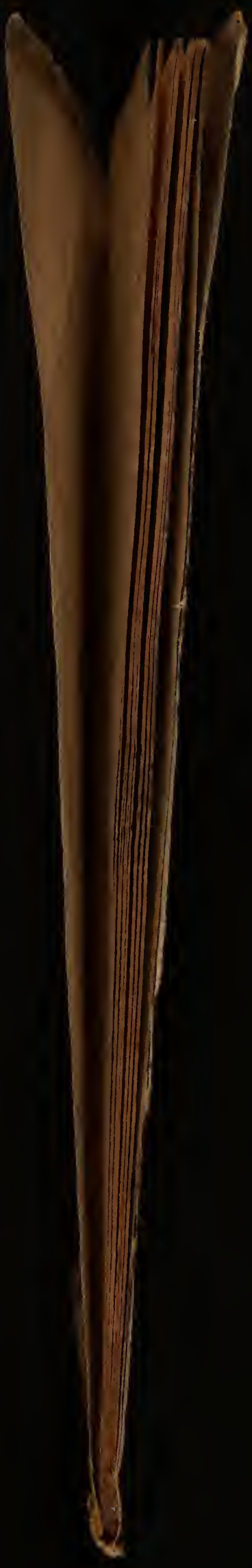

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[London N. Okes]

1613

NEW DIRECTIONS OF EXPERIENCE TO THE COMMONS

COMPLAINT BY THE INcouragement of the Kings most excellent Maiesty, as may appeare, for the planting of *Timber and Fire-wood.*

WITH A NEERE ESTIMATION what millions of Acres the kingdome doth containe; what Acres is waste ground, whereon little profit for this purpose will arise.

WHAT MILLIONS HATH BIN Woods, and Bushy grounds, what Acres are Woods, and in how many Acres so much Timber will be contained, as will maintaine *the Kingdome for all vses for euer.*

AND HOW AS GREAT STORE OF Fire-wood may be raised, as may plentifully maintaine the Kingdome for all purposes, without losse of ground; so as within thirty yeares all Spring-woods may be conuerted to Tillage and Pasture.

Inuented by Arthur Standish.

Anno Domini. MDCXIII.

By the King.

To all Noblemen, Gentlemen, and other our louing Subiects, to whom it may appertaine.

HEREAS Arthur Standish (*Gentleman*) *hath taken much paines, and bene at great charges in composing and publishing in a book, some proiects for the increasing of Woods, the decay whereof in this Realme is vniuersally complained of: And*

therefore We would be glad that any inuention might further the restoring thereof: We haue therefore beene pleased to giue allowance to this Booke, and to the Printing thereof. And if the same shall be willingly receiued of the Gentlemen, and others of ability, who haue grounds fitting for his proiects, it shall much content Vs, doubting not, but that such as shall thinke good to make vse of the Booke, will deale worthily with him for his paines. And We are also pleased for the better encouragement of the said Standish, *hereby to declare, that Our pleasure is, that no Person or Persons whatsoeuer, shall Print any of the said Bookes, but for and to the vse of the said* Standish, *and none others.*

Giuen vnder our Signet at *Andeuer*, the first day of *August*, in the ninth yeare of our raigne of *England*, *France*, and *Ireland*, and of *Scotland* the fiue and fortieth.

God saue the King.

New Directions for the planting of *Wood, by Arthur Standish.*

WHEREAS It pleased the Kings most Excellent Maiestie, forth of his Princely respect, for the better repairing of the ruine of this Kingdome, for the good of euery particular person : the publique good of the Common-wealth, and the preseruing and maintaining of the same for all posteritie, to giue alowance to the Printing and publishing of the Booke, that I presented vnto his Maiestie, principally concerning the planting and preseruing of wood, as hath and doth appeare to all men, whereby I am the better animated by his Maiestie, and many other good men, to perseuere in so needefull and more then necessary businesse, and to apply my whole indeuour, to seeke out all possible means that may be found to effect the same: with the least charge & losse of ground, the better to incourage all his louing Subiects thereunto: by meanes whereof, together with the daily conference that I haue with many of the better sort; and oft, for this purpose with Husbandmen, and workemen; who (for the most part) haue best experience in this businesse, being loath to write more then by mine owne eie-sight I know to be true. Further, seeking to know the opinions and experience of many vnderstanding and good Common-wealths men,

men, to ſeuerall ends; and hauing conference with ſome skilfull Surueyors of Land, and ſuch as take vpon them to know the number of Acres, that are contained in this Kingdome: Thus, obſeruing what I heare or ſee, tending to any publique good, eſpecially for this buſineſſe, I attaine to a neere eſtimation what Acres the Kingdome doth containe, what acres wil plentifully ſupply all wants, and maintaine the Kingdome for euer, being planted and preſerued, as followeth: and how as great ſtore of Fire-wood may be raiſed, being maintained, as may plentifully maintaine the Kingdome for all purpoſes, aſwell for the making of yron, and all other mettalls that the Kingdome doth affoord for euer; ſo farre from the loſſe or hurt to land, as it may rather greatly better and improue it: Firſt, it is generally decreed by all Surueyours, that the whole kingdome containeth nine and twenty millions, fiue hundred ſixty eight thouſand acres, or neere thereabouts: whereof it is ſuppoſed that there is foure millions, and al the odde thouſands waſte, that yeeldeth little or no profite at all; and that there hath been within a hundred years laſt paſt, foure millions of woods and buſhy grounds, that yeelded little profit, but wood and buſhes, ouer and aboue Parkes, Forreſts, and Chaſes.

Forth of which twenty nine millions, and the odde thouſands, the waſtes being deducted, which in effect is fiue millions, the remainder is fiue and twenty millions: whereon wood, hath, doth, or would grow, if it were planted and preſerued: Firſt, for this purpoſe, take forth of euery thouſand acres, forty foure acres, incloſe and plant the ſame according to the directions following: Wherſoeuer it lieth, plant foure acres of euery forty foure in rowes, ſo as there may be contained in a hundred thouſand acres, ſo much timber as will plentifully ſerue the Kingdome for all vſes, euery tree to be ten yards diſtant one from an other one way, and three the other, which can be no loſſe to ſuch as ſhall plant, neither for their owne vſes, nor for ſuch as want ground to plant on; in reſpect that ſuch as want, muſt be conſtrained to buy of ſuch as haue to ſell, which is ſo farre from the loſſe of any, as it will be for their greateſt profite; for after twenty

yeares

yeares the forty acres will yeeld much more profite, either in corne or grasse then the foure and forty did before, ouer and aboue the benefite of the timber; and in the meane time, little or no losse. The like planting for fire-wood might bee made in rowes, as shall appeare, but it is altogether needelesse; for the very hedges, being planted and made as after followeth, will yeelde Fire-wood plentifully for all vses, as by experience shall appeare, so as within thirtie yeares it may be more then needefull to haue any Copies or Spring-woods at all, but that all Wood-land may be conuerted to Tillage or Pasture, to the particular good of the Owners and Common wealth. Further, shewing in particular, what publique good may arise thereby. In the meane time, it were very conuenient, that the stocking vp of woods were preuented, except they were stocked vp into rowes, for it is generally conceiued, that within a very few yeares, there will be little or no wood left for any vse, the stocking & stubbing is so great, notwithstanding the Lawes prouided, by the worthy King of famous memory *Henry* the eight, for the preseruing of wood; which laws haue beene from time to time continued, and are still in force, and haue beene most earnestly called vpon by the Kings Maiestie euer since his comming to this kingdome, especially at euery high Court of Parliament, where he hath not onely required the continuance thereof, but also most earnestly giuen it in charge (especially at the last Parliament) that some course might be taken for the planting and preseruing of woods, which assuredly (as I haue heard) was intended at the last sitting in Parliament, the which cannot be vnknowne to such as daily stocke and stubbe vp woods: neither respecting the displeasure of his Maiesty, nor the breach of the Lawes in that case prouided. In euery countrey wood is daily stubbed vp, especially within twenty miles of London, where wood is pretious, and too deare for the poorer sort; by meanes thereof, they are constrained to breake hedges, to the great decaying of wood, and to the grieuance of euery man that hath woods & hedges, and to their great charge, which I finde generally complained of, and daily more and more wil be complained of: for (say the poore) Though they

want

want victualls, that is too deare for them to get by their honest labour, yet will they not perish for want of fire, so long as it is to be gotten. The best remedy for the same, is, a generall Plantation, whereby no one man may feele the losse that some few do, that plant; for as they plant the one day, the poore plucke or cut them vp the next day, if not the same night. Which, if all men should be constrained to plant, it would be as it is in *Worcester* shire with fruit, where the plentie is so great, as the stealing of some few is neuer missed: Euen so would it be by the generall planting of wood, and in time be growne so cheape, as the poore would rather choose to buy then steale it.

Also the making of yron and glasse, hath beene, and is the greatest decay of wood; notwithstanding, yron was neuer so ill, nor neuer so deare as it is at this instant, by the halfe, before so great store was made in this kingdome; & by all likelihood is likely to grow dearer: the reasons why it is so deare, are especially two; the one in respect that wood is so worne out, as many are constrained to giue ouer the making therof: which want may be supplied by the meanes following, namely, out of hedges by lop-wood, which will approuedly make as good char-cole for all vses, as any other wood, which may be continued so long as it shall please GOD the Kingdome shall endure: the other is in respect, that before so great store of yron was made in this Kingdome, the Merchants bought Cloth of the Clothiers, which beyond the Seas they exchanged for yron; which was better yron, and better cheap then the English yron: the want of which exchange, together with the transporting of Wooll beyond the Seas, the worthy trade of clothing is so decayed, as many poore people that were set on worke by the abler sort of Clothiers, are constrained to beg, that before liued well by their labour: Also there are millions of people that liue in great feare, that they in a short time may fall into the like necessity, which are the Carpenters, the Shippe-wrights, the Plough and Cart-makers, the Ioyners, the Cowpers, and the Coach-maker. Whereupon it is generally conceiued by all men of iudgement, that enter into consideration of the premisses, that without a speedie

die generall Planting and Preſeruing, both of Timber and Fire-wood be, the Kingdome by no meanes can be maintained another Age; which with ſmall coſt and labour (to willing mindes) in good time, may be preſerued and maintained, as plentifully as euer heeretofore: as ſhall be proued to the glorie of God, content of his Maieſtie, their owne ſelues, poſteritie, and Common-wealth.

Concerning the Planting and Preſeruing of Timber, all men with whom I haue conuerſed, are of one minde, that a better direction then herein is ſet downe cannot bee deuiſed, which is, by planting groues of a Roode, or halfe a Roode of ground in a Groue, in paſture grounds (or as followeth,) eſpecially in Rowes, whereby much more timber may be raiſed in leſſe ground as ſhall appeare; which being performed, there will be timber enough for al purpoſes, with the ſurpluſſes of Timber that may be planted and preſerued in Forreſts, Chaſes, Parks, Commons, or common Paſture, and much the better it will continre, if it be ſo prouided, that none ſhall fell or other-waies make away any tree or trees, but to be enioyned to plant and preſerue ſo many as ſhall be felld, or other-waies made away. Thus may Timber be raiſed two ſeuerall waies; the one in Groues, the other in Rowes: for Groues, ſuch as haue but one hundred acres, and ſo for ſuch as haue more, to incloſe for euery hundred acres, one ſeuerall Rood in ſome corner of a Cloſe, which is already incloſed, for the ſauing of charges, where halfe of the Fence is already made, and is to be maintained notwithſtanding this deuice; or rather in the middeſt of a Cloſe, although the charge be ſomething the more, where the cattell may not onely haue ſhadow in Summer, but alſo ſhelter in Winter, euery way the better. To improue the cloſe and cattell, the plot of ground for this purpoſe of one roode, would be in length tenne pole, in breadth foure: in which length there is contained fifty fiue yards, and in breadth twenty two yards. In which plot of ground there may be planted fiue rowes of trees for Timber, and in euery rowe there muſt bee digged vppe foureteene plots of a yard ſquare, which ſhould be digged vp two ſeuerall times, betweene Midſummer and Michaelmaſſe; and a-

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gaine, when the meanes following are to be set, according to the nature of the soyle, and the directions following; euery plot to be foure yards distant euery way one from an other; so there may be contained in a Rood of ground threescore and tenne trees. And in euery of these plots so digged, there may be set nine, a foote one from another, (either Akornes, Chessenuts, Beech-maste, Keyes of Ash, Rootes or Chips of Elme) being so set, & come vp, the ground would be weeded twice, or thrice the first and second yeare, if occasion serue, and after foure or fiue yeares, when it may be discerned which of thē is likest to be the best trees, there would be but foure left, the other would be drawne vp and planted else-where at the Owners pleasure. And after sixeteene or twenty yeares three of the other may be felld, and made away for some vses; and onely one, being the very best, to remaine; from which all the leaues would be plucked off by hand within a foote of the top, in the beginning of Iune, so long as a man can reach them, and afterwards cut off with a knife, or light forrest bill, made for that purpose. The reason why I wish the planting of Groues to be in so many seueralls, is, that when a Groue is felld, it should be all felld: for the felling of trees in woods at seuerall times, hath beene a great decay to wood. And further, by experience it may be proued, that seldome good timber groweth of old stocks; by reason whereof, I could wish that trees should rather bee stocked vp, then felld, that the ground might be planted againe. The second way for planting in rowes is as hereafter followeth.

For the planting in Barren, Champaine, or Gorsie grounds, either for Timber or Fire-wood.

IF in all Champaine Countries, where land is barren, and fewell so scant, that they are constrained to burne the straw, and manure, which should be imployed to the manuring of land; the want thereof is the vtter vndoing of many a Husbandman, who tilleth much land, soweth much seed, and reapeth much losse, for want of manure. If therefore (I say) not

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onely of my ſelfe, but alſo in the opinions of many vnderſtanding men, inhabiting in ſuch countries, that if ſome part of their bareſt grounds that lieth ſo far from the town wherunto it doth belong, that ſeldome, or neuer it is manured: by reaſon whereof it oft lieth ley, and yeeldeth no profite: if for this purpoſe, there were eleuen acres of that land, as it lieth together, and that one acre of the eleuen were planted with wood in rowes, and after that rate for more or leſſe, according to the number of the Acres that are in the poſſeſſion of the Lords of Land, and their Tenants in euery towne; which acre may thus be planted: (firſt it is to be vnderſtood, that a ſtatute acre doth containe in length 220. yards, and in breadth, two and twenty. Firſt make a good Fence, according to the directions following, and then beginne at a ſide of the eleuen acres, and meaſure ten yards in breadth, and in euery eleuenth yard digge vp fiue and fifty plots of ground of a yard ſquare; and ſo in euery eleuenth yard from ſide to ſide: Euery plot to be three yards betweene one an other in the rowes, ouer and aboue the ſquare yard for fire-wood; for Timber but two yards betweene the ſquare yards, ſo as there may be three ſcore and fourteene plots in euery rowe, and ſo planted and obſerued, as before is declared. Whereby there may be contained in one acre, one thouſand ſixe hundred and odde trees for timber: In foure acres of the thouſand, ſixe thouſand and foure ſcore, euery tree to growe one from another tenne yards one way, and three the other; and for fire-wood, one thouſand one hundred and tenne. There may be alſo contained in one entire acre, one thouſand two hundred and ten trees for timber, euery one to haue foure yards of ground to thriue on.

Theſe Directions may be obſerued by ſuch as are deſirous to plant ſpacious grounds, ſo farre from the loſſe of ground, as the ground thereby may be much improoued, eſpecially if the ground be barren, by letting it lie ley foure or fiue years after it is planted; which lying will better the ground, ſo as it may be plowed between the rowes, and ſowne with corne, and for two or three yeares haue good croppes: in which time the plants will be ſo growne vp, as it may be a ſheepe-

 paſture

pasture, till the wood be past taking hurt by cattell: in which time the shadow of the trees, and the rotting of leaues, and the manure of the sheepe will better the ground, so as it will be good medow, pasture, or corne ground, at the Owners pleasure, for his best profit. This were a very profitable course to be obserued in sheepe-walkes, on Downes, where hedge-wood is scant, as commonly it is in such barren grounds. The best way to inclose, is (if it be in swarthy grounds) to set the aforesaid meanes as a foote-set of thornes without any ditch, and to raise the Fence of either side by walles of Soddes, as is to be seene betweene *Lincolne* and the Horse-race, or as commonly sheepe pennes are made in Downes and Heaths: If no swarth, by a double ditch, and set the meanes on the top of a banke, being made a yard broad on the top, so as a hedge of a foote high of either side will serue to defend it; and by a like planting in all gorssie grounds, where gorsse groweth so naturally, that the Owners of the grounds can by no meanes destroy it: great store of timber or fire-wood may be raised, with the other profits, and the soyle much improued: for after the trees be past taking hurt by cattell, the gorsse betweene the rowes may be stocked vp, so as the tenne yards of ground betweene the rowes may bee sowne with corne, and being limed when it is tilled, the lime, together with the shadow of the trees, will approuedly so destroy the gorsse, as the ground will be recouered to be corne, medow, or pasture. In like sort, all broomy ground may be improued. Some that haue gorssie grounds, haue obiected, that if their gorsse should be destroyed, they should be damnified thereby, in regard they haue no better fewell. To such I haue giuen good satisfaction, that it is not intended, that the gorsse should bee destroyed, before the wood bee past taking hurt by cattell, when the wood will yeeld better fewell, and better store.

How to improue barren ground.

THE best remedy for barren grounds, either for sandy or clay, for fruit-trees, or any kind of wood, to make them grow speedily, & without mosse, is for sandy land, to make a

hole

hole, ſo bigge, as it will holde the quantitie of three buſhells of good earth, and a buſhell of vnſlecked lime; then put into the hole a third part of the lime, and vpon that lime, lay a third part of the earth, and vpon that earth, another part of the lime, and vpon that lime a third part of earth, and ſo the reſt: and in like ſort ſand and lime for clay land, and ſo lay more or leſſe, as occaſion ſerueth. Thus mingle them together, and let it lie a quarter of a yeare before it is to be vſed; and when you remooue a yong tree, or ſet a ſtocke to graffe on, lay vnder, and about the roote a buſhell of the lime and earth well mingled together, and powre thereon a paile full of water, which water will waſh the earth cloſe to euery roote. And to any kind of Peach or Plumb-ſtone halfe a pecke; and for Cheſſenuts, Akornes, or any other kinde of ſeedes of wood, vſe this mingled earth in diſcretion, and approouedly thus being vſed, they will grow more in one yeare then in any other ground in two, though the ſoile be good: and it is a ſpeciall good manuring for corne, the nature of lime is to make clay-land lighter, and ſand-land ſtiffer, as partly may appeare in buildings, that lime and ſand do make morter, when it is drie, as hard as ſtones.

For the planting of Timber-trees, or Fire-wood, in Forreſts, Chaſes, Parkes, Commons, and common Paſtures.

EXperience hath, and may teach all men to know, for it is to be ſeene with the eyes of all men, that in all ages, buſhes haue beene, are, and will be (if they be preſerued) in all grounds, the mother and nurſe of trees, ſo that all men may take notice thereby, that by the digging vp of a hole a foote ſquare, and three or foure fingers deepe, in the middeſt of any tuft of buſhes, gorſſe, furres, or whins, as ſome terme them, or in hollinbuſhes, and therein to ſet 3. of the maſt of oake, cheſſenuts, beech, keys of aſh, the roots, or chips of elme, or rather rootes or ſykamore ſeeds which wil grow as faſt as any other wood, the body good for little, but for to make trenchers, or drinking-cups, and for thoſe vſes, better then any other wood growing in this kingdom, as before is ſet down:

any of these, according to the nature of the soile, wherin these are to be planted: out of which three it is not to be doubted, but one of them at the least, wil grow and prosper, the bushes being preserued about them, till the plants be past taking hurt by cattell. This may be performed with a small charge, for a man may set a hundred in a day at the least, by experience I speake it, which can not cost aboue twelue pence (a thousand for ten shillings.)

Many there are that like wel of this planting of wood, and many doe obserue it, that before were desirous to raise wood, by taking vp of yong trees where they did grow and prosper; which are weary of that kinde of planting, by reason that for the most part, halfe of them doe not grow, which mooueth many to obserue these directions: And some there are that say they like these directions well; but say they, it is against the nature of this Age to tarry so long for profite. To which I answer, That if the Ancestors of noblemen, gentlemen, and others, had had so little respect to their posterity, as we haue in this Age; there are some noblemen, and many others, that would haue been constrained to haue sold a great part of the land their Ancestours left them, to supply the wants which they haue supplied by their woods; and it will fall so out ere it be long, that such must sell land, for wood their Ancestors will leaue them none to sell. And to content such, and all others, I haue added by experience directions for this present Age, as followeth towards the latter end of this Booke.

For the planting of Fire-wood about Parkes.

HOw all Parkes may be fenced by fire-wood, so as after tenne or twelue yeares it will be stronger then any pale; and after forty yeares stronger then any wall, and longer lasting by many degrees: and being once made, neuer to be made againe, with the charge and profit that may arise thereby. Say for this purpose, that there is a parke to be fenced of foure miles pale-walke, which miles containe in length thirty two furlongs of Statute-measure, euery furlong containeth forty poles, euery pole fiue yards and a halfe: Admit there were no ditch at all about the pale, nor wood (as commonly there is)

is) and that all were to be ditched and fenced anew, with a ditch of fiue foote wide at the top, a foote and a halfe broade in the bottome, and three foot deepe, and that this ditch, with the getting and setting of the meanes aforesaid, for the planting of timber, should cost twelue pence a pole; the totall of the charge three score and three pounds at the most: for it is certaine, that much of this may be saued: for in many places the ditch cannot be so chargeable; for about many parks in some places, there need no ditch at all, and in some places, a lesse ditch will serue. Neither can the hedging be chargeable in two respects; the one, by reason that about many Parkes, there are many thornes growing, which being felld to make the fence once, will afterwards so grow vp, as they will defend the wood so set without any further charge; and about many parkes there is as much wood growing as will defray the charge: so as to some the effecting of this busines, will be little or no charge at all. The earth of this new ditch must be cast to the pale-ward, so as the banke may be a yard broad on the top: fence there needeth none, but long bushes so put betweene the pales aboue the railes, as they may reach and hang ouer the banke into the ditch.

This being done, for such soiles as by experience Maste and Seeds will best like of, as may best appeare by the wood thereon growing, the Maste would be gathered as it falleth from the tree, and not beaten downe before it be ripe. The Ash keyes may be gathered about Alhollontide: being thus gotten and gathered in, they would be kept neyther too wet nor too drie, till they be set, according to the directions following. The rootes of Elme are to be gotten by baring olde Elmes at the roote, betweene Alhollontide and Candlemasse, when the sappe of trees is in the rootes, from whence there may be taken, without hurt to the Elme, many yoong rootes of the bignesse of a little finger, and a foot long. And as of Elme, so of Wiche, being a wood as apt to grow speedily as any other, which are to be cut from the oide rootes. These yong roots would be set as a foot-set of thornes within a foote of the pale, so as the thornes may hang ouer them; set in the ground, and one inch out of the ground: so likewise

wiſe in the ſides of banks, as quick-ſets, they are to be ſet in 2. rowes, 3. fingers broad betweene the rowes, and ſo ſet as they may not ſtand directly one againſt another. The maſte and ſeedes would alſo be ſo ſet in two rowes, three fingers betweene euery rowe, three fingers deepe, and foure in a foot in either rowe. The boughes of Elme, Willows, or Sallow, would bee lopped from the trees betweene mid-March and the middeſt of Aprill, when the ſappe is in them, and before the leaues put foorth; they would be of three or foure yeares growth, of the freſheſt, ſappieſt, and knottiew. Thus being lopped from the trees, they would be cut in length of a foote long, colt-footed at either end, the boughes and twigges being cut off cloſe to the body: they would bee laid in trenches in two rowes, three fingers deepe, with the knotty ſide vpward, and three fingers betweene the rowes a hand breadth one from an other, and couered with earth, which is neither weedy nor graſſie. Theſe boughs would be laid the ſame day that they are lopped, or the next day after at the fartheſt, or ſet in the ground as ſets a foote deepe.

This being done, they will within ſixe or ſeuen yeares bee growne ſo high, as the plants may be bended, and laied as a plaſhed hedge, but not cut at the rootes: the reaſon is, that being ſo yong the plants will eaſily bend, which way a man will haue them, and when they are to be laid, the rowe that is to be laid, would be ſhread cloſe to the body, and topped ſo high as when they are laid, the toppe may lie ſeuen foote wide from the roote, and ſo high as a beaſt may not reach the tops: And when the rowe is in laying, if they grow thicker then a foote aſunder, ſome may be cut vp for bindings, to binde them downe that are laide, for thicker then a foote aſunder is needeleſſe for them to be laide. The other rowe would be yearely ſhread, and kept with ſmall tops, the leſſer to hurt the Fence ſo laid, and ſome of them are to be bound into the fence ſo laid, to ſtand three or foure yeares for ſtakes, ſo as thoſe that are thus bound downe after two or three yeares, will continue ſo, and lie as railes; and if cattell bee kept from the browſing of them but a yeare: the boughes will ſpring foorth of the knots, ſo as the Fence will

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be both thicke and ſtrong, and much the ſtronger, by the helpe of the other rowe, which after the fence of it ſelfe is growne ſtrong, may be felled and imployed to other vſes. This in common reaſon (as I ſaid before) cannot but in ten or twelue yeares be a ſtronger Fence then any pale, and in a ſhort time ſtronger then any wall, and longer laſting, without further charge. And this for experience, in part, may be ſeene in all wood-land countries, eſpecially in Fences about Woods, where it is to be ſeene, that for want of thornes in many places all kinde of woods are plaſhed, and thus laide, which in ſome places haue laine ſo long, as they are growne ſo great, that they are incorporated one into another; notwithſtanding liketh very well, and yeeldeth much fire-wood by lopping off the toppes and boughs that are growne forth of them ſo lying.

And as in this, ſo in other things, by experience I write of that which mine eyes haue ſeene in many places for two or three poles together, where there haue beene fiue or ſixe heads growing out of one tree ſo laide. And for the better proofe hereof, I haue alſo ſeene, as I haue rode by the way, in an Orchard (in little *Waltham* in *Eſſex*, foure miles at the moſt from *Chelmsford*,) an Apple tree that was blowne downe many yeares ſince, which lieth cloſe to the ground, the root hauing ſome ſmall holde in the ground, which hath put forth of the body ſo lying, fiue trees at the leaſt, which are ſo nouriſhed as they beare fruit. I haue alſo ſeene in a towne within two miles of *Stone* in *Stafford* ſhire, in a ground of maiſter *Ratliffes*, a Peare-tree that was likewiſe blowne downe, bigger then a fadome about, that ſtood in a hedge, which tree lieth a yard from the ground, being ſtaied ſo by two boughs that ſticke in the ground, which hath ſo taken roote, as thereby, with the helpe eſpecially of ſome part of the roote, that it hath alſo put forth, and nouriſheth fiue trees as bigge as the calfe of a mans legge, which grow a yard one from another; whereby it may the better appeare, that this kinde of Fencing may bee perfourmed, not onely with wood, but alſo with Apple and Peare-trees, if neede required, with ſuch as like thereof, to the good of themſelues and common-wealth.

Another kinde offencing there is, that many do like better of, then the laying of the wood, as is aforesaid, which by experience may be performed by letting the plants grow, and neuer to lay them, but yearely to shread the twigs of the one rowe, that after is to be felld, so as they may be kept with small toppes, the lesse to hurt those that are to remaine for the Fence, which rowe that is to stand for the Fence, would be topped at sixeteene or twenty yeares growth, fifteene or sixteene foote high from the ground, and againe after eight yeares, and then for the better encreasing of fire-wood they would be so lopped, as there may be as well three heads of a tree, as one, and euery head to yeeld as much wood, as if there were but one head of the tree: if when the worke-man doth top a tree, he would top it where the tree putteth forth most boughes, within three inches aboue the knottiest place of the tree, not too flatte, as many worke-men doe, but sloping, the lesse to take water for the rotting of the tree: at which second lopping, all the boughes would bee lopped off close to the head of the tree, but onely three of the greatest; the one that groweth directly vp, to bee topped halfe a yard aboue the head of a tree; the other two would be of those that growe outward, from either side of the tree from the rowe-ward, the lesse to hurt the rowe by dropping: which two would be lopped foure foote off from the body of the tree, by which meanes, as well from this, as from the other kind of fencing, there may be lopped from a Parke of foure miles pale, yearely, after one and twenty yeares, two furlongs of sixeteene yeares growing; and as in euery pole there was sixteene let to grow, so there are sixteene to be yearely lopped, which being husbanded, as aforesaid, would yeeld eight and forty heads, whereas if they should haue but one head a peece (as they haue three) could not yeelde lesse then three loades of wood in a pole of sixteene yeares growing; worth to be sold two shillings sixe pence the loade, ariseth to tenne pounds a yeare. The timber for paling and workemanship yearely saued, which can not be lesse worth then sixe pounds, (which timber is more then needefull to he saued) besides the profite of the browse for Deere) maste for hogges, and barke for the

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tanning of leather, which would arise to be much worth, if the wood might grow vntill it be twenty or foure and twenty yeares olde, which then would also yeelde many good sparres for the building of out-houses and cottages, with good store of worke for poore laboring men, by lopping and faggoting the wood. This direction were very profitable to be vsed about spring-woods when they fell their wood, and make their hedges, so as it may be made once for euer to great profite. What reason any man hath to omit this, I leaue to be censured by the discreet Reader.

For the increase of Fire-wood, by the Lopping of trees.

FOr the better increasing of wood by lopping of trees, experience will teach all men to know, that will obserue it, as hee rideth on the way in euery Countrey, especially in *Cheshire*, neere vnto the *Wiches*, (where salt is made, and much wood is spent by the boyling thereof,) that euery tree will as well yeelde fiue or sixe heads, as one, if workemen, when they loppe trees, would obserue the directions before set downe, for the topping and lopping of trees about parks, and in hedges.

For the increasing of fire-wood in hedge-rowes, between decayed trees, the best remedy is, that when such trees decay, and haue lop-wood on them, of the age of tenne or twelue yeares, within a weeke of the first day of August, or within a weeke after, when the sappe is in the tops of the trees, to set a discreete workeman into the trees, and there with a sharpe knife to cut off close to the head of the trees, all the barke a hand broad that groweth vpon the principall boughs that be likest to make trees, so cleane that he leaueth not the breadth of a haire, but rather cut part of the wood then leaue any of the barke: This being done, presently get good clay, and let one worke it to the breadth and thicknesse of a tile, and so long, or longer, as it may well lappe about the bough so pared, then lay thereon some fatte earth two or three fingers thicke, and lay the same clay and earth vpon the barke of the

bough next to the plot ſo pared, and with moſſe and bands binde theſe ſame on, like vnto a graffe, and ſo let it reſt, and about Alhollontide, then make holes in the ground where you would haue them to grow, and preſently ſaw off with a hand-ſaw the boughs ſo clayed, betweene the clay and the plot ſo pared, and ſo doe it as the earth be not ſhaken off, carry them, and ſet them halfe a yard deepe, fill vp the holes with limed earth halfe a yard broade about the plant and treade it well; if the ground be barren, make the holes ſo much the wider, and fill them: Being ſo ſet, ſtake them, and binde them as other Sets, and aſſuredly they will grow and proſper better then other Sets, or tranſplanted trees: If they be ſet betweene trees, loppe the olde trees before you ſet them, that they be not euer-topped, nor dropped by them: theſe being either elme, willow, or ſallow. As for other wood, I haue ſeene no experience (but of ſome boughs of Apple and Peare-trees, which being thus vſed, haue borne fruit the ſame yeare they were ſet,) I can finde no reaſon to the contrary, but that other woods may grow and proſper as well as theſe. This is the moſt ſpeedy way to beget woods.

All theſe Directions beeing obſerued, there may bee in good time, more timber, fire-wood, corne and catell contained in this kingdome, then hath beene at any time theſe three-ſcore yeares, and yet no woods at all: ſo that the ſoile of all woods in time may be conuerted to tillage, medow, or paſture, to the profite of the Kings maieſty, all Poſterity, and the Common-wealth. The kingdome thereby may bee the better defended from forren enemies by the Nauigation, the bankes of the Seas, and ebbing and flowing riuers defended, ſtaies maintained; all which cannot bee maintained but by wood, without which defence a great part of the kingdome is in danger to be ouer-flowen and ruinated: ſome proofes thereof were to be ſeene this yeare one thouſand ſix hundred and thirteene, neare *Blackewall*, where was a Breach that hath and will coſt two thouſand pounds to recouer it: And this winter, to the vtter vndoing of many an able man, in many places of this kingdom: the charge of ſtaies and banks in many ebbing and flowing riuers, is chargeable to many, eſpeci-

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ally in the riuer of *Owes*, where the maintaining of ſtaies and bankes coſteth the Biſhop of *Durham* at the leaſt a hundred markes a yeare, and is very chargeable to ſir *Thomas Mettam*; and all that haue grounds there, that are charged thereby, according to the proportion of their grounds. The decay of theſe bankes may in one tide drowne much land, and many townes: which the obſeruing of theſe directions, & ſome other following, will preuent.

The wood that may be raiſed about parkes, and the hedges within this kingdome, would raiſe many profites to the common-wealth, as the making of vron, and all other kinde of mettalls which the kingdome affoordeth, together with the burning of lime for the manuring of land, and buildings, and burning of bricke and tile for building, with many other profites to the kingdome.

For the increaſing of wood in the Springs of wood.

WHereas in ſprings I find many waſte places growne ouer with graſſe, by reaſon whereof, men couet to put in Calues and Horſes, which are great ſpoiles to woods. The onely way to furniſh ſuch places, eſpecially in barren grounds, which may beſt be ſpared for wood, vntill ſuch time that the other woods be growne vp, is either when the Spring is fiue or ſixe yeares growne, or when it is felld, to digge vp certaine ſquare yards, according to the ſpaciouſneſſe of the ground, three yards betweene euery plot, and therein to ſet, or lay in trenches the aforeſaide meanes, as is before ſet downe; and when they are growne vp fiue or ſixe yeares to plaſh them cloſe by the ground, and lay them in Trenches euery way from the roote three fingers deepe, and to couer them with earth, and ſo of all other wood that groweth of olde rootes, ſo as there may not be a waſte place nor any thornes left to grow, but proouing wood.

As for other grounds that are woorth twenty ſhillings an Acre yearely, (which is too good for wood to grow on) but

that the decay of wood is too great, I could wish that it were stocked into rowes, either for timber, or to top and lop it for fire-wood.

And whereas it is required by the lawe, that there should be a certaine number of trees preserued for timber, which is by few men performed, the reason is, that the dropping and shadow of them will destroy the vnder-wood, which is most true: my aduice is, that rather the number of timber-trees might be preserued in some corner of the Spring, where they may be preserued from many dangers which they are subiect to, as they are left in the Springs.

Concerning the planting of wood in hedges already made with thornes.

SOme do obiect, that the planting of wood in them will so destroy the thornes by the dropping and ouershadowing of them, as there will be no good fence kept. To such I answer, that if they would the next yeare after that they cause a hedge to be plashed, & the ditch thereunto belonging scoured, and some small quantity of the earth cast vp to the roots of the hedge; for too much earth so cast to the rootes of the hedge decay the hedge, and that they would set in the same earth such meanes as is before set downe, and so vse them, they might at any time after twenty yeares, haue both good store of wood and thorns, and also haue a stronger fence then any thornes can make. The charge of the setting and getting of the meanes in common reason can no way cost two shillings a furlong, for two men will set at the least two furlongs a day, the one man to make holes to set them in, and the other to put in the meanes, and couer it. The profite that may arise thereby is before set downe for the profite of parkes.

Concerning such as hereafter may inclose.

IS to inclose with the aforesaid means and not with thorns, whereby with lesse charge & labour they may raise a fence stronger and longer lasting, with greater profit, by the setting

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of the aforesaide meanes, on the top of the bankes, as is set downe for Parkes, which (by experience) will grow more speedily then thornes, and make a better fence, (as is prooued) that will with a good Gate, Locke, and Key, keepe all Cattell safe from stealing, and from breaking into any other grounds then the owner would haue them, safe from trespassing to his neighbour, or his neighbours to him; whereby much corne may be saued, trespassing preuented (which too often raiseth enuy, and suites in Lawe.) The browse of the wood in winter will greatly relieue cattell, and saue fodder: And being wood that will yeelde maste, the maste will be very beneficiall to the particular Owner, and Commonwealth.

Directions for such as are desirous to stocke vp woods, for the improouing of the Soile.

BY conuerting of the same to corne, medow, or pasture, & to haue as much, or rather more profite by the woods, then they had before; is, first, to leaue a yard in breadth round about the sides, for the maintaining of the fence, which may be made once for all, by obseruing the aforesaid directions: Then beginne at a side next to the wood so left, and stocke vp all the wood whatsoeuer, so as the ground may bee plowed tenne yards in breadth, and in the eleuenth yard stocke vp all but fifty fiue of the best trees, which trees would (as neere as may be) be so left, that they may grow foure yards distant one from another, from end to end, as trees planted in an orchard: and so stocke vp from side to side, and from end to end, leauing the like distance, so as there may be ten yards distance one way, and foure an other from tree to tree: by which meanes, in euery two rowes, there may be left an hundred and tenne trees out of euery Acre, how great or little soeuer the ground be: which being topped, and after twelue yeares lopped, with many heads (as they may be by the directions already set downe, or rather for a greater profite, left vnlopped till the wood be of twenty yeares growth) the profite thereof, by the greatnes of the wood, and the barke, with

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the profite of the wood that may arise about the fence (being made as before is directed) will farre exceed the profite of the vnder-wood growing of all the ground before.

But as the case standeth, and as is more like to stand, by the want of timber, if all the trees were left for timber, and neuer topped nor lopped, would, in time, arise to the greater profite; especially if they were euery third yeare shread in March, when the sappe is rising vp, and the wood worth the shreadding, which sappe would so grow, as it would couer the knottes, by which meanes the trees will grow taper-like, with so small tops, as the ground betweene the rowes may be plowed three yeares, and may be laide to grasse for nine yeares; so may you haue from time to time three yeares good corne, and nine yeares good grasse, and neuer to decay the land, but rather to improue it. The trees beeing thus kept with small toppes, can neither hurt corne or grasse, by dropping or shadow.

Some doe obiect and say, that if all Spring-woods were so stocked, how should hurdles be gotten for the folding of sheepe? To which I answer with experience, where wood is not lopped too young, some of the greatest boughes being lopped and barked, and then laide in water a moneth, they will be so rated, and grow so hard, as wormes can no way hurt them: and beeing so vsed, will make farre better and stronger hurdles, then any young rods whatsoeuer, as may appeare in many Countries of this kingdome where wood is so scant, as they are of necessity constrained to vse willow boughs for spars and laths for many houses, and to vse them about ploughs, carts, and harrowes.

Others do obiect, that the grasse in such wooddy grounds will be so sowre as cattel wil not like of it. To that I answer, that if the rowes be planted East and West, or so stocked, as the ground betweene the rowes may haue the morning, noon and euening Sunne, the pasture will be as sweet as any other: the corne will as well like of it as of any other ground, and will as well drie when it is cut, or if the cattell bee put into such grounds before they taste of a sweeter grasse, they will like as well of that grasse as of any other. And for the better

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proofe thereof: Who euer saw grasse lost for the eating, in any forrest, chase or parke, where trees grow thicke, notwithstanding the cattell in such grounds, (if they be not eaten too bare) like very well, by reason of the shadow in Summer, and shelter in Winter.

A further experience may be taken; to incourage all men hereunto, from about thousands of towns in this kingdome, where are to be seene little closes, of two, three, foure or fiue acres of ground, as haue so much timber or fire-wood growing about them, as if it were at this instant to be sold, would giue more money then the fee-simple of the land. Whereupon it followeth, very fittingly for this purpose, to shew what good may arise to the particular owners of ground, by obseruing these directions set downe in sundry places for these purposes, and how the kingdome may be improoued, onelie by wood planted about Parkes, and in Hedges made, and heereafter to be made of wood, so farre from the losse of any, as it may be to the generall good of all men, euen to the very pooreſt, whose reliefe I greatly desire.

1. And for my further experience, I sawe about Christmas last, a close of sandie Land of foure Acres, taken in the middest of a field belonging to *Downam* in *Norffolke*, about forty yeares agoe, and set round about when it was taken in, with young sets, (as it was confessed to me by the Owner thereof) of Ashe, rootes of Elme, and Thornes, and the most part of the stakes of the Hedge, were of Willow and Sallow, which Stakes and Settes of Wood did so take roote, as vpon my credite there is growing about the saide close fiue hundred fiftie and odde trees, of the aforesaide wood, whereof the Owner confessed vnto mee that hee did euery yeare loppe fiue and fiftie of tenne yeares growing, the which wood hee could yearely sell for forty shillings, and the foure Acres of ground hee could not let for aboue sixe and twentie shillings and eight pence yearely: So that I doe find by experience, that the most sure way to performe this planting, is to make nurseries, which may be kept from Mice by trappes.

And that the ſimpleſt may the better vnderſtand it, admit for this purpoſe, that a man haue ſixe ſcore Acres of ground in his owne occupation, and that it were equally diuided into twelue Cloſes, and that but halfe the Fences about thoſe twelue Cloſes did belong vnto them, by reaſon that they are ioyning to other mens Cloſes, (as commonly all incloſed grounds are) there remaineth to euerie of thoſe Cloſes, an end, and a ſide, at the leaſt, of the Fence, which containe two furlongs, which is foure-ſcore poles to a Cloſe; all which hedges being planted, according to the directions ſet downe for hedges, there will ariſe about theſe twelue Cloſes foure and twenty furlongs, whereby the Owner of thoſe Cloſes, may after thirty yeares, loppe yearely the wood about one Cloſe, being two furlongs, or one furlong of foure and twentie yeares growth; which is the greater profite by much, by reaſon that the wood being growne ſo great, it would yeeld ſparres for the building of barnes, ſtables, cottages, and ſuch like ſtraw-thatched houſes, with good ſtore of Barke for the tanning of leather, with a greater plentie of Maſte, then being lopped yonger, it would yeelde, with many other profites to the Owner thereof, and to the good of the Common-wealth.

The Maſte that may ariſe by this generall planting, will ſaue more corne (in thoſe yeares that it taketh) then the wit of man can imagine it to be worth. A late experience thereof may bee taken from the yeare of our Lord one thouſand ſixe hundred and eleuen, by the Maſte that the ſmall quantitie of wood that is left, yeelded that yeare: which Maſte fed ſo many hogges that yeare, as it greatly eaſed the priſes of corne, and other victualls. For the better proofe thereof, it is certaine, vpon confident report of ſeuerall honeſt men, that there was ſaued (by Maſte) in ſome one towne in *Leiceſter*-ſhire, forty quarters of beanes and peaſe; and in ſome townes more, and in ſome leſſe: which hogges were driuen into Shropſhire to Maſte, which in former Ages was a common courſe, before woods were deſtroyed, for the champaine Countries, to feede their hogges in wood-land countries:

tries: In which times the Officers of Noblemen and Gentlemen tooke twenty or thirty pounds a yeare, for the feeding of hogges in a Parke, or in a Wood, which hardly now take fiue pounds; and in many Parkes or Woods, not one penny, the woods are ſo made away.

So (to conclude) he that obſerueth the aforeſaid directions about the twelue Cloſes, may yearely loppe eight ſcore load of wood, of twelue yeares growing, woorth to be ſolde at two ſhillings ſixe pence the load, twentie pounds, and much more, if the cloſes be leſſe. Whereby it appeareth, that all Grounds incloſed, and that heereafter may be incloſed, may be improoued three ſhillings and foure pence an Acre yearely.

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