms and fruit are soon desired, or the tree meant to be dwarfed, the reverse must be observed.

THE grafts being cut and laid by the heels, their covering ought next to be prepared, by collecting the quantity necessary of strong, fat, loamy clay, to which add a fifth or sixth part of new-made horse-dung, mix'd with some hay or straw cut very small, which will bind the whole better together, and prevent its rending and falling off the trees. These must be well blended, by often beating, and pouring water on them every second or third day, till they become solid and well incorporated; after which the whole should be hollow'd in form of a dish, not exposed to frost or drying winds, and kept moist by regularly pouring water on it as it becomes dry, till it is used.

THE instruments necessary for the different operations are:

1. A small hand-saw, to cut off the heads of large stocks.
2. A good strong pruning-knife, with a thick back, to make clefts in the stocks.
3. A small knife, made very sharp, to cut the grafts.
4. A grafting-chisel, and a small mallet.
5. A wedge, to keep open the clefts in large stocks till the insertion of the graft.
6. A bafs mat, or woollen yarn, to tye the grafts cut in pieces at lengths proportioned to the bulk of the stocks.

SINCE the first invention of grafting, there have been many various ways of performing it; but the following has been found the best, and most successful:

1. Grafting in the rind, or Shoulder-grafting, which is only proper for trees two inches diameter or upwards.
2. Cleft or Slit-grafting: This is proper for stocks from about three quarters of an inch to two inches diameter.
3. Whip or Tongue-grafting: This, for stocks not exceeding three quarters of an inch diameter, is the most readily performed, and far most successful manner of any. By whip-grafting, the wounded stock soon heals, and where the growth is vigorous, in two years the stock and graft become so perfectly united, that one will hardly discover any incision having been made.
4. Grafting by approach, inarching, or abscission: This is to be performed on plants in pots, or when the stock you

would graft on, and the tree from which you take your graft, stand, or can be brought so near together that they may be joined: But inarching is only proper for tender and exotic plants, as from this operation they never become vigorous hardy trees, though, to bring about the sudden production of flowers and fruit, no practice has yet been found so successful; and you may even inarch trees with the blossoms and fruit upon them, but this is committing violence, and it is better to allow an intimate conjunction, by a free circulation of the sap, before you admit of their bearing any quantity of fruit at least, which considerably impairs the strength of all young new-planted or new-grafted trees. This method is to be performed three or four weeks later than any of the preceding ways, and when the juices are in high circulation.

5. Grafting in the root: This is of much later invention than any of the former ways, and, in many circumstances, may be an improvement on them all. It is performed by cutting the clean smooth roots of the stocks in pieces five or six inches long, and as large, or a little larger, than the graft of the same species you are to put in it: Let them be whip-grafted and tied together very close, so as to prevent the wet from affecting the wounded parts, and plant them so deep, that the graft, which should be four or five inches long, may be about one half buried under the surface. This is an admirable practice, both for improving the flavour of fruits, and preserving a nearer similitude to the tree from whence you took your grafts; for by this means the grafts will root, and these roots increase as well as those from the stock: Hence, as all plants must draw much

from the stock on which they are grafted, such will have a less dependence, having great part of their nourishment from their own proper roots. To this circumstance I must also observe, that I can see no manner of difficulty in making these grafts as genuine a species as the original tree from which they were taken, by cutting away the stock altogether, after they have stood two or three years, in which time they will be sufficiently rooted to admit of a separation, and succeed by themselves. This hint may assuredly be improved to much advantage, and is only making the stock a temporary nurse till the graft has acquired strength. Where this method is to be put in practice, the grafts may be an inch or two longer than those before mentioned, as, by giving them that additional depth in the earth, they will the sooner and the more abundantly root.

THE season of grafting must be regulated according to the temper of the weather in the spring, earlier or later as that shall be more or less so. The usual time of performing it, is when the buds begin to swell, which no doubt appears very consistent with nature; but as we seldom have uniformly mild weather for several weeks after that period, I have in my earlier years often paid very dear for my compliance with this so common and seemingly reasonable a time for the operation, both from a continuance of cold rains, and sharp withering frosts, and that even after the grafts have begun to push out their shoots, from whence I have frequently lost whole quarters of them: Therefore, from as much practice with my own hands in grafting as perhaps any one man of my age has ever had, I advise, that the grafts, particularly of hardy free-shooting trees, having been cut and laid in the ground before

the buds begin to swell; I say, in that case, I advise the operation to be deferred till the circulation of the sap is brisk, and the buds of the stocks are beginning to break into leaves, when the grafts will immediately unite, which done earlier, cannot so soon happen; besides, at this advanced time in the spring, there is at least a greater probability that the weather afterwards will continue milder. At the same time it must be observed, that the weak shoots of tender trees will not admit of being so long cut as the more hardy.

LET it ever be a standing rule, not to graft while it actually freezes or rains; in either of which events, no reasonable success need be expected.

It has lately become a frequent practice, after barely tying the grafts with bafs, and without the application of clay, to hoe up the earth so deep as to cover the stock; and in this way, with hardy trees, in a dry mild spring, I have succeeded to my wishes: But in this country we have been so little acquainted with these temperate seasons of late years, and I have suffered so much by my too sanguine hopes of better weather, that till I see some alteration in our climate, I shall neither advise others, nor venture deep myself, without taking every precaution, except from absolute necessity, and where the hands needful to accomplish the business seasonably cannot be procured. I must therefore recommend, that your grafts be tied as firm as may be, without galling them, that the wounded part of the stock may be intirely covered with the bafs, and that the clay may be well tempered, and put on smooth and close, fully covering the bafs, and top of the stock, in such a manner as will best expel the air, and prevent all other injurious effects to be apprehended from cold and wet.

INOCULATION or budding is a species of grafting infinitely superior to any other yet invented for most kinds of trees, and will succeed with many sorts that will not grow, nor make good plants, by any other means. From this practice of only opening about an inch of the bark, and gently thrusting in a small bud between that and the wood, there is not the smallest violence committed on the stock, which, being done in the growing season, in two or three weeks becomes perfectly sound.

THIS operation is commonly performed from the middle of June till the middle of August, a little sooner or later as the season is more or less forward: But the best rule to observe, is to begin when you find the buds fully formed at the extremity of the same year's shoots, at which time they have finished their spring growth, and are ripe for inoculation.

IN very hot dry summers, particularly in light thin ground, the bark of the stocks will not open clean and smooth, from both a want and stagnation of juices: To remedy which, two or three weeks before the season of budding commences, let the stocks be regularly watered every third or fourth evening; and if some is sprinkled over the tops, from the rose of the watering-pot, to imitate Nature's watering, it will contribute much to invigorate them. This too may be very successfully applied to the trees from whence the buds are to be taken; by not knowing or attending to which, I have frequently seen whole quarters of buds perish, and others where the stocks were so hide-bound that the bark would by no means separate from the wood to receive the bud. A watering or two after the buds are put in, will likewise be of use.

THE best time for budding is in cloudy weather, (though not when it actually rains) or in the evening of a warm dry day; for if it is done in the middle of it, the shoots will perspire so fast as to leave the buds destitute of moisture.

BUDDING is highly preferable to every operation for all kinds of stone fruit, which, from all the other ways of grafting, are very apt to produce a gum at the wounded part, with which, if the plants are once ever so little infected, they never after shoot freely, or live long. It is likewise best for most of the nut-bearing trees, many of which will succeed in no other way than by this, or inarching, and which, as has been said, is rather an amusing curiosity than any solid improvement.

THE manner of performing the different ways of grafting, has been described in various books on Gardening; and though for that reason I would not spare a relation of it here, yet I hold it altogether unnecessary. Every regular-bred gardener is instructed in it as the first elements of his profession; and simple as the operations are, I never knew them readily and successfully executed by any who had not begun early in life: I therefore advise all young and unexperienced gardeners, to apply for knowledge in grafting, to the practice of it, under the direction of an able master, as otherwise the most lively description will little avail them.

THE stocks on which the different kinds of trees will succeed, and others by which their species will be improved, and their fruits meliorated, are already mentioned in the culture of these trees.

C H A P T E R X L.

O N F O R E S T S O R W O O D S, and the most speedy
manner of R E A R I N G them.

TO plant a wood without inclosing it, is not only amongst the idlest ways of throwing away money, but is laying up a fund of remorse and discontent that must necessarily often occur, from the devastations of cattle and sheep, whose browings and bitings communicate a poison to the trees, which nothing but cutting them below the infected parts will expel. Let this then be your first care to perform in the most substantial manner, with double hedges, in one or other of the ways directed, according to the situation and quality of your field.

THOUGH the advantages arising from timber, over most of the large estates in Great Britain where it abounds, are apparently great, yet we are certainly less attentive to the culture of woods than any other kind of plantation, and indeed than any improvement we undertake. But as I believe the increase of them, particularly in the cold, barren, and less cultivated places of the kingdom, would be of the utmost importance, remove many obstructions, and pave the way to general and successful husbandry of various kinds, I shall endeavour to give some hints, which, if attended to, will, I am certain, much forward the growth of these plantations, and procure them in many quarters where ex-

periments have already been tried in vain, but not conducted judiciously, or on proper principles.

WHERE the soil is of a loose sandy quality, the trees must necessarily be planted in pits, as, by breaking up the whole surface, many of them may be blown out of the ground, and others buried by the driving of the sand, where the situation is exposed. With respect to every other soil solid enough not to be driven by the winds, notwithstanding much has been said in defence of pitting plants, I must from experience, and I think plain reason too, dissent from it, and maintain, that all such cannot be too long fallowed and pulverised, by frequent plowings and harrowings; grounds of a middling quality, after grafts, will require a summer and winter's labour at least; an obstinate clay, not less than two.

NEITHER is the extraordinary expence of labouring this ground so great, as may at first view appear without reflecting on future circumstances. The pits in old, hard, uncultivated land, must be made three times as large as on that which is dressed, and ought to have a good deal of loose earth round the roots, otherways, in wet seasons, the water will stagnate and rot the fibres; and in any season they will be so much obstructed in their progress when they reach the hard uncivilized earth, as to become stunted and hide-bound, from which they slowly recover, and that seldom till they are cut over; whereas, in the other situation, the pits need be made no larger than easily to contain the roots, as they will proceed in their growth, and spread their roots near the surface without interruption. However, if planting the ground in its natural state is determined, let the pits be made the preceding

spring, to correct and meliorate the founness and obliquity of the soil; and if you can procure a mixture of more generous mould, and opposite quality, let it mixed, and often blended together with that taken out of the pits, as soon after as may be. In planting after this manner on stiff or wet land, give the greatest attention that the trees be planted no deeper than barely to support themselves against the winds, and that the pits may be dug considerably broader for their depth, than the usual proportion allowed in loose dry ground.

FOR a century past the Scots Fir has been the common nurse of all the better kinds of Forest Trees in Scotland; and one must be both ungrateful and ignorant, who is insensible of the many and great advantages that country has reaped from the general culture of this plant. Without it, in many sterile soils, and exposed situations, we should not have had a specimen of other thriving useful timber trees, where now we have beautiful plantations of Oak, Elm, &c. Thus, though nothing is farther from my intention than to depreciate the Scots Fir, yet I must beg being allowed to mention others, and which I do on the most solid of all foundations, experience, that will produce the same salutary effects in ten or twelve years they have done in twenty, and that by easier and cheaper methods than even the small expence of raising them.

THE plants I mean to substitute in the place of Firs, are the different kinds of Poplars, and the large Maple, in Scotland vulgarly called the *Plane Tree*: Those being of infinitely quicker growth than the Firs, can be planted of considerable sizes on the

pooreſt lands with ſafety, and will of courſe ſooner effect all the benefits that can be derived from them.

I HAVE long thought we are more alarmed than hurt from the common impreſſion of hard winters being ſo generally baneful to our hardy deciduous plantations, and believing that then only the ſhelter from Firs or other plants is moſt materially uſeful. That we have ſeen two or three winters which have hurt hardy plants when young, or new planted out, muſt be acknowledged; but the caſe is far from being common, and for one loſs of that kind, we have ſuſtained many by the violence of the winds in the ſummer months, when the trees, pregnant with their juices, and loaded with leaves, are ſo heavy as to yield to the tempeſt, the roots at that time being an unequal balance to their bodies, whence theſe roots are often torn aſunder in the growing ſeaſon, bleed much, are apt to canker, and ſlowly, if ever, recover; which, in the moſt violent winter ſtorms, is ſeldom the caſe, when the plants, much lighter, firmer in their ſhoots, and diveſted of their leaves, leſs oppoſe themſelves to, and are more rarely conquered by the winds.

IT has already been mentioned, that the trees muſt be accommodated to the different ſoils on which they are planted; and it cannot be too much inforced, to make this obſervation with the greateſt attention and judgment you have, or are capable of procuring, over all the various parts of your intended wood or foreſt, wherein, I am ſorry to ſay, we have hitherto been extremely defective. Notwithſtanding then what has been ſaid on the culture of the different trees here treated of, and the ſtations Nature has beſt adapted them for, it may not be amiſs to repeat

some of these particulars, to make what is here meant more readily understood, without a tedious reference to the particular trees.

I CANNOT help observing, we surely betray a general want of taste in the disposition of our woods, as in few of them any regard to elegance or beauty is paid, and which, if we did, would add nothing to the expence. Why then may not all our plantations be diversified in walks as various as those in our most finished and adorned wildernesses? This, though not so sprightly and chearful a scene; would be a no less magnificent one than the other, and as agreeable to many rural tastes: At the same time, I should be ashamed to appear insensible of the pleasure resulting from a well-planted wilderness kept in fine order, and deck'd with its charming variety of hues. Thus too the free circulation of air in these walks and alleys would be communicated through the quarters of trees, make them more healthful and vigorous, and prevent many mortal diseases incident to large crowded plantations by a suppression of the damp vapours, which creates a mouldiness hurtful to the plants, and contaminates the air itself: Besides, those walks, well plowed, fallowed, and laid smooth, would, from the great litter of leaves fallen, and blown upon them, soon become good grass, as has been observed under the article *POPLAR*.

THE best season for planting the light grounds, is as soon as possible after the beginning of October; for the moist and heavy, February and March. At these periods, your ground being prepared in one or other of the ways mentioned, and staked out in the figure you chuse, proceed to planting as follows:

IF the field is disposed in the wilderNESS way, let every quarter be bounded by a row of Poplars, at two, or two and a half feet asunder; in the heaviest and wettest places, let them be of the Lombard kind, and in the thinner and lighter, of the white, which, of all the species, will make the quickest progress in such soils; and, in order to make them yield a speedier shelter, by growing close, let them be pruned or clip'd in the sides for two or three years. These Poplars ought to be planted, either rooted, or from cuttings four or five feet high, if such can conveniently be procured, or as near that size as you can. If the whole ground is to be planted, without being divided by walks, after going round it as mentioned for the quarters, let lines of Poplars, running from south to north, be planted at about a hundred, or, in very cold exposed situations, at eighty feet asunder.

THE next thing to be adverted to, is the disposition of the Planes in such a manner as will best promote the growth of the other more valuable trees; to effect which, I think every second line ought to be of them not next the Poplars, which will sufficiently shelter whatever is immediately near them, but amongst the trees intended for a longer continuance.

THE distance of the trees over the whole plantation, (the bounding and dividing lines of Poplars excepted), I think, as a just medium, ought to be five feet every way; for whatever the advocates for very thick planting may advance, the consequences arising from it, are generally more fatal, than erring in the opposite extreme. Plants may be too much crowded, or, what the gardeners call *drawn*, as well as too much exposed; and the shelter of the Plane and Poplar trees, (for the time shall here be

directed, will put them beyond the want of any further assistance, than they mutually communicate to one another.

HAVING planted then one half of your intended Forest, free from standing water, with Planes, in rows ten feet asunder and five in the row, consult the genius of every spot in it, that the remaining more valuable plants may be disposed on the different soils they most delight in, which, in general, I take it to be as follows :

IN the most generous, deep, but dry soils, the Walnut, with English, Scots, and Cornish Elms ; in the moist and heavy, the Dutch Elm ; in coarse and stoney, the Chestnut and Ash ; in light and sandy, the Larch and Beech ; and in clays of all qualities, tho' swampy and mossy, the Oak. These are the soils most universally prevailing in Great Britain, and those the trees nature seems best to have fitted for such soils. They are also of the greatest value, and most general use, tho', if a little ornament and variety is wanted, a small mixture of the hardy American sorts may be added ; but profitable returns being the principal object of this Essay, to that I chuse, in a great measure, to confine myself.

WHERE the grounds are various, and the trees thus properly adapted to that variety of soils, an extensive plantation, diversified with groups of different trees in its different quarters, will appear far more chearful and picturesque, than one uniform wood of the same kind.

SUCH a Forest, and to be planted in the manner I here describe, I mean should be in a flat field, or at least one not

abounding with many large stones, for which reason only, I have altogether excluded the Scots Fir; but in mountainous rocky situations this plan will not succeed near so well, as the Poplars and Planes cannot have their roots covered enough to nourish them at first planting: In such places therefore, Firs are perhaps the greatest improvement can be made, planted not above three years old, when, after two years more growth, Oaks and other trees may be interspersed wherever the land will receive them. The culture of the Scots Fir then, so far from being discountenanced, should, with the greatest propriety, be rather increased; as there are still, in most parts of Great Britain, more large tracts of mountainous, beggarly, and otherways unimproveable surface, than the greatest industry of several ages will probably overtake, and cover with these plants. But I shall now proceed to the ages and sizes of trees best fitted, in forbidding soils and situations, to make our Forest flourish.

SOME advise, that the best manner of rearing woods, is by sowing the seeds on the spot. But of this I cannot approve, for several reasons: It is, in the first place, a very tedious practice, allowing it to succeed, which, on many occasions it will not, the ground must be as well prepared, kept as clear of weeds as in the nursery garden, the land as regularly dug about the plants, and in all respects as well cultivated as these. It is a small proportion of the seeds sown, and the plants that ought to arise from them, which can remain in the wood to make trees, and, by raising what is superfluous, the plants meant to continue are generally much injured from those standing close together about them, which circumstances will be attended with a much greater expence in the end, before these plants are out of danger, than at once making a handsome finished plantation.

I AM therefore against raising a Forest, after this manner, with other plants than the Walnut, Chestnut, Evergreen Oak, and a few of the other nut-bearing trees, that do not easily remove, or grow freely after it, and even of those only where timber, without regard to fruit, is desired; in which case, such are preferable to the best otherways cultivated plants, where the land is not extremely bad.

OTHER gardeners, and indeed I am afraid the greatest part of them, argue in defence of planting seedlings two years old, as the most hardy, and likely to succeed, in our barren, cold and uncultivated soils. This practice, however universal, and long sanctified by custom, has no weight with me, as, from many trials, I have found it absurd; and I cannot help declaring, I think it both against nature and common sense, nor can I in any other way account either for its beginning or continuance, than the bad culture too generally given our trees in the nursery, to which being removed from the seed-bed, they are dibbled in without a proper reduction of their roots, so as to procure abundance of fresh spreading ones, and crowded so thick together, as soon to become much worse than good seedlings, from hard carrot roots, without mouths to feed themselves, and tall slender bodies, unable to bear a gentle breeze of wind.

I PRESUME no honest sensible gardener will deny, that seedling trees in general have one downright top-root, with few small roots and fibres, in comparison of such as have been raised, their roots shortened, and transplanted; or that these transplantations, repeated at proper periods, will not still increase the roots, and otherways, by change of food and situation, render the plants

more hardy. If this is the case, it appears to me no less ridiculous to assert, a young tender plant should be as hardy, just taken from a warm seed-bed, and immediately exposed to a bleak situation, and cold uncultivated soil, as that an infant from the breast should be able to bear the inclemency of the seasons, and live and thrive with coarser food, and less shelter, than a child who has been properly nourished for some considerable time, and inured by degrees to various changes.

THE analogy between the animal and vegetable creation, which in many circumstances are very intimate, is not too far stretched in the present comparison, nor is what I have advanced a speculative notion; but to exemplify it, I shall mention the following experiments to that effect, and which I have repeatedly tried:

I HAVE sown the seeds of Forest Trees on the poorest ground, planted seedlings, and strong well-nursed trees, from five to ten feet high, on the same ground, and at the same time, where the old well-cultivated plants have frequently made goodly trees, when the seedlings have perished, and, from the sterility and coldness of the soil, the seeds have not so much as vegetated. In short, the mouths of seedlings are not so well fitted as larger plants, to draw sufficient nourishment from crude, rank, and uncultivated soils; and as I have truly found what is here said in many instances to be the case, I am obliged to believe, that the general practice of planting seedlings in poor, and larger trees in good land, should be quite reversed; but still attending to this most essential and indispensable circumstance, that the large plants have been removed as directed, and otherways properly cultivated.

HAVING then planted your nurſing trees, and rejected both the ſowing of feeds, and planting of ſeedlings in your wood; I ſhould adviſe your plants to be four or five years old, that is, to have been removed at the proper times already mentioned from the feed-bed, and cultivated in the nurſery two or three years, more or leſs according to their kinds, and the quality of the ground whereon they ſtand; with ſuch finiſh your plantation, in the manner, and at the diſtances of the Planes. Thoſe trees will be able to get the better of all weeds, but a few of the large-growing ſorts; and the land may be cultivated by hoeing in ſummer, and digging in the autumn and ſpring months, or not, agreeable to the expence you chuſe to lay out, tho', if that expence is beſtowed for three or four years, the more vigorous growth of the trees will ſoon amply repay it.

WHEN theſe plants have ſtood four years, but not longer, take away every ſecond Plane, and, in two years more, the remainder of them, with every ſecond tree of the other kinds, which will leave the whole plantation at ten feet aſunder.

THE trees raiſed cannot be loſt to a perſon who has any conſiderable extent of land, few large Britiſh eſtates being yet too much crowded with wood over all parts of them. They may be planted on the farms in hedge-rows, and many various ways to great advantage, and would ſtand a great deal of money from a nurſeryman; ſo that the expence of this plantation ought not to be grudged, having effected two of the moſt capital points on any eſtate, a thriving wood, and a good nurſery.

FROM this time theſe plants will require no further trouble, than pruning away the ill-placed ſuperfluous branches, till they

bring money, which they ought to do in eighteen or twenty years from planting, at which time three-fourths more of the remaining trees, and all the Poplars, must be taken away, which reduces them to twenty feet asunder, and when the value of the timber, cut for country uses, will certainly exceed both the expence of labour and rent of the ground, much more than any other crop will; besides, the trees at these distances will not hereafter prevent the ground from yielding good pasture, and the value of the plantation, for fifty years afterwards, will annually increase in greater proportion than before.

THOUGH I have mentioned the whole trees in this Forest to be planted the same season, yet if the nursing ones, which are soon to be taken away, were planted a year or two before the others, particularly in very bad soils, and exposed situations, it would, in place of losing, be gaining time, as, from their immediate and extraordinary shelter, the better trees would have little check from the winds the first season, which when they meet with in a violent degree, often keeps them at a stand for several years. It is therefore of the greatest consequence, that every possible assistance be given them, to encourage a free growth at being first planted out.

NOTWITHSTANDING of warmly recommending shelter at first planting, as the most probable means of soonest procuring a flourishing plantation, yet I must no less recommend attention in taking away the necessary proportions, where too thick, seasonably as they advance; from which neglect, I have often seen many extensive plantations of noble Oaks ruined, by being overhung with Scots Firs, which not admitting a free circulation

of air, they have been drawn up to the most disproportioned heights, and this misfortune nothing but cutting over will effectually cure; but the different periods here directed for thinning them, will generally answer your intentions.

FROM the late and now universal taste in all new and expensive designs in the garden way, of throwing a large extent of ground about the house into lawns of grass, many fruit-trees, which in former times generally grew in the kitchen garden, and these gardens adjoining to the house, are now destroyed, from whence common fruit has risen in price to the full proportion of every other article in life. I cannot therefore but believe, that an orchard, which, sensibly planted, will little or not at all impede the growth of grass, corn, and other vegetables, would soon become the highest improvement the lands in this country are capable of receiving: But a dissertation on Fruit-trees being foreign to the present subject, I only mention, that if some of the most favourable quarters for fruit were inclosed, and planted with strong well-cultivated trees of them, in fourteen or sixteen years, every tenth acre of the orchard would certainly pay the whole expence laid out in our Forest, and lay the foundation, without further expence, of an estate, increasing considerably for ages. Apples and Pears, the most certain and profitable standard fruits, will succeed in land of any tolerable depth, though coarse and heavy, having been exposed and meliorated by the winter's frost and summer's sun.

CHAPTER XLI.

ON making TREES FIT FOR REMOVAL, that have stood uncultivated and too thick in Nurseries or Woods.

THOUGH the longest experience, and most extensive knowledge in planting, will not for many years, if ever, bring overgrown unremov'd trees to the comely figure and luxuriant growth of those that have been reared from young plants, according to the preceding directions, yet, where one cannot procure such, and have of the former, they may turn them to account, and soon make a figure in a bare field, or about a new-built house.

THE trees worthy of this labour ought not to exceed fourteen or sixteen years growth, or from twenty to twenty-five feet high, as, if older, in general the cutting of either their roots or bodies will be doing them a violence they will never recover so perfectly as to become handsome trees, but ever continue in a spreading bushy form.

THE sorts to be treated in this manner, are the different species of Elms, of which the English, as the most aspiring, and that soonest recovers its wounds, is far the most proper. The Lime will bear this operation at a great size, soon heal, and afterwards may be formed with ease to any shape you please :

The Ash and Oak will likewise admit of cutting well enough at the ages mentioned, but these ought to be cut higher in proportion to their bulk than the former, and where the bark is smoother and thinner; from whence the shoots will be fewer, and rise in a more perpendicular direction. In this direction, and in the strength of the branches, they will be much assisted, by rubbing off all the tender shoots, but one or two of the most erect and vigorous, from the beginning till the end of June.

THE Beech, the Platanus, the large-leaved Maple, the Hornbeam, the Sweet Chestnut, the Horse Chestnut, the Poplar, and the Laburnum, will also bear being reduced in height, but will not afterwards grow lofty, or in the pyramidal form, but, in detached trees, on lawns, or other grazing fields, may make graceful spreading plants, and afford an agreeable salutary retreat for men or cattle from the scorching summer heats.

THE first step to be taken in this business, is, to mark out what trees (if any) you intend should remain on the spot, as also those you mean to remove for planting again, leaving them at such distances, as that there may be sufficient bounds for making a deep trench round each plant for undermining them the following season. This being done, in autumn grub out by the roots all the others, and trench the ground at least three feet deep, of whatever quality it be, which will encourage many spreading roots from the sides, and better prepare them for what is to ensue. Early in the succeeding spring, cut your trees over at a suitable height, a good deal slanting, immediately above where buds are, or branches have been, and rub over the wound with pitch, or cover it with a plaister of clay mix'd with horse-

dung, such as has been directed for grafts. It is impossible justly to ascertain the height these trees should be reduced to, that depending on their proportions, as the strong-bodied plants must be cut higher than the more slender of the same height. I shall suppose them, from standing very thick, to be drawn the length of twenty-five feet; in that event, cutting them from twelve to fifteen feet high may probably be about a proper medium, but the precise standard must depend on some little knowledge in the operator, or rather director, as indeed the wounding or pruning of trees of every kind, and for every particular purpose, ought not to be left to the barbarity of common labourers, but have more attention bestowed, and gentler treatment given them, than they usually meet with.

THE general practice in cases of this kind, is reducing both the tops and roots of the tree at the same time: But this is a severity they will not bear; for though they may outlive it a few years, it will be but in a consumptive way, from which they never fully recover: Therefore, to do this effectually, two years more must at least be employed.

THE following spring then, make a trench between three and four feet deep, and full four feet wide, round all the plants to be removed: Bend the tree so far to one side, as that you can come easily at the downright roots; after which, with a sharp hatchet, cut them across, but leave the side-roots, particularly those nearest the surface, as little disturbed as may be: This being done, replace the plant in its former upright station, and throw back the earth taken from about it.

A YEAR after, open the same trench, and shorten all the spreading side-roots, which will much increase their number, and make the earth adhere to them when the trees are raised for good, and which they may be the succeeding season, but it will still be better if they remain another. It may naturally occur, that if any of the trees are to remain, reducing their overgrown heights is all that is necessary to be done with them.

THE reason of taking two or three seasons for preparing these roots in the manner directed, is, that the strength of the trees may be as little impaired as possible, particularly such as you intend to grow lofty in the pyramidal form, which, when all the wounding operations are performed at once, they cannot do, as the shoots, from weakness, will not grow perpendicular, but loose and straggling, though, by using these precautions, and having this patience, which in the main is losing no time, the upright shoots will be straight and vigorous before the trees are raised, and, being furnished with plenty of young fresh roots, they will rise with bulks of earth about them, and continue in a healthful state.

FOR the best manner of planting these trees, see the ELM.

F I N I S.

P O S T S C R I P T.

*I*F the foregoing TREATISE is favourably received by the Public, another, on FRUIT-TREES, will suddenly follow, principally written a good many years ago, and before any part of this was farther advanced than Notes taken from the different effects of different practices. What is meant to succeed, was founded during very extensive practice, and the result of a great variety of annually repeated experiments and observations for above twenty years; during which time, fortune was favourable, and liberally afforded all the aids necessary to make the fullest and most accurate enquiries into the nature of that subject, being provided with a considerable extent of ground in the happiest situation this country will admit, and a greater variety of the better kinds of soil than I have ever known in that extent. These favourable opportunities were not for some time given in vain: A great number of wall, espalier, and standard Fruit-trees, were planted out—for all the different purposes, and in all the different forms hitherto directed or practised: Hence every opportunity of instruction was given, and the materials for the proposed publication were collected.

From the lateness of our Spring, and shortness of our Summer months, we are, by usual practice, incapable of ripening the best kinds of French Fruits, even on our warmest south walls; and our common espalier and standard kinds, that come late in Autumn, are, many of them, from want of maturity, unhealthy,—and all of them far from perfection.

If then, attended with many other agreeable circumstances, a method shall be plainly pointed out for ripening our Winter Fruits, in all their various situations, at least three weeks earlier than they now are, and at the same time improving them both in size and flavour, I must imagine such a discovery ought to intitle a man to the protection and encouragement of the Public, as the effects arising from it must be both honourable and profitable to the whole island of Great Britain. By prosecuting this plan, we should, to my certain knowledge, eat at least as good fruit at Edinburgh as they now do at London,—and, as near as I can judge, much about as good at London as they do at Paris.

I am very sensible, that to ignorant and illiterate Gardeners this will appear a ridiculous, and even to those of competent knowledge and observation, a sanguine attempt; but I can honestly, and will therefore boldly affirm, from no slighter a foundation than having already done so, that I can not only perform the utmost circumstance here advanced, but do it likewise by easy means, and without any additional expence to the usual culture worth naming.

The original bent of my genius inclining me to the study of Fruits, and my first Essays on Gardening being experiments on improving their culture, I have long intended the publication now proposed; but a bad state of health, besides the great expence of Plates, &c. that must necessarily attend such a work, and some other unlucky circumstances, has hitherto prevented me: And now I am not sorry it was delayed, as the longer I have lived, and during the farther continued course of my observations, I have ever found that kindly warmth proceeding from the shelter of Forest-trees, and Hedges, no less essential towards the production of generous

Fruits, than other common vegetable crops; whence the Treatise now presented, ought naturally to precede the other designed.

Tho' many are the examples I could give from the improvements made on the culture of Fruit,—it may here be sufficient only to mention one: That I have eat my own Golden Pippins at Edinburgh, fully ripe, double the common size, and in all respects in the highest perfection, the beginning of November. Upon the whole, had I a thousand lives at command, I would stake or risque them all, without the smallest anxiety, on the success of what is above mentioned.

As I have noticed the indiscretion of some Authors, by writing on all the various branches of Gardening,—it may here be necessary to inform the ignorant, that I do not subject myself to that just censure by the proposed work. The culture of Fruit and Forest-trees, in many material circumstances, are similar, and the study of them entirely consistent with one another,—or rather, but two parts of the same plan.

ATPJV

597

