COMPLETE YIELD TABLES FOR BRITISH WOODLANDS

AND

THE FINANCE OF BRITISH FORESTRY

P. TRENTHAM MAW

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PREFACE

THE absence of any complete forest yield tables, based upon measurements taken in Great Britain, has long been felt. Hence I am prompted to publish the results of my own investigations concerning the growth of timber in this country, and the financial returns to be obtained therefrom.

In this connection I must acknowledge a reference to an article[1] by the late Professor Fisher on the growth of the young trees (now 19 years old) in the experimental plantation at Cooper's Hill, but with this exception I have derived no assistance whatever from the few measurements of individual crops which have been published by others.

I anticipate that many critics will assert that there is not sufficient evidence obtainable in this country upon which to base any complete yield tables. But with this view I cannot agree, except in regard to some of the recently introduced conifers from the Pacific coast, in which case I have put forward my tables provisionally, having also availed myself of data which I have collected in their native habitat, a region which I have on two occasions visited.

Now, were it possible to compile yield tables only by such means as are indicated by those who rely solely upon the methods adopted by German scientists, I must admit that there would not be sufficient evidence in this country. But my investigations into the growth of timber in this country have revealed a method, the existence of which, so far as I know, has not hitherto been realised, and have disclosed the fact that, *caeteris*

[1] Vide *Quarterly Journal of Forestry*, July 1909.

paribus, the growth of timber is characterised by certain girth indices and density factors, both of which are interdependent, and which are dependent also on the height growth, and if these and the height growth at different ages be taken into account, the preparation of yield tables is a comparatively simple matter; and results can be obtained which, there is ample evidence to prove, are approximately correct for all practical purposes.

I have previously, in *The Practice of Forestry*, published certain limited data as to the growth of timber on average land, but since that date I have investigated the matter much more extensively and in much greater detail, and whereas, speaking generally, I have no desire to qualify in any way my statements made therein, as to the yields and returns to be obtained from timber growing, yet, in the following tables I have made many alterations in respect of certain details, and furthermore I have given a vast amount of additional data in respect of practically all common forest trees.

With regard to German yield tables, the use of which in this country is advocated by many, who assert that such tables afford a fair criterion of the amount of timber that may be grown, and of the manner in which it should be grown here in Great Britain, I can only say that my own investigations are a direct negation of any such assertion.[1]

There is ample evidence to prove that it would be an act of the gravest folly if any attempt were made in this country to grow mature timber in as dense a canopy or in as crowded a condition as that which obtains in Germany, and is indicated by the German yield tables.

That somewhat similar yields of timber as are indicated in the German tables may be obtained in this country by means of densely crowding the trees I am willing to admit; but to adopt such a course would involve the expenditure of something like 1s. 6d. for every "shillings-worth" of timber so grown.

It seems to me that those responsible for the German tables have entirely ignored the economic side of the question, and that they have fallen into the grave error of imagining that the best practice is necessarily associated with those conditions under which the greatest volume of timber at any given age is attained.

Whereas, if I may assume the oracular cloak of an

[1] *Vide* Chapter I., pp. 3 and 6, where it is shown that, owing to the different methods employed in measuring timber in the two countries, the use of German yield tables is, *ipso facto*, rendered futile in Great Britain.

ancient seer, I would have my readers to remember that, within certain limits, the less timber per acre that is grown the greater are the profits.

In another branch of agriculture there is an apt illustration of the inadvisability of attempting to obtain a maximum volume of timber on any given area.

For, just as every farmer who is feeding "beasts" for a fat stock show realises that, beyond a certain point, every pound of flesh is produced at a monetary loss, so it is in the case of the forester, who, prompted by ambition and in his eagerness to obtain a maximum yield of timber, allows too close a canopy to exist in the woodlands under his charge.

As regards the elucidation of the financial results of forestry, it is of course necessary to value the timber, although such timber may not be sold for 50 or 100 years or more.

Now there are many enthusiastic advocates of afforestation who assert with confidence that afforestation must pay, and yet these same persons also assert that it is ridiculous to make calculations based upon the value of timber at a far distant date.

For my part, I must confess that I regard the arguments of such persons as being most illogical; for no man, however great a genius he may be, can possibly form an opinion as to whether afforestation is likely to pay or not, unless he is willing to take into consideration the probable profits which are likely to be derived from the undertaking.

That such profits are governed by factors of the greatest uncertainty I am only too ready to admit, and for these reasons afforestation must generally be looked upon in the light of a gamble, a legitimate one perhaps, but one in respect of which it is only reasonable to look for a high rate of interest if vast sums of money are to be expended thereon.

With reference to the financial results shown in the following pages, I wish it to be clearly understood that there is no desire on my part that they should be accepted as representing, *of necessity*, the results in years to come of afforestation if undertaken at the present time. For the prices of timber, one or two generations hence, may be very different from those prevailing at the present time. They may be greater, they may be less; but who shall say?

Nevertheless, *if* the prices of timber in years to come should prove to be the same as those herein indicated, then, according to my investigations, the results of afforestation will be as stated.

In conclusion, I would point out that it is most

desirable that societies, such as the Royal English Arboricultural Society, or the Royal Scottish Arboricultural Society, should endeavour to collect data from their members as to the growth of any typical crops under their charge.

In all such cases it is imperative that exact data be given on at least four points, besides a detailed description of the soil, situation, aspect, and altitude, and an actual estimation of the contents of timber per acre.

It is imperative to know :—

(1) The exact height to the very top of the trees.

(2) The quarter girth at 5 feet from the ground, stating whether taken with a tape or string, and whether over or under bark.

(3) The number of trees per acre. These should be actually counted on several sample areas of 1 or 2 square chains each. A mere guess at the number per acre is of very little value.

(4) The age of the crop, stating whether from seed or from the date of planting.

And then, again, when such particulars are given, it is most important to state whether the crop now requires to be thinned, and if so what proportion of the crop should be cut out; or if no thinning is now necessary, an opinion should be expressed as to when a thinning will next become necessary.

And lastly, when stating the volume of timber per acre, such volume should be calculated both down to 6 inches quarter girth and also down to 3 inches "top-diameter." And it should be expressly stated whether the timber has been measured over or under bark, and if the latter, what allowance for bark has been made.

P. Trentham Maw.

Nutfield, *December* 1911.

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COMPLETE YIELD TABLES FOR BRITISH WOODLANDS AND THE FINANCE OF BRITISH FORESTRY

CHAPTER I

AN INTRODUCTION

It is necessary that the following yield tables be prefaced by a few notes of an explanatory nature.

General Note.—The yields stated in these tables can only be attained if the crops escape any special damage due to insects, fungi, fire, or storm. And as regards the volumes of the final crops, these could generally be increased if the amount removed as thinnings were restricted; but such a course would seldom be advisable.

Quality of Soil and Situation.—The adaptability of any particular area for the successful growth of timber is indicated by describing the soil and situation, which must be considered the one along with the other, and which includes, *inter alia*, a consideration of the aspect, altitude, rainfall, and relative humidity of the air, as being referable to one of four qualities—Quality I. being the best, and Quality IV. the worst; Quality II. land represents good average land in fairly sheltered districts, and is capable of growing excellent timber.

It is, however, necessary to remember that the same area is not necessarily representative of the same quality for different kinds of trees. For instance, an area may be Quality I. for Scots Pine, and yet only Quality III. for Ash; or Quality I. for Corsican Pine, and only Quality III. for Sitka Spruce or *Thuya plicata*.

The yields, as stated, where the soil and situation are Quality I., must not be taken as representing the very best yields which are occasionally obtained from small plantations in most favoured localities, but they represent an average such as can be obtained over considerable areas of the best forest land.

It is most important that foresters should get into the habit of assessing the quality of the locality for different kinds of trees in respect of all land under their charge. For it is only by so doing, and by having regard to the corresponding yield tables, that it is possible to become acquainted with and to fully realise the productive capacity of any land, and, consequently, the financial returns likely to be obtained by the growth of any particular crop.

Now, the best practical method of assessing the quality of any locality, is by reference to the height growth of a crop at any particular age. In the following tables the height to the very top of the trees is stated, as by so doing inaccuracies are avoided. The top of the tree affords an exact point to which measurements can be taken, and thereby comparisons with measurements which others may take are rendered less difficult; whereas, were the Quality of the locality gauged by the height growth to (say) 5 or 6 inches quarter girth, a standard would be set up the very nature of which would preclude the possibility of constant accuracy.

However, in the case of all trees which, if given sufficient growing space, tend to form spreading crowns, the height growth alone is apt to cause deception, unless the trees have been grown in a reasonably close canopy. So that, where such trees have been grown with obviously a thinner canopy than that indicated by the table, it is necessary also to have regard to the growth in girth that has taken place at any particular age.

Thus it will be apparent that in any given district, even where there are existing woods upon which to base an opinion, it is not altogether an easy matter to correctly assess the quality of a locality. And, of course, in unwooded districts the task is rendered still more difficult.

Measurements of Timber.—All contents, as stated, are arrived at by quarter girth measurements (under bark), taken with string. All the timber exceeding 3 inches in diameter under bark has been included.

Furthermore, the ordinary methods made use of when measuring timber in this country have been adopted, except that, as already indicated, all "tops" exceeding 3 inches in diameter have been included, even in the case of large-girthed trees. This has been rendered necessary in order to avoid confusion, as data are given for the early stages of the various crops, when so much of the timber is of very small dimensions. The

actual amount of timber exceeding 3 inches in diameter but less than 6 inches in quarter girth varies with the species and age of the trees. In the case of young poles, there will be from 3 to 6 cubic feet (quarter girth). But if the trees are old, this amount will be reduced in the case of coniferous trees to about 2 to 4 cubic feet (quarter girth); whereas in the case of broad-leaved trees, which form large crowns, the amount will be from 3 to 5 cubic feet, and often more.[1]

String measurement has been adopted, as by far the greater amount of felled timber is still measured, and probably always will be measured, by this method.

However, it is necessary to remember that "in the fold of the string" about half an inch is lost on every quarter girth as compared with measurements taken with a tape.

Now, in the case of small-girthed trees, this loss of half an inch makes a vast difference in the contents per acre of any crop of trees.

For instance, a pole might be 40 feet long and $5\frac{1}{2}$ inches quarter girth by tape measurement, or only 5 inches quarter girth by string measurement. In the former case the contents would be 8 cubic feet 5 inches, whereas, in the latter case the contents would only be 6 cubic feet 11 inches, thus showing a difference of nearly 18 per cent. In larger girthed trees the relative difference is not so great. For instance—

in trees averaging 9 or $9\frac{1}{2}$ inches quarter girth, the difference would be about 10 per cent.;

in trees averaging 12 inches quarter girth, about 8 per cent.;

in trees averaging 19 inches quarter girth, about 5 per cent.;

and so on.

However, these are very considerable differences, and they afford one of the many reasons why Continental yield tables, which are based upon mathematically accurate calculations, are quite inapplicable for practical use in this country.[1]

There are many who advocate the abandonment of string measurement, and who would substitute always the use of the tape. However, ancient customs are wont to "die hard," and it is necessary to remember that it is often most difficult to pass a tape under fallen timber, whereas such difficulties are compara-

[1] In the case of trees grown as standards over coppice, the amount is usually very considerable, and will often be from 5 to 9 cubic feet.

[1] *Vide* also p. 6.

tively rare when a string is used. In fact, the origin of the use of string lies in the facility of its use in practice.

Allowance for Bark.—An allowance of 1 inch to 1 foot quarter girth has been made in respect of all trees.

Now, this allowance is really too much in respect of smooth, thin-barked trees, but it has been adopted, since it is customary in so many parts of the country.

It must be distinctly understood that this deduction for bark is by no means universal throughout Great Britain, so that those who use these tables in districts where this deduction is not customary, must make the necessary allowances to suit the custom obtaining in their own district.

When making an allowance of 1 inch to 1 foot quarter girth, it is usual to deduct—

$\frac{1}{2}$ an inch for trees under 12 inches quarter girth,

1 inch for trees 12 inches quarter girth and under 18 inches quarter girth,

$1\frac{1}{2}$ inches for trees 18 inches quarter girth and under 24 inches quarter girth,

2 inches for trees 24 inches quarter girth and under 30 inches quarter girth,

and so on, though in many cases quarter girths measuring within 1 inch or $1\frac{1}{2}$ inches of 12, 18, 24, 30 inches, and so on, would have the same amount deducted therefrom for bark, as is deducted in the case of these specific quarter girths.

These deductions for bark average in a general way about 12 per cent., or (say) one-eighth of the contents as measured over bark.

Now, if one-eighth of the contents over bark has been deducted, and the contents under bark are given, the contents over bark may be immediately found by adding one-seventh of the contents under bark as given.

Prices of Timber.—In order to show the financial returns of the various crops, it has been necessary to value the timber. Now, the value of timber must vary very greatly in different localities, but the prices which have been adopted may be taken as fair average prices, provided there be a fairly good market within a reasonable distance.

All the timber (down to 3 inches in diameter) has been valued, though of course, in practice, "tops" below 6 inches quarter girth are usually "thrown in"; but, as already indicated, it is necessary in the following tables

to take account of these small "tops," in order to avoid confusion and unnecessary detail, inasmuch as data are given for the crops in their early stages. In the following tables the value of timber below 6 inches quarter girth may be taken at from 8d. to 1s. 6d. per tree, except in the case of young Larch trees, where a somewhat greater value has been adopted. So, also, when small timber or poles are sold, they are usually sold at a fixed price "per ton" or "per 100," but in these tables the prices have (generally) been taken at so much "per foot," in order, again, to avoid unnecessary detail.

Inasmuch as prices vary so much and so constantly in different localities, it will be necessary in many cases for those who use these tables to value the timber according to the prices prevailing in their own districts, and to make their own calculations as to the profits that may be expected.

However, the following tables can be applied without alteration to very many districts, and even if alterations in the prices are necessary, the relative position as regards any particular crop will not necessarily be altered.

It will be noticed that the felled thinnings have been valued on the same basis as the standing timber of the final crop. The reason for so doing is to avoid unnecessary detail and to make some allowance for the fact that "thinnings" scattered over an area are not so easily saleable as is the timber of a final crop.

Form Factors.—The use of "Form Factors" affords a very ready method of determining approximately the volume of any particular wood or crop of trees. They can only be expected to give correct *average* results, so that when applied to any particular tree, there will, as often as not, be a considerable error in the volume of timber so estimated.

When estimating the contents of a tree by their use, the quarter girth is taken at 5 feet[1] from the ground, and then the total length *to the very top of the tree* is found, and then the contents of a log with such a length and quarter girth are found. The contents thus found are of course far too great. Therefore they are reduced by multiplying by the "form factor," by which means the correct contents (to 3 inches in diameter) are obtained. It will thus be apparent that the use of form factors avoids the necessity of carefully measuring standing

[1] Continental form factors are usually made referable to measurements taken at 4 feet 3 inches from the ground.

timber in various lengths by estimating the amount of "taper" and so on, as is now customary.

In these tables the form factors for timber down to 3 inches in diameter are given, but other form factors, giving the amount of timber down to 5 or 6 inches quarter girth, might well be prepared.

It is necessary to remember that these form factors are referable to measurements in which fractions of $\frac{1}{2}$ an inch in quarter girth are omitted, so that in the following tables there is often a considerable difference between the contents, as stated, of an average tree at any particular age and the contents indicated by the height, quarter girth, and form factor. But in all cases an average form factor has been stated.

With regard to the form factors for the broad-leaved trees, they must only be regarded as correct if the trees have been grown under somewhat similar conditions to those as indicated in the tables. They are not applicable to short, stunted crops which in their youth have been over-thinned.

These form factors, if applied, will give contents which indicate that the timber has all been measured with string in a practical manner, according to the custom of the country.

The form factors as obtained from German yield tables have, in practice, no value whatever in this country. They have an academic interest, but that is all. For they are obtained by measuring a tree in small sections, the diameters being taken with calipers and booked to the equivalent of decimal parts of an inch, thereby giving theoretically accurate measurements. But in this country, if form factors are used, it is imperative that they give correct results according to the prevailing practice adopted by practical timber measurers.

Now, besides the great losses entailed "in the fold of the string" (*vide* p. 3), it is customary to omit fractions of $\frac{1}{2}$ an inch in the quarter girth; and so also trees are measured in long lengths (unless there are "stops"), and not in small sections of 5 or 10 feet.

Thus it will be evident that these variations in the methods of measuring will make an enormous difference to the form factors, according to whether they are obtained by British methods or German methods of measuring timber.

These discrepancies are very much greater in the case of small timber than in the case of large timber.

The Percentage Increment.—The two columns which show the percentage increment which takes place from period to period in volume and in value

(gross) of timber are most important. The latter column indicates within very narrow limits what is the most profitable rotation upon which to grow any crop, though this point is perhaps more easily decided by a study of the next column of "land rentals."

So, also, if a comparison is made between these two columns showing the percentage increase in volume and in value of timber, it becomes evident that large mature timber can only be profitably grown if there is a large increase in the price per foot for large timber over that which obtains for small timber. The greater the increase in price, the longer can a rotation be extended.

Again, if a comparison of these columns be made with the percentage increase which takes place according to German yield tables, the inadvisability of attempting to grow a maximum yield of mature timber is well illustrated.

Land Rentals.—These "land rentals" represent the equivalent rental value obtained for the land *from the date of planting*, after all annual outgoings are paid for and after the capital spent on planting, and interest thereon, has been paid back. They are directly comparable with existing agricultural rents, and hence by this method, and this method alone, is the financial result of growing any particular crop of timber represented in a manner which is clear, concise, and intelligible to the lay mind. The method of arriving at these land rentals is fully explained in *The Practice of Forestry*,[1] and there is no need whatever to adopt complicated formulæ (as some recommend) in order to work them out. They are really quite simple.

The annual outgoings have been estimated as being 4s., 3s. 8d., 3s. 4d., and 3s. per acre when the soil and situation are respectively, Qualities I., II., III., and IV. These outgoings represent, generally speaking, the minimum net average outgoings necessitated on large forest areas.

If the areas are small, these outgoings will be considerably greater. These outgoings include rates and general supervision, repairs to forest roads, fences, and gates, and also the extra cost of felling "thinnings" and clearing them up, over and above any sum received by the sale of faggots (and all wood below 3 inches in diameter) therefrom. But these outgoings do not include the cost of felling final crops or of replanting.[2]

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[1] *Vide* Chapter XII.

[2] As to the total cost of labour on forest areas, *vide* pp. 6 and 7 of *The Practice of Forestry*.

The cost of planting, including also fencing and cutting out any rank growth of grass, etc., during the first two or three years, has been taken at £5 per acre. However, the cost of planting, etc., must always be subject to great variation, and the above sum is instanced merely as affording a basis upon which calculations may be made.

If the cost of planting is greater, then the equivalent land rentals can easily be approximately calculated by deducting $3\frac{1}{2}$ per cent. or 4 per cent. interest on such additional cost. On the other hand, if the cost of planting is less, then the land rentals, as stated, will be increased by a sum representing $3\frac{1}{2}$ per cent. or 4 per cent. interest on any such sum by which the cost of planting is lessened. However, it should be remembered that in any such variations, no account has been taken of the necessary sinking fund representing the amount by which the initial outlay is varied.

As regards the rates of interest, namely, $3\frac{1}{2}$ per cent. or 4 per cent., at which the land rentals have been calculated, it is, without a doubt, necessary to adopt such rates of interest as would be reasonable in ordinary practice.

Of course, if a very low rate of interest, such as 2 or $2\frac{1}{2}$ per cent. be adopted, very much better results could be shown. But in this connection it is well to remember that even the most wealthy of cities or municipal corporations can only borrow money at about $3\frac{1}{2}$ per cent. interest, and this too is the rate of interest yielded by most "trustee" stock; whereas private individuals, however rich they may be and whatever security they may offer, can practically never borrow money for any length of time at less than 4 per cent. interest.

Enthusiastic advocates for national afforestation often base their advice upon the supposition that money can be borrowed at $2\frac{1}{2}$ or 3 per cent. interest, even on such a risky undertaking as afforestation; but such a supposition seems somewhat quaint when the premier security of even the richest country in the world is valued upon a basis which yields the investor well over 3 per cent. interest.

Then, again, with reference to these "land rentals," it is necessary to point out what an enormous difference in capital value a rental of 1s. per annum represents at the end of a long rotation.

Now, on a 50-year rotation, and at 4 per cent. interest, a gain or loss of 1s. per annum in a rental represents a gain or loss at the end of the rotation of about £7, 13s.; and at the end of a rotation of 75 years the corresponding difference is nearly £23; and

at the end of 100 years the difference is nearly £62, and so on.

Thus it will be evident that it is most important to bear the above in mind when considering any scheme for afforestation; for otherwise, it is quite possible that a small loss of a few shillings in a rental might be considered as of little moment, whereas, in reality, a big capital loss would be sustained by the end of the rotation.

And so, also, it should be remembered that there can be no real profit representing a rental for the land until the value of a final crop, "plus" the accumulated value of any "thinnings," exceeds the accumulated value of all annual outgoings, and also the original cost of planting the land, along with the accumulated interest thereon. Now, in this connection, if the annual outgoings in respect of any given area were 4s. per acre, and if the cost of planting, including fencing and replacing "deaths," etc., were £5 per acre, there would be (at 4 per cent. interest) a debt per acre of £66 at the end of 50 years; and of £184 at the end of 75 years; and of £500 at the end of 100 years.

However, it must not be forgotten that the accumulated value of any "thinnings," especially after about the 50th year, is often very considerable, and will very much reduce the debit side of any account.

The most profitable Rotation.—Generally speaking, these land rentals show which is the most profitable rotation under which crops can be grown. However, in many cases the rotation may be somewhat longer than that specified,[1] as the various land rentals are given from period to period, and the actual date at which any crop might be most profitably realised may be somewhere between two given periods. In this connection, the column showing the percentage increase in value will be found a useful guide.

As will be observed, the rate of interest at which calculations are made, and the price per foot at which the timber at various ages is saleable, will largely determine which is the most profitable rotation.

From a purely financial point of view, it will often be preferable to sell, at a low price per cubic foot, a young, immature crop of timber which consists perhaps mostly of sapwood, rather than to wait until the timber is mature, even though double the price per foot could then be obtained by the sale thereof.

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[1] The highest "land rentals" are printed in thick type.

Annual Income from Normally Stocked Areas.—The amounts given in this column, as also in the column of land rentals, must, generally speaking, be regarded as *maximum* results, as it is presumed that the areas under timber are large, and consequently working expenses have been estimated at a very low value. However, occasionally the cost of planting will be less than £5, as instanced; but then, on the other hand, it will often be very much more, for the cost of fencing, replacing "deaths," and keeping young plantations free from rank growth for the first two or three years is also included in this sum of £5 per acre.

Now, when speaking of a normally stocked area, the presumption is raised that a given area is so stocked that a succession of correctly grown, mature crops of equal volume can be harvested annually from the present time onwards. Thus there are crops of all ages from one year old up to maturity.

And whereas the annual income from such an area is often very considerable, yet it has to be remembered that the average *accumulated* capital per acre over such an area is also very considerable.

This "locked up" capital may vary from about £25 up to £400 per acre, according to the length of the rotation, the cost of planting, and the original value of the land before it was planted, etc.

For instance, in the case of Scots Pine grown upon an 80-year rotation, if the land were to cost £7 and the planting £5 (£12 in all), the average "locked up" capital would be £70 per acre; whereas, in the case of Oak grown upon a 120-year rotation, if the land were worth £20 an acre and if the planting cost £7 per acre, the average "locked up" capital would be £400 per acre.[1]

However, it must be distinctly understood that this "locked up" capital represents the average capital value of money which has been already spent on any given area, and is not the average present saleable value of any such area, which is, in so many cases, very much less.

Advocates for afforestation are very prone to quote statistics showing the average income from some Continental forest which is more or less normally stocked, and these annual returns often appear to contrast very favourably with the present rents obtained from agricultural land. But evidence such as this is most misleading, unless the average accumulated debt per acre is also stated. It is much to be feared that

[1] *Vide* Chapter XII. of *The Practice of Forestry*, where the matter is dealt with at some length.

many landowners and corporations have been very much misled by such evidence, and it is impossible to too strongly condemn any attempt to state only one half of the case.

For instance, a landowner might be told that by expending an outlay of £15 per acre, such sum to include the purchase of the land and also the cost of planting, he might, in all probability, obtain an average annual income of £2 per acre when once the area was in proper working rotation.

Now, although the above anticipations are perhaps quite likely to be realised in certain cases, yet it seems most unfair—in fact, almost dishonest—to put forward such advice without at the same time stating that by the time that the area is in proper working rotation, the average debt per acre will in all probability amount to £100, or even £150.

There can be no doubt that hitherto landowners have never realised the enormous debt per acre which their woodland areas represent. For instance, 4000 acres of woodland may well represent an accumulated capital of half a million pounds; and yet how seldom is it thought necessary to pay any attention whatever to any course of action indicated by considerations of finance based upon actuarial calculations.

There is undoubtedly a disposition to regard such considerations as "being all theory," whereas, in reality, these actuarial calculations are just as imperative in reference to forestry—if the best practice is to be carried out—as they are imperative in determining the correct policy to be pursued by any assurance corporation. Any disregard of these matters must in both cases lead to disaster.

Application of the Tables.—When using these tables in practice, regard must be had to the fact that in cases where the soil and situation are of the same quality, it will often be found that the number of trees per acre standing at any given age varies considerably with the number specified in the table. Now, if the number is smaller, the trees will have a larger average quarter girth, and in some cases the average height growth will be less, especially if the trees were too far apart when young and crown development was encouraged at an early age. And, on the other hand, if there is a greater number of trees per acre than that which is shown in the table, the average quarter girth will be less.

Now, it is most important to obtain large "girthed" trees in as short a space of time as is possible, if the

best financial results are to be obtained. However, in attempting to achieve this end, care must be taken not to "thin" the crops too heavily, for, to pursue such a course in the case of young crops would result in the production of coarse, "knotty" timber, and would also check the height growth.

Generally speaking, the more trees there are per acre, the greater will be the average annual increment of timber, though, as previously indicated, the actual profits will often be less.

As regards the financial results indicated by the tables, including also the most profitable rotation, these depend so very largely upon the respective prices for timber in various localities, influenced not only by market demand but also by transport facilities, that in many cases it will be imperative that those responsible for the management of woodlands work out the financial results themselves, using the necessary data as to the volume of timber as found in the following tables.

CHAPTER II

YIELD TABLES FOR BROAD-LEAVED TREES

Soil and Situation } **QUALITY I.** (out of 4 qualities). **(the best).**

THE YIELD PER ACRE OF ASH

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.		
		c. feet, q.g.	c. feet.	s.	d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s.	d.	£ s. d.
16	...	...	...	...		...	**1200**	6	$\frac{1}{6}$	**35**	...	...	...	...	...		...	16
21	500	...	...	...		1 0 0	**700**	8	$\frac{1}{6}$	**45**	$3\frac{1}{2}$	·39	1030	$1\frac{1}{2}$	0	3	...	21
26	270	130	$\frac{1}{2}$	0	3	1 10 0	**430**	10	$\frac{1}{5}$	**53**	$4\frac{1}{2}$	·40	1270	3	0	3	16 0 0	26
31	150	250	$1\frac{1}{2}$	0	3	3 0 0	**280**	$12\frac{1}{2}$	$\frac{1}{5}$	**61**	$5\frac{1}{2}$	·41	1490	$5\frac{1}{4}$	0	5	31 0 0	31
38	90	380	$4\frac{1}{4}$	0	5	8 0 0	**190**	15	$\frac{1}{5}$	**70**	**7**	·43	1890	10	0	10‡	56 10 0	38
45	60	510	$8\frac{1}{2}$	0	7	15 0 0	**130**	18	$\frac{1}{4}$	**77**	$8\frac{1}{2}$	·44	2140	$16\frac{1}{2}$	1	0‡	82 10 0	45
52	35	460	13	0	10‡	15 10 0	**95**	$21\frac{1}{2}$	$\frac{1}{4}$	**83**	**10**	·46	2370	25	1	3‡	129 0 0	52
60	25	490	$19\frac{1}{2}$	1	0‡	21 0 0	**70**	25	$\frac{1}{4}$	**88**	$11\frac{1}{2}$	·47	2590	37	1	6‡	177 0 0	**60**
70	...	...	...	...		...	...	...	...	**92**	$12\frac{1}{2}$	·48	3380	$48\frac{1}{4}$	1	8‡	262 0 0	70

* Only timber exceeding 8 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 8d. per cub. foot.

SOIL AND SITUATION } **QUALITY I.** (the best). **ASH** [*Continued.*

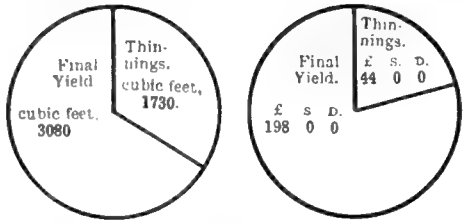
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
16	...	...	...	...	...	...	...
21	49	...	...	...	...	...	...
26	54	74	...	...	...	...	...
31	60	94	6¼	...	...	...	...
38	70	**112**	5⅞	...	...	...	...
45	76	109	4¾	...	0 14 0	0 10 10	2 2 1
52	79	99	4	7¾	0 18 7	0 14 6	2 19 4
60	**80**	89	3¼	5¼	**1 0 7**	**0 15 5**	3 13 8
70	80	79	2¾	3⅞	1 0 6	0 14 10	4 6 8

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

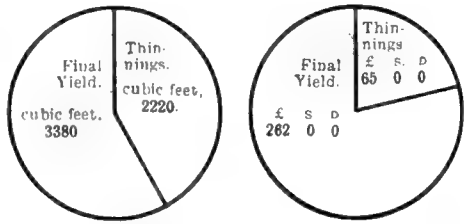
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***60-year*** rotation.



On a ***70-year*** rotation.



The most profitable rotation
(according to the yields and prices indicated)

Is one of ***60*** to ***65 years,*** if interest is reckoned at 3½ per cent.
or ,, ***60*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.	
Trees containing less than 4 cub. ft. . . .	0	3	Including "tops" to 3 in. diameter.
,, 4 cub. ft. and less than 7 cub. ft.	0	5	
,, 7 ,, ,, 10 ,,	0	7	
,, 10 ,, ,, 15 ,,	0	10	"Tops" below 6 in. q.g. at 8d. per cub. ft.
,, 15 ,, ,, 20 ,,	1	0	
,, 20 ,, ,, 30 ,,	1	3	
,, 30 ,, ,, 45 ,,	1	6	
,, 45 ,, and over . . .	1	8	

SOIL AND SITUATION } **QUALITY II.** (out of 4 qualities). **THE YIELD PER ACRE OF ASH**

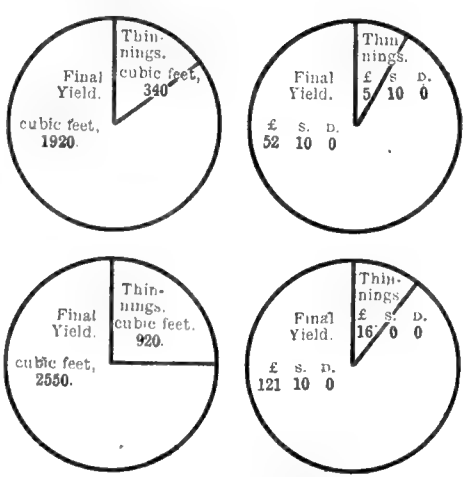
Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included. s. d.	£ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included. s. d.	£ s. d.	
19	...	...	...	...	...	**1210**	6	$\frac{1}{6}$	**36**	...	...	...	...	...	...	19
25	500	...	...	...	1 0 0	**710**	8	$\frac{1}{6}$	**45**	$3\frac{1}{2}$	·39	1030	$1\frac{1}{2}$	0 3	...	25
31	270	110	$\frac{1}{2}$	0 3	1 10 0	**440**	10	$\frac{1}{5}$	**53**	$4\frac{1}{2}$	·40	1280	3	0 3	16 0 0	31
37	150	230	$1\frac{1}{2}$	0 3	3 0 0	**290**	12	$\frac{1}{5}$	**59**	$5\frac{1}{2}$	·42	1460	5	0 5	30 10 0	37
43	70	220	3	0 3	3 0 0	**220**	14	$\frac{1}{5}$	**64**	$6\frac{1}{2}$	·42	1700	$7\frac{3}{4}$	0 7	49 10 0	43
50	65	360	$5\frac{1}{2}$	0 5	7 10 0	**155**	17	$\frac{1}{4}$	**69**	$7\frac{1}{2}$	·44	1850	12	0 10‡	59 0 0	50
60	55	550	10	0 10‡	16 10 0	**100**	21	$\frac{1}{4}$	**74**	$9\frac{1}{2}$	·45	2000	20	1 3‡	105 0 0	**60**
70	...	...	...	...	...	...	...	...	**77**	$10\frac{1}{2}$	·46	2650	$26\frac{1}{2}$	1 3‡	145 10 0	70

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 3d. per cub. foot.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
19	...	...	...	...	...	...	...
25	41	...	...	...	...	...	...
31	45	60	5	...	...	...	...
37	48	68	4⅝	...	...	...	...
43	52	**76**	4½	...	0 4 2	0 2 6	1 0 5
50	55	73	3¾	4¼	0 4 5	0 2 4	1 3 10
60	58	70	3¼	6⅞	**0 7 9**	**0 4 11**	1 19 9
70	**59**	65	2¾	3¼	0 6 9	0 4 2	2 5 1

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***60 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices:—

				Per cub. ft. s.	d.	
Trees containing less than 4 cub. ft.				0	3	Including "tops" to 3 in. diameter.
,,	4 cub. ft. and less than	7 cub. ft.		0	5	
,,	7 ,, ,,	10 ,,		0	7	
,,	10 ,, ,,	15 ,,		0	10	"Tops" below 6 in. q.g. at 8d. per cub. ft.
,,	15 ,, ,,	20 ,,		1	0	
,,	20 ,, ,,	30 ,,		1	3	
,,	30 ,, ,,	45 ,,		1	6	
,,	45 ,, and over			1	8	

SOIL AND SITUATION } **QUALITY III.** (out of 4 qualities).

THE YIELD PER ACRE OF ASH

Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included. s. d.	£ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included. s. d.	£ s. d.	
23	...	...	...	...	...	1160	6	1/6	34	...	...	...	...	...	...	23
30	490	...	...	...	1 0 0	670	8	1/5	42	3½	·40	960	1½	0 3	...	30
37	250	100	½	0 3	1 10 0	420	10	1/5	49	4½	·41	1210	3	0 3	15 0 0	37
44	140	210	1½	0 3	2 10 0	280	12½	¼	54	5½	·42	1370	5	0 5	28 10 0	44
52	90	270	3	0 3	3 10 0	190	15	¼	58	7	·43	1520	8	0 7	44 10 0	52
60	50	270	5½	0 5	5 10 0	140	17½	1/3	60	8	·45	1640	11¾	0 10‡	52 0 0	60
70	35	310	8¾	0 7	9 0 0	105	20½	1/3	62	9½	·45	1780	17	1 0‡	73 0 0	70
75	...	...	...	...	...	...	...	...	63	10	·46	1990	19	1 0‡	84 0 0	75

* Only timber exceeding 8 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 8d. per cub. foot.

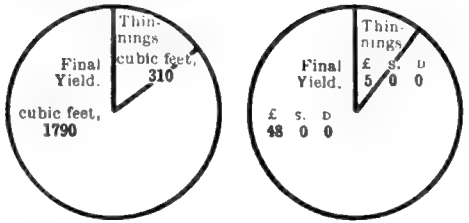
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
23	...	...	...	...	...	...	...
30	32	...	...	...	...	...	...
37	35	50	...	...	...	...	...
44	38	53	3¾	...	...	...	...
52	40	52	3⅜	6⅜	0 0 3	loss of **0 1 2**	0 14 9
60	41	49	2¾	3¼	0 0 1	loss of 0 1 6	0 16 7
70	**42**	45	2⅜	4½	**0 0 7**	loss of 0 1 4	1 2 3
75	42	41	2¼	2¾	0 0 4	loss of 0 1 7	1 3 6

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

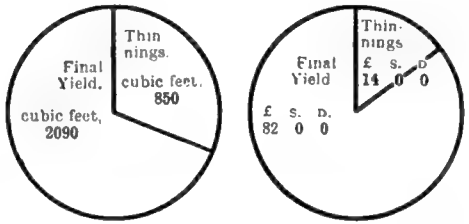
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***52-year*** rotation.



On a ***70-year*** rotation.



The most profitable rotation
(according to the yields and prices indicated)

Is one of ***70 years,*** if interest is reckoned at 3½ per cent.
or ,, ***52*** to ***55*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

		Per cub. ft. s.	d.	
Trees containing less than 4 cub. ft.		0	3	Including "tops" to 3 in. diameter.
,, 4 cub. ft. and less than	7 cub. ft.	0	5	
,, 7 ,, ,,	10 ,,	0	7	
,, 10 ,, ,,	15 ,,	0	10	"Tops" below 6 in. q.g. at 3d. per cub. ft.
,, 15 ,, ,,	20 ,,	1	0	
,, 20 ,, ,,	30 ,,	1	3	
,, 30 ,, ,,	45 ,,	1	6	
,, 45 ,, and over		1	8	

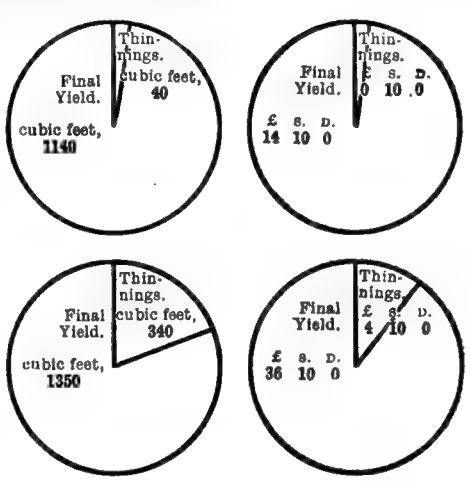
Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included. s. d.	£ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included. s. d.	£ s. d.	
26	. .	...	...	...	...	1270	6	¼	25	...	...	...	...	...	...	26
34	590	..	...	...	...	690	8	¼	32	3½	·40	740	1	...	...	34
42	270	40	¼	0 3	0 10 0	420	10	¼	37	4½	·41	900	2	0 3	...	42
50	130	100	¾	0 3	1 10 0	290	12	⅓	40	5½	·42	1040	3½	0 3	13 0 0	50
60	100	200	2	0 3	2 10 0	190	15	⅓	42	7	·43	1110	5¾	0 5	23 0 0	60
70	55	190	3½	0 3	2 10 0	135	18	½	43	8	·45	1160	8½	0 7	34 0 0	70
80	...	...	...	...	...	...	...	...	44	8½	·46	1360	10	0 10‡	41 0 0	80

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 3d. per cub. ft.
Note.—The loss of 4s. 1d. per annum on an 80-year rotation is, at 3½ per cent. interest, equal to a capital loss of nearly £86 per acre.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 8s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 8s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
26	...	...	...	...	...	...	...
34	21	...	...	...	...	...	...
42	22	25	...	...	...	..	...
50	23	**30**	3	3	loss of 0 4 11	loss of 0 5 8	0 1 0
60	24	27	2¼	6½	loss of 0 4 1	loss of 0 5 0	0 2 5
70	**24**	24	2	4½	loss of **0 3 9**	loss of **0 4 9**	0 7 2
80	23	20	1⅝	1⅞	loss of 0 4 1	loss of 0 5 1	0 7 7

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***70 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

				Per cub. ft. s.	d.	
Trees containing less than 4 cub. ft.				0	3	Including "tops" to 3 in. diameter.
,,	4 cub. ft.	and less than	7 cub. ft.	0	5	
,,	7	,, ,,	10 ,,	0	7	
,,	10	,, ,,	15 ,,	0	10	"Tops" below 6 in. q.g. at 3d. per cub. ft.
,,	15	,, ,,	20 ,,	1	0	
,,	20	,, ,,	30 ,,	1	3	
,,	30	,, ,,	45 ,,	1	6	
,,	45	,, and over		1	8	

SOIL AND SITUATION } **QUALITY I.** (out of 4 qualities). (the best).

THE YIELD PER ACRE OF BEECH

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.											Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.‡			
		c. feet, q.g.	c. feet.	s.	d.					Feet.	Inches.		c. feet, q.g.	c. feet.	s.	d.	£ s. d.	
30	...	...	...	...		...	**1100**	6	$\frac{1}{8}$	**49**	**3**	·39	...	...	...		...	30
37	380	30	...	0	3	0 10 0	**720**	8	$\frac{1}{7}$	**57**	**4**	·40	1950	$2\frac{3}{4}$	0	3	...	37
44	200	150	$\frac{3}{4}$	0	3	2 0 0	**520**	9	$\frac{1}{7}$	**64**	**5**	·41	2490	$4\frac{3}{4}$	0	3	31 0 0	44
53	150	330	$2\frac{1}{4}$	0	3	4 0 0	**350**	11	$\frac{1}{6}$	**71**	**6½**	·43	2970	$8\frac{1}{2}$	0	$5\frac{1}{2}$	67 0 0	53
62	110	640	6	0	$4\frac{1}{2}$	12 0 0	**240**	$13\frac{1}{2}$	$\frac{1}{6}$	**76**	**7½**	·44	3270	$13\frac{1}{2}$	0	$6\frac{1}{2}$	90 0 0	**62**
74	80	870	11	0	6	22 0 0	**160**	$16\frac{1}{2}$	$\frac{1}{5}$	**82**	**9½**	·45	3640	$22\frac{3}{4}$	0	7	108 10 0	74
86	45	800	$17\frac{3}{4}$	0	$6\frac{3}{4}$	22 10 0	**115**	$19\frac{1}{2}$	$\frac{1}{5}$	**87**	**11**	·46	3940	$34\frac{1}{4}$	0	$7\frac{1}{2}$	121 10 0	86
100	35	1110	$31\frac{3}{4}$	0	$7\frac{1}{2}$	35 0 0	**80**	23	$\frac{1}{4}$	**91**	**13**	·46	4020	$50\frac{1}{4}$	0	$9\frac{1}{2}$	156 10 0	100
110	15	590	$39\frac{1}{4}$	0	8	19 10 0	**65**	26	$\frac{1}{4}$	**93**	**14½**	·47	4220	65	0	$10\frac{1}{2}$	185 0 0	110
120	...	...	...	...		...	...	...	...	**95**	**15½**	·47	4980	$76\frac{1}{2}$	0	$10\frac{3}{4}$	225 10 0	120

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

SOIL AND SITUATION } **QUALITY I. (the best).** **BEECH** *[Continued.*

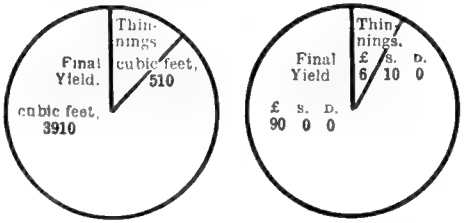
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
30	...	...	...	...	...	...	...
37	54	...	...	...	...	...	..
44	60	83	...	...	...	...	...
53	66	90	3⅛	...	0 1 11	*Nil*	1 1 4
62	71	**104**	3	4⅝	**0 2 8**	**0 0 4**	1 8 10
74	78	103	2⅝	3⅛	0 2 0	loss of 0 0 6	1 14 5
86	79	92	2¼	2⅜	0 1 0	loss of 0 1 5	1 16 3
100	**79**	84	2	3¼	0 0 9	loss of 0 1 9	2 5 4
110	79	79	1⅞	2⅝	0 0 5	loss of 0 2 3	2 9 7
120	79	76	1⅝	2	*Nil*	loss of 0 2 7	2 11 10

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

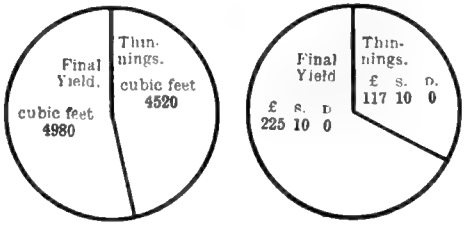
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***62-year*** rotation.



On a ***120-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***65 years,*** if interest is reckoned at 3½ per cent.
or ,, ***62*** ,, ,, ,, ,, 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices :—

Timber 12 in. q.g. and over at 1s. per cub. ft.
,, 6 in. q.g. and under 12 in. at 8d. per cub. ft.
,, below 6 in. q.g. at 3d. per cub. ft.

SOIL AND SITUATION } **QUALITY II.** (out of 4 qualities).

THE YIELD PER ACRE OF BEECH

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included.‡ s. d.		Value Felled.† £ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included.‡ s. d.		Value Standing. £ s. d.	
34	...	...	...	...		...	1140	6	1/8	45	3	...	...	...	...		...	34
42	400	10	...	...		...	740	7½	1/7	52	4	·40	1700	2¼	0	3	...	42
50	230	120	½	0	3	1 10 0	510	9	1/7	58	5	·41	2110	4	0	3	26 10 0	50
60	180	340	2	0	3	2 0 0	330	11½	1/6	64	6½	·43	2490	7½	0	5¼	54 10 0	60
70	90	460	5	0	3½	6 10 0	240	13½	1/5	68	7½	·44	2810	11½	0	6	70 0 0	70
80	65	540	8½	0	5½	12 10 0	175	15½	1/5	72	9	·45	3020	17¼	0	6¾	85 0 0	80
94	50	680	13½	0	6½	18 10 0	125	18½	¼	76	10½	·46	3340	26¾	0	7¼	101 0 0	94
110	35	750	21½	0	7	22 0 0	90	22½	¼	79	12½	·48	3660	40¾	0	9	136 10 0	110
120	...	...	...	...		...	...	.	...	81	13½	·48	4280	47½	0	10	171 0 0	120

* Only timber exceeding 8 inches in diameter under bark has been included.

† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

Note.—The difference between a rental of minus 1s. 8d. and one of minus 8s. 1d. on a 120-year rotation represents, at 3½ per cent. interest, an additional loss of £128 per acre. The total loss of 8s. 1d. is equal to a capital loss of £269 per acre.

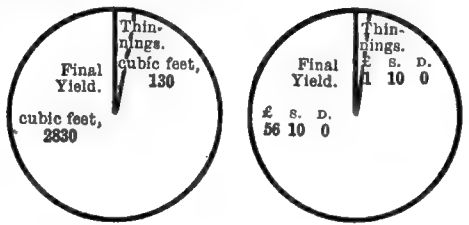
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
34	...	...	...	...	...	...	...
42	41	...	...	...	...	...	...
50	45	66	3⅜	...	...	...	...
60	49	73	2⅞	7¼	loss of 0 1 8	loss of 0 3 2	0 13 8
70	53	**78**	2¾	3⅜	loss of 0 1 10	loss of 0 3 5	0 17 5
80	56	75	2⅜	3⅜	loss of 0 1 11	loss of 0 3 7	1 1 7
94	58	72	2	2½	loss of 0 2 6	loss of 0 4 2	1 5 2
110	59	67	1¾	2¾	loss of 0 2 9	loss of 0 4 6	1 10 5
120	**60**	62	1⅝	2¼	loss of 0 3 1	loss of 0 4 9	1 14 2

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

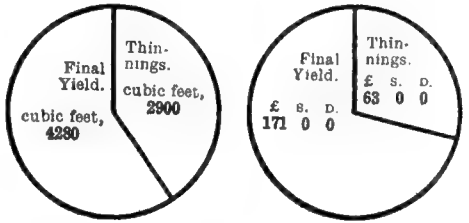
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***60-year*** rotation.



On a ***120-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***60*** to ***65 years,*** if interest is reckoned at 3½ per cent.
or ,, ***60*** ,, ,, ,, ,, 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices :—

Timber 12 in. q.g. and over at 1s. per cub. ft.
,, 6 in. q.g. and under 12 in. at 8d. per cub. ft.
,, below 6 in. q.g. at 8d. per cub. ft.

SOIL AND SITUATION } **QUALITY III.** (out of 4 qualities).

THE YIELD PER ACRE OF BEECH

Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet. q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included.‡ s. d.	Value Felled.† £ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included.‡ s. d.	Value Standing. £ s. d.	
38	...	...	...	...	...	1200	$5\frac{1}{2}$	$\frac{1}{7}$	38	3	...	...	...	...	...	38
47	410	...	...	...	...	790	7	$\frac{1}{6}$	45	4	·40	1560	2	...	...	47
56	290	130	$\frac{1}{2}$	0 3	1 10 0	500	$9\frac{1}{2}$	$\frac{1}{5}$	50	5	·42	1840	$3\frac{3}{4}$	0 3	23 0 0	56
65	140	190	$1\frac{1}{4}$	0 3	2 10 0	360	11	$\frac{1}{5}$	54	6	·43	2120	$5\frac{3}{4}$	0 $4\frac{1}{2}$	40 0 0	65
75	90	260	$2\frac{3}{4}$	0 3	3 0 0	270	13	$\frac{1}{4}$	58	7	·44	2440	9	0 $5\frac{1}{2}$	56 0 0	75
85	70	380	$5\frac{1}{2}$	0 $4\frac{1}{2}$	7 0 0	200	15	$\frac{1}{4}$	61	$8\frac{1}{2}$	·45	2620	13	0 $6\frac{1}{2}$	71 0 0	85
95	40	350	$8\frac{3}{4}$	0 $5\frac{1}{2}$	8 0 0	160	$16\frac{1}{2}$	$\frac{1}{4}$	64	$9\frac{1}{2}$	·46	2810	$17\frac{1}{2}$	0 $6\frac{3}{4}$	79 0 0	95
105	35	400	$11\frac{1}{2}$	0 6	10 0 0	125	$18\frac{1}{2}$	$\frac{1}{4}$	66	$10\frac{1}{2}$	·47	2910	$23\frac{1}{4}$	0 7	85 0 0	105
120	...	...	...	...	...	...	...	...	68	$11\frac{1}{2}$	·48	3580	$28\frac{3}{4}$	0 $7\frac{1}{4}$	108 0 0	120

* Only timber exceeding 3 inches in diameter under bark has been included.

† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

Note.—The difference between a rental of minus 3s. 4d. and one of minus 4s. 6d. on a 120-year rotation represents, at 3½ per cent. interest, an additional loss of £102 per acre. The total loss of 4s. 6d. is equal to a capital loss of £892 per acre.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
38	...	...	...	...	...	...	...
47	33	...	...	...	...	...	...
56	35	45	2 5/8	...	...	...	...
65	37	51	2 1/2	6 5/8	loss of 0 3 6	loss of **0 4 7**	0 8 6
75	40	**58**	2 3/8	3 7/8	loss of **0 3 4**	loss of 0 4 8	0 11 11
85	42	56	2 1/8	3 1/4	loss of 0 3 5	loss of 0 4 9	0 15 3
95	43	54	1 7/8	2	loss of 0 3 9	loss of 0 5 1	0 16 7
105	44	50	1 5/8	1 7/8	loss of 0 4 1	loss of 0 5 4	0 17 10
120	**44**	45	1 3/8	1 5/8	loss of 0 4 6	loss of 0 5 8	0 19 0

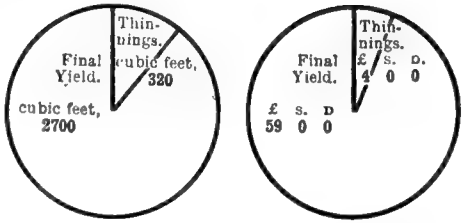
* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.

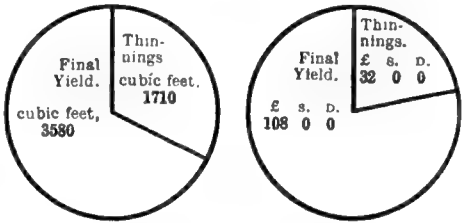
IN VOLUME. (To 3 inches diameter.)

IN VALUE.

On a ***75-year*** rotation.



On a ***120-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***75*** ***years,*** if interest is reckoned at 3½ per cent.
or ,, ***65*** to ***70*** ,, ,, ,, ,, 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices :—

Timber 12 in. q.g. and over at 1s. per cub. ft.
,, 6 in. q.g. and under 12 in. at 8d. per cub. ft.
,, below 6 in. q.g. at 3d. per cub. ft.

SOIL AND SITUATION | **QUALITY IV.** (out of 4 qualities). **THE YIELD PER ACRE OF BEECH**

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.‡			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.‡		
		c. feet, q.g.	c. feet.	s.	d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s.	d.	£ s. d.
40	...	...	...	...		...	1350	5½	1/5	29	3	...	...	...	...		...	40
50	470	...	...	...		...	880	6½	1/5	35	4	·40	1200	1¼	0	3	15 0 0	50
65	420	170	...	0	3	2 0 0	460	9½	¼	41	5½	·42	1540	3¼	0	3	19 0 0	65
80	160	250	1½	0	3	3 0 0	300	12	¼	46	7	·44	1900	6½	0	5	39 10 0	80
95	100	400	4	0	3	5 0 0	200	15	⅓	50	8½	·45	2090	10½	0	6	52 0 0	95
110	60	450	7½	0	5¼	10 0 0	140	17½	⅓	53	10	·46	2200	15¾	0	6¾	62 0 0	110
120	...	...	...	...		...	...	...	...	54	10½	·47	2540	18	0	7	74 0 0	120

* Only timber exceeding 8 inches in diameter under bark has been included.

† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

Note.—The difference between a rental of minus 4s. 6d. and one of minus 5s. 1d. on a 120-year rotation represents, at 3½ per cent. interest, an additional loss of £51 per acre. The total loss of 5s. 1d. is equal to a capital loss of £443 per acre.

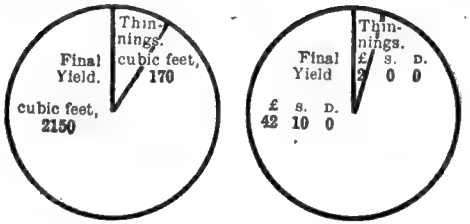
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
40	...	...	...	...	...	...	...
50	24	...	...	...	...	...	...
65	26	34	2⅜	2⅜	loss of 0 5 2	loss of 0 5 11	0 1 10
80	29	**40**	2¼	**5**	loss of **0 4 6**	loss of **0 5 6**	0 6 7
95	31	39	1¾	2⅜	loss of 0 4 9	loss of 0 5 9	0 8 10
110	32	37	1⅝	2⅛	loss of 0 5 0	loss of 0 5 11	0 10 10
120	**32**	34	1⅜	1¾	loss of 0 5 1	loss of 0 6 0	0 11 8

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

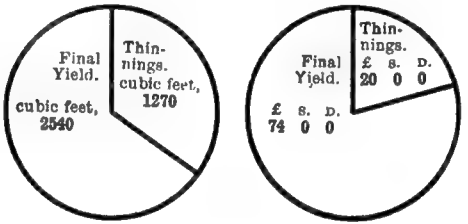
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On an ***80-year*** rotation.



On a ***120-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***80 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices :—

Timber 12 in. q.g. and over at 1s. per cub. ft.
,, 6 in. q.g. and under 12 in. at 8d per cub. ft.
,, below 6 in. q.g. at 3d. per cub. ft.

SOIL AND SITUATION } **QUALITY I.** (out of 4 qualities). **(the best).**

THE YIELD PER ACRE OF BIRCH

Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
				Value Felled.†										Value Standing.		
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	At per foot, "tops" included.		Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure *under* bark.	Av. per tree.	At per foot, "tops" included.		
		c. feet, q.g.	c. feet.	s. d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s. d.	£ s. d.	
16	430	...	...	...	...	**670**	8	1/5	**41**	**3**	...	...	...	...	...	16
20	320	20	...	3 0 (per 100 stakes)	0 10 0	**350**	11	1/5	**52**	**4**	·37	730	2	0 3	9 0 0	20
23	90	80	¾	0 3	1 0 0	**260**	13	¼	**58**	**4½**	·39	840	3¼	0 3	10 10 0	23
27	80	140	1¾	0 3	2 0 0	**180**	15½	¼	**64**	**5½**	·41	990	5½	0 3½	14 10 0	27
33	60	270	4½	0 3¼	3 10 0	**120**	19	¼	**69**	**7**	·42	1170	9¾	0 6‡	23 10 0	33
40	40	360	9	0 6‡	7 0 0	**80**	23½	⅓	**74**	**8½**	·44	1320	16½	0 6‡	30 10 0	40
50	30	540	18	0 6‡	13 0 0	**50**	30	⅓	**79**	**11**	·45	1440	28¾	0 6½‡	37 0 0	**50**
60	...	...	...	...	...	...	...	...	**82**	**12½**	·46	2030	40½	0 6½‡	52 10 0	60

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 3½d. per cub. foot.

Soil and Situation } **QUALITY I. (the best).** **BIRCH** [*Continued.*

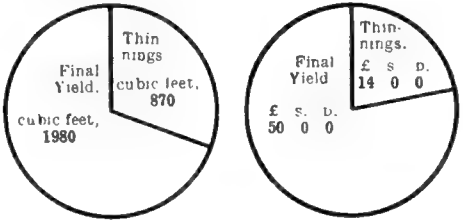
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
16	...	...	...	...	...	...	...
20	37	...	...	...	...	...	...
23	41	63	7⅝	...	...	...	...
27	46	72	7¼	...	...	...	...
33	50	**74**	6¼	...	...	...	...
40	54	73	5¼	6⅝	0 2 7	0 1 1	0 15 2
50	57	66	4	4⅞	**0 3 4**	**0 1 7**	0 19 2
60	**57**	59	3⅜	3½	0 2 9	0 1 0	1 0 5

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

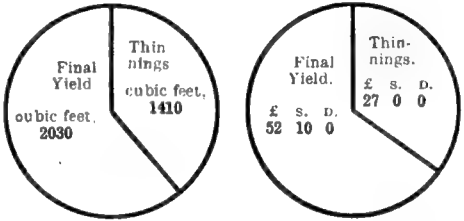
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***50-year*** rotation.



On a ***60-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***55 years,*** if interest is reckoned at 3½ per cent.
or ,, ***50*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.	
Trees containing less than 4 cub. ft. . . .	0	3	
,, 4 cub. ft. and less than 5 cub. ft.	0	3¼	Including "tops" to 8 in. diameter.
,, 5 ,, ,, 7 ,,	0	3½	
,, 7 ,, ,, 8 ,,	0	4	
,, 8 ,, ,, 20 ,,	0	6	"Tops" below 6 in. q.g. at 8½d. per cub. ft.
,, 20 ,, and over . . .	0	6½	

THE YIELD PER ACRE OF BLACK POPLAR

Years since planted with 2-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 2-year-old trees.
				Value Felled.†										Value Standing.			
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	At per foot, "tops" included. s. d.	£ s. d.		Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	At per foot, "tops" included. s. d.	£ s. d.		
15	...	...	...	...	...		890	7	1/6	40	3	...	...	...	...	...		15
19	350	...	...	...	...		540	9	1/6	50	4	·39	1120	2	0 3	14 0 0		19
25	260	310	1¼	0 3	4 0 0		280	12½	1/5	62	5½	·41	1490	5½	0 4	25 0 0		25
31	100	450	4½	0 3	5 10 0		180	15½	1/5	71	7	·42	1840	10¼	0 5‡	32 10 0		31
39	70	700	10	0 5‡	12 0 0		110	20	¼	79	9	·44	2150	19½	0 5‡	41 0 0		39
50	45	900	20	0 6‡	20 0 0		65	26	⅓	86	12	·46	2490	38¼	0 7‡	68 10 0		50
60	...	...	...	...	...		...	...	...	91	13½	·46	3510	54	0 7½‡	105 0 0		60

* Only timber exceeding 8 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 3d. per cub. foot.

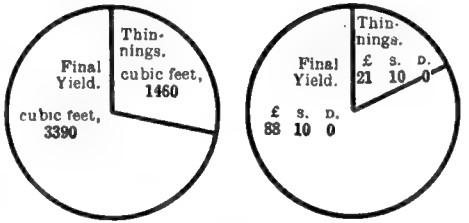
Years since planted with 2-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
15	...	...	...	...	...	...	...
19	59	...	...	...	...	...	...
25	72	113	7¾	...	...	...	...
31	84	133	7	...	...	...	...
39	92	126	5⅜	6	0 8 1	0 6 2	1 5 1
50	97	113	4	6⅝	**0 11 4**	**0 8 6**	1 17 6
60	**98**	102	3⅜	4⅛	0 11 3	0 8 2	2 2 8

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

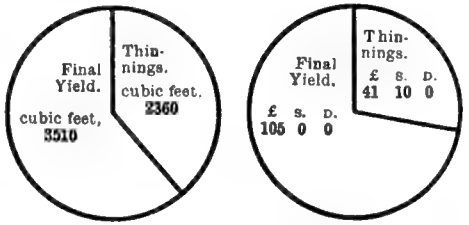
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***50-year*** rotation.



On a ***60-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***50*** to ***55 years,*** if interest is reckoned at 3½ per cent.
or ,, ***50*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.	
Trees containing less than 5 cub. ft. . . .	0	3	Including "tops" to 3 in. diameter.
,, 5 cub. ft. and less than 10 cub. ft.	0	4	
,, 10 ,, ,, 20 ,,	0	5	"Tops" below 6 in. q.g. at 8d. per cub. ft.
,, 20 ,, ,, 35 ,,	0	6	
,, 35 ,, ,, 50 ,,	0	7	
,, 50 ,, and over . . .	0	7½	

SOIL AND SITUATION } **QUALITY I.** (out of 4 qualities). (the best).

THE YIELD PER ACRE OF OAK

Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.									Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included.‡ s. d.	£ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing.§ At per foot, "tops" included.‡ s. d.	£ s. d.	
21	...	...	...	...	...	1450	5	1/7	35	...	...	...	...	...	...	21
27	560	...	...	...	...	890	7	1/6	44	3	...	...	...	...	...	27
33	330	80	...	0 3	1 0 0	560	9	1/6	52	4	·40	...	...	...	...	33
40	190	170	1	0 3	2 0 0	370	11	1/5	59	5	·41	1440	3¾	0 3	18 0 0	40
47	150	370	2½	0 3	4 10 0	220	14	1/5	65	6	·43	1550	7	0 5¾	36 10 0	47
56	75	410	5½	0 4¾	8 0 0	145	17½	1/4	70	7½	·44	1740	12	0 7½	54 10 0	56
65	45	410	9	0 6¾	11 10 0	100	21	1/4	75	9	·46	1930	19¼	0 8½	68 0 0	65
75	30	490	16¼	0 8¼	17 0 0	70	25	1/3	80	11	·47	2100	30	0 9	79 0 0	75
85	20	560	28	0 9	21 0 0	50	30	1/3	84	12½	·48	2200	44	1 1	119 0 0	85
95	10	460	46	1 1½	26 0 0	40	34	1/3	88	14	·49	2350	58¾	1 4	157 10 0	95
105	5	310	62	1 4¼	21 0 0	35	38	1/2	91	15½	·49	2590	74	1 6½	200 0 0	105
120	...	...	...	...	...	...	...	...	95	17	·50	3310	94½	1 7	264 0 0	120

* Only timber exceeding 8 inches in diameter under bark has been included.

† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

Note.—On most soils, the Sessile Oak will yield better returns than the Pedunculate Oak. Many soils are Quality II. for Sessile Oak and Quality III. for Pedunculate Oak.

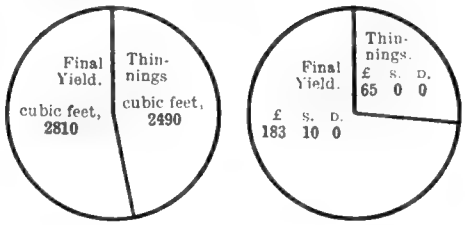
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting.§ After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting.§ At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...
40	42	...	...	...	...	...	...
47	46	69	...	...	...	...	...
56	49	67	3⅝	5⅞	...	...	0 18 10
65	52	67	3¼	4⅛	0 1 0	loss of 0 1 10	1 3 3
75	54	66	3	3⅜	0 0 10	loss of 0 1 3	1 7 0
85	55	66	2¾	5⅞	0 1 10	loss of 0 0 7	1 17 7
95	**56**	61	2½	4¼	**0 2 2**	loss of **0 0 5**	2 6 9
105	55	55	2⅛	3¼	0 2 0	loss of 0 0 6	2 13 11
120	55	48	1⅝	1⅞	0 1 1	loss of 0 1 4	2 17 4

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

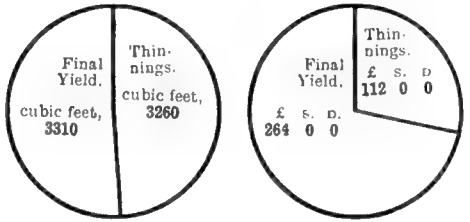
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***95-year*** rotation.



On a ***120-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***95*** to ***100 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices :—

Timber 12 in. q.g. and over at 1s. 9d. per cub. foot.
,, 6 in. q.g. and under 12 in. at 10d. per cub. foot.
,, below 6 in. q.g. at 3d. per cub. foot.

§ It is presumed that the trees are felled in winter, and no allowance has been made for the sale of bark.

SOIL AND SITUATION } **QUALITY II.** (out of 4 qualities).

THE YIELD PER ACRE OF OAK

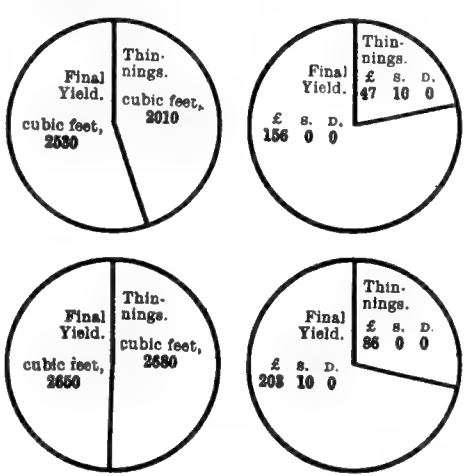
Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included.‡ s. d.	£ s. d.		Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing.§ At per foot, "tops" included.‡ s. d.	£ s. d.	
31	...	...	...	...	...		1070	6½	1/6	36	...	...	...	...	...	...	31
38	460	70	...	0 3	1 0 0		610	8½	1/5	43	4	·40	960	1¾	...	...	38
45	230	140	...	0 3	2 0 0		380	10½	1/5	49	5	·41	1150	3	0 3	14 10 0	45
52	150	250	1½	0 3	3 0 0		230	14	¼	55	6	·43	1270	5½	0 4¾	25 0 0	52
60	65	260	3¾	0 3	3 0 0		165	16½	¼	60	7	·44	1420	8½	0 6½	38 0 0	60
70	60	390	6½	0 5½	8 0 0		105	20	⅓	65	8½	·45	1530	14½	0 8	50 10 0	**70**
80	25	280	11¼	0 7¼	8 10 0		80	23	⅓	69	10	·47	1750	22	0 8½	63 10 0	80
90	20	350	17½	0 8¼	12 0 0		60	27	⅓	73	11	·49	1880	31¼	0 9	71 0 0	90
100	10	270	27	0 8¾	10 0 0		50	30	⅓	77	12½	·49	2080	41½	1 0½	108 0 0	100
110	10	400	40	1 0½	21 0 0		40	33	½	80	14	·50	2130	53¼	1 3¼	135 0 0	**110**
120	5	270	54	1 3½	17 10 0		35	35	½	82	15	·50	2270	64¾	1 5	162 10 0	120
130	...	...	...	...	...		...	...	...	84	16	·50	2650	75¾	1 6½	203 10 0	130

* Only timber exceeding 3 inches in diameter under bark had been included.
† Felled thinnings have been valued at the same price per foot as the "**standing**" timber left after a thinning.
Note.—On most soils, the Sessile Oak will yield better returns than the Pedunculate Oak. Many soils are Quality II. for Sessile Oak and Quality III. for Pedunculate Oak.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. § After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. § At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
...	...	...	...	...	...	...	...
38	27	...	...	...	...	...	...
45	30	47	...	...	...	...	...
52	33	**53**	4	...	...	...	...
60	36	51	3½	6	loss of 0 2 7	loss of 0 3 9	0 10 1
70	38	50	3	4¼	loss of 0 2 3	loss of **0 3 8**	0 14 3
80	39	50	2¾	3½	loss of 0 2 3	loss of 0 3 9	0 16 10
90	40	48	2½	2⅝	loss of 0 2 7	loss of 0 4 0	0 19 1
100	41	47	2¼	5	loss of 0 2 1	loss of 0 3 10	1 6 1
110	**41**	45	2	3⅝	loss of **0 2 0**	loss of 0 3 10	1 12 5
120	41	41	1¾	2⅞	loss of 0 2 2	loss of 0 3 11	1 16 11
130	41	38	1½	2¼	loss of 0 2 5	loss of 0 4 1	2 0 1

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings of Final Crop.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***100*** to ***110 years,*** if interest is reckoned at 3½ per cent.
or ,, ***70*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices :—

Timber 12 in. q.g. and over at 1s. 9d. per cub. foot.
,, 6 in. q.g. and under 12 in. at 10d. per cub. foot.
,, below 6 in. q.g. at 3d. per cub. foot.

§ It is presumed that the trees are felled in winter, and no allowance has been made for the sale of bark.

Note.—The difference between a rental of minus 2s. and one of minus 2s. 5d. on a 130-year rotation represents, at 3½ per cent. interest, an additional loss of £51 per acre. The total loss of 2s. 5d. is equal to a capital loss of £297 per acre.

SOIL AND SITUATION } **QUALITY III.** (out of 4 qualities).

THE YIELD PER ACRE OF OAK

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
				Value Felled.†										Value Standing.§			
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	At per foot, "tops" included.‡			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	At per foot, "tops" included.‡		
		c. feet, q.g.	c. feet.	s.	d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s.	d.	£ s. d.	
44	...	40	...	0	3	0 10 0	**530**	9	¼	**39**	**4**	·41	940	1¾	...		...	44
52	170	130	¾	0	3	1 10 0	**360**	11	¼	**45**	**5**	·42	1120	3	...		...	52
60	140	240	1½	0	3	3 0 0	**220**	14	¼	**50**	**6**	·43	1220	5½	0	4½	23 0 0	60
70	80	300	3½	0	3	3 10 0	**140**	18	⅓	**55**	**7½**	·45	1330	9½	0	7	38 0 0	**70**
80	40	270	6½	0	5½	6 0 0	**100**	21	⅓	**59**	**9**	·46	1460	14½	0	8	48 0 0	80
90	25	280	11	0	7¼	8 10 0	**75**	24½	⅓	**63**	**10**	·47	1580	21	0	8½	56 0 0	90
100	15	240	15½	0	8	8 0 0	**60**	27½	½	**66**	**11½**	·49	1710	28½	0	9¾	69 0 0	100
110	10	230	23	0	8½	8 0 0	**50**	30½	½	**68**	**12½**	·49	1830	36½	1	0¾	97 10 0	**110**
120	10	310	31	0	9	11 10 0	**40**	33	½	**70**	**14**	·50	1840	46	1	3¼	118 10 0	120
130	...	...	...	...		...	...	...	...	**71**	**15**	·50	2140	53⅛	1	5¾	157 10 0	130

* Only timber exceeding 8 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
Note.—On most soils, the Sessile Oak will yield better returns than the Pedunculate Oak. Many soils are Quality II. for Sessile Oak and Quality III. for Pedunculate Oak.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting.§ After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting.§ At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
44	22	...	...	...	...	...	...
52	25	39	3½	...	...	...	...
60	27	**43**	3¼	...	...	...	...
70	29	41	2⅞	5¾	loss of 0 3 9	**loss of 0 4 10**	0 8 4
80	30	40	2⅝	3½	loss of 0 3 9	loss of 0 4 10	0 10 10
90	31	40	2¼	3	loss of 0 3 10	loss of 0 5 0	0 12 11
100	32	37	2⅛	3⅛	loss of 0 3 10	loss of 0 5 1	0 15 6
110	**32**	35	1⅞	4⅛	**loss of 0 3 9**	loss of 0 5 1	1 0 5
120	32	32	1⅝	2⅞	loss of 0 3 10	loss of 0 5 2	1 3 9
130	32	30	1½	2⅞	loss of 0 3 11	loss of 0 5 3	1 7 8

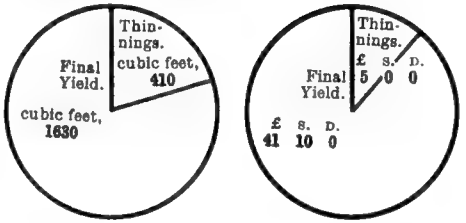
* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.

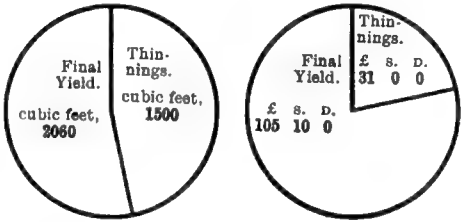
IN VOLUME. (To 3 inches diameter.)

IN VALUE.

On a ***70-year*** rotation.



On a ***110-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***110 years,*** if interest is reckoned at 3½ per cent.
or ,, ***70*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices :—

Timber 12 in. q.g. and over at 1s. 9d. per cub. foot.
,, 6 in. q.g. and under 12 in. at 10d. per cub. foot.
,, below 6 in. at 3d. per cub. foot.

§ It is presumed that the trees are felled in winter, and no allowance has been made for the sale of bark.

Note.—The difference between a rental of minus 3s. 9d. and one of minus 3s. 11d. on a 130-year rotation represents, at 3½ per cent. interest, an additional loss of £20 per acre. The total loss of 3s. 11d. is equal to a capital loss of £441 per acre.

Soil and Situation } **QUALITY IV.** (out of 4 qualities).

THE YIELD PER ACRE OF OAK

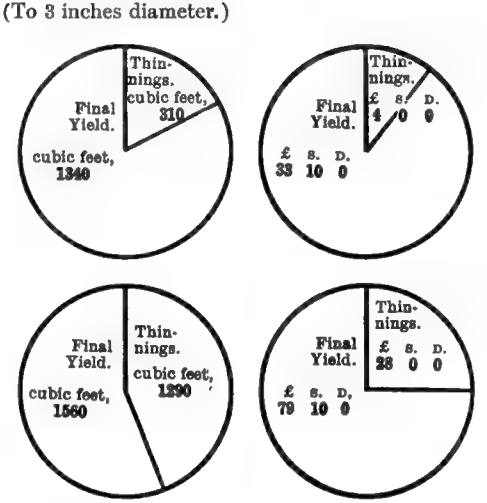
Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.‡			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing.§ At per foot, "tops" included.‡		
		c. feet, q.g.	c. feet.	s.	d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s.	d.	£ s. d.	
40	...	...	...	...		...	**890**	7	¼	**29**	**3**	...	...	...	...		...	40
50	330	30	...	0	3	0 10 0	**560**	9	¼	**35**	**4**	·41	720	1¼	0	3	...	50
60	230	110	½	0	3	1 10 0	**330**	11½	¼	**40**	**5**	·42	910	3	0	3	11 10 0	60
70	130	170	1¼	0	3	2 0 0	**200**	15	⅓	**44**	**6½**	·44	1050	5¼	0	4½	19 10 0	70
80	60	200	3¼	0	3	2 10 0	**140**	17½	⅓	**47**	**7½**	·45	1140	8	0	6½	31 0 0	**80**
90	35	190	5½	0	4½	3 10 0	**105**	20½	⅓	**50**	**8½**	·46	1220	11¾	0	7½	38 0 0	90
100	25	200	8	0	6½	5 10 0	**80**	23½	½	**52**	**10**	·47	1280	16	0	8¼	44 0 0	100
110	15	170	11	0	7¼	5 0 0	**65**	26	½	**54**	**11**	·48	1350	20¾	0	8½	48 0 0	110
120	15	220	14½	0	8	7 10 0	**50**	28½	½	**55**	**12**	·49	1350	27	0	11	61 10 0	120
130	...	...	...	...		...	...	...	...	**56**	**12½**	·49	1560	31	1	0¼	79 10 0	130

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
Note.—On most soils, the Sessile Oak will yield better returns than the Pedunculate Oak. Many soils are Quality II. for Sessile Oak and Quality III. for Pedunculate Oak.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting.§ After deducting annual outgoings, 3s., and after paying back capital and interest on £5, the cost of planting fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting.§ At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
40	...	...	...	...	...	...	...
50	15	...	...	...	...	...	...
60	17	30	3½	...	...	...	...
70	19	31	2⅞	...	...	...	...
80	21	29	2½	5¼	loss of 0 4 9	loss of 0 5 8	0 5 0
90	21	28	2⅛	3	loss of 0 4 10	loss of 0 5 9	0 6 5
100	22	26	1⅞	2⅝	loss of 0 4 11	loss of 0 5 10	0 7 9
110	**22**	24	1¾	1⅞	loss of 0 5 0	loss of 0 5 11	0 8 5
120	22	22	1½	3⅝	loss of 0 5 0	loss of 0 5 11	0 10 10
130	22	21	1⅜	2⅝	loss of 0 5 1	loss of 0 6 0	0 12 8

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***80 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices :—

Timber 12 in. q.g. and over at 1s. 9d. per cub. foot.
,, 6 in. q.g. and under 12 in. at 10d. per cub. foot.
,, below 6 in. q.g. at 3d. per cub. foot.

§ It is presumed that the trees are felled in winter, and no allowance has been made for the sale of bark.

Note.—The difference between a rental of minus 4s. 9d. and one of minus 5s. 1d. on a 130-year rotation represents, at 3½ per cent. interest, an additional loss of £41 per acre. The total loss of 5s. 1d. is equal to a capital loss of £626 per acre.

SOIL AND SITUATION } **QUALITY I.** (out of 4 qualities). (the best).

THE YIELD PER ACRE OF SPANISH CHESTNUT

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included.‡ s. d.	Value Felled.† £ s. d.		Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included.‡ s. d.	Value Standing. £ s. d.	
17	...	...	...	...	...		1100	6	1/6	36	...	...	...	...	...	...	17
23	500	190	...	0 3	2 10	0	600	8½	1/6	48	5	·39	1930	3¼	...	...	23
29	230	420	1¾	0 3	5 10	0	370	10½	1/6	58	6½	·39	2450	6½	0 5	51 0	0 29
35	120	590	5	0 4	10 0	0	250	13	1/5	66	8	·39	2840	11½	0 6¼	75 0	0 35
41	75	680	9	0 5¾	16 10	0	175	15½	1/5	72	9½	·39	3080	17½	0 6¾	87 10	0 41
47	45	600	13¼	0 6½	16 10	0	130	18	¼	77	11	·40	3350	25¾	0 7¼	101 0	0 47
53	30	570	19	0 7	16 10	0	100	21	¼	81	12½	·41	3600	36	0 8½	130 0	0 53
60	20	540	27	0 7¼	16 10	0	80	23	¼	85	14½	·41	3960	49½	0 10	163 10	0 60
65	15	560	37½	0 8½	20 10	0	65	26	⅓	87	15½	·42	3970	61	0 10½	176 10	0 65
70	...	...	...	...	...		...	...	...	89	16	·43	4460	68½	0 10¾	201 0	0 70

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

SOIL AND SITUATION } **QUALITY I. (the best).** **SPANISH CHESTNUT** *[Continued.*

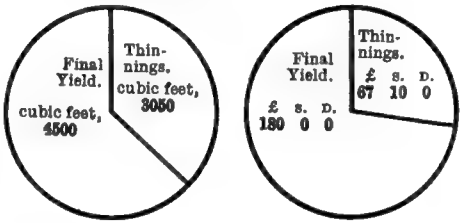
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
17	...	...	...	...	...	...	...
23	92	...	...	...	...	...	...
29	105	156	...	...	...	...	1 12 0
35	115	**164**	5⅝	...	0 19 8	0 16 8	2 4 11
41	121	154	4⅝	5⅜	1 0 5	0 17 0	2 16 6
47	123	145	4⅛	5	1 0 7	0 16 11	2 18 11
53	125	137	3⅝	6⅛	1 2 2	0 18 3	3 7 3
60	**126**	129	3¼	4⅝	**1 2 11**	**0 18 4**	3 15 6
65	125	114	2⅜	3¾	1 2 9	0 17 7	3 19 8
70	123	98	2½	2⅝	1 1 8	0 16 5	4 0 7

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

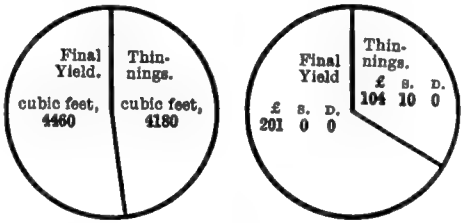
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***60-year*** rotation.



On a ***70-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***60*** to ***64 years,*** if interest is reckoned at 3½ per cent.
or ,, ***60*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices:—

Timber 12 in. q.g. and over at 1s. per cub. foot.
,, 6 in. q.g. and under 12 in. at 8d. per cub. foot.
,, below 6 in. q.g. at 3d. per cub. foot.

SOIL AND SITUATION } **QUALITY II.** (out of 4 qualities).

THE YIELD PER ACRE OF SPANISH CHESTNUT

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.											Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included.‡ s. d.		Value Felled.† £ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included.‡ s. d.		Value Standing. £ s. d.	
22	...	...	...	...		...	1040	6	1/7	40	3½	...	...	...	...		...	22
29	400	150	¼	0	3	2 0 0	640	8	1/6	50	5	·39	2040	3¼	0	3	25 10 0	29
37	270	480	1¾	0	3	6 0 0	370	11	1/5	59	6½	·39	2500	6¾	0	5	52 0 0	37
45	120	590	5	0	4	10 0 0	250	13	1/5	65	8	·40	2900	11½	0	6¼	75 10 0	**45**
55	85	800	9½	0	6	20 0 0	165	16½	¼	70	10	·41	3290	20	0	7	96 0 0	55
65	55	880	16	0	6½	24 0 0	110	20	¼	74	12	·42	3420	31	0	8	115 10 0	65
70	15	290	19½	0	7	8 10 0	95	22	1/3	76	13	·42	3580	37¾	0	9¼	137 10 0	**70**
75	...	...	...	...		...	...	...	...	77	13½	·43	3980	42	0	9½	158 0 0	75

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

Soil and Situation } **QUALITY II. SPANISH CHESTNUT** [*Continued.*

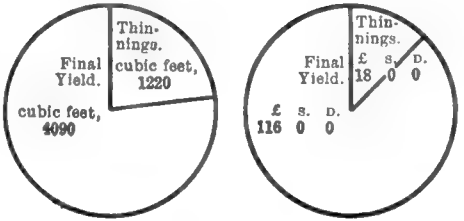
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
22	...	...	...	...	...	...	...
29	75	...	...	...	...	...	...
37	86	117	4⅝	...	...	...	...
45	91	**124**	4½	6	0 10 3	**0 7 7**	1 14 10
55	96	119	3⅜	4¼	0 10 4	0 7 4	2 2 5
65	**97**	101	2⅝	3⅝	0 10 0	0 6 9	2 8 7
70	97	90	2½	4⅝	**0 10 5**	0 6 10	2 13 6
75	96	80	2⅛	2¾	0 9 11	0 6 4	2 15 2

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

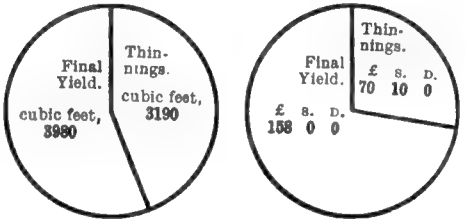
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***55-year*** rotation.



On a ***75-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***70 years,*** if interest is reckoned at 3½ per cent.
or ,, ***50*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices :—

Timber 12 in. q.g. and over at 1. per cub. foot.
,, 6 in. q.g. and under 12 in. at 8d. per cub. foot.
,, below 6 in. q.g. at 3d. per cub. foot.

SOIL AND SITUATION } **QUALITY III.** (out of 4 qualities).

THE YIELD PER ACRE OF SPANISH CHESTNUT

Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included.‡ s. d.	Value Felled.† £ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included.‡ s. d.	Value Standing. £ s. d.	
25	...	...	...	...	...	1080	6½	1/6	37	3½	...	...	...	...	...	25
34	450	120	¼	0 3	1 10 0	630	8	1/6	46	5	·39	1900	3	0 3	24 0 0	34
43	250	380	1½	0 3	4 10 0	380	10½	1/5	52	6½	·40	2250	6	0 4½	42 0 0	43
52	130	530	4	0 3	6 10 0	**250**	13	¼	**56**	**8**	·41	2510	10	0 6	62 10 0	**52**
64	85	670	8	0 5½	15 10 0	**165**	16½	¼	**60**	**10**	·42	2810	17	0 6¾	79 0 0	64
70	30	320	10½	0 6	8 0 0	**135**	18	1/3	**62**	**11**	·42	2900	21½	0 7	84 10 0	70
76	25	340	13½	0 6½	9 0 0	**110**	20	1/3	**63**	**12**	·43	2930	26½	0 8	97 10 0	76
85	...	...	...	...	...	..	...	...	**64**	**13**	·43	3430	31	0 9	129 0 0	85

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

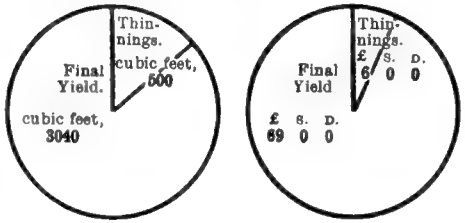
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
25	...	...	...	...	...	...	...
34	59	...	...	...	...	...	...
43	64	81	...	...	0 2 2	0 0 7	0 15 11
52	68	**87**	3¼	5⅜	**0 3 5**	**0 1 5**	1 2 9
64	**70**	80	2¾	3⅜	0 3 0	0 0 10	1 7 8
70	70	69	2¼	2⅝	0 2 6	0 0 3	1 8 10
76	69	62	2	3⅞	0 2 5	0 0 2	1 12 0
85	68	56	1¾	3⅛	0 1 10	loss of 0 0 2	1 16 1

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

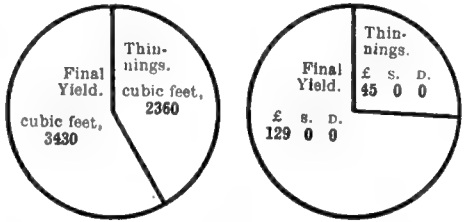
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***52-year*** rotation.



On an ***85-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***52*** to ***60 years,*** if interest is reckoned at 3½ per cent.
or ,, ***52*** to ***55*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices:—

Timber 12 in. q.g. and over at 1s. per cub. foot.
,, 6 in. q.g. and under 12 in. at 8d. per cub. foot.
,, below 6 in. q.g. at 3d. per cub. foot.

SOIL AND SITUATION } QUALITY IV. (out of 4 qualities).

THE YIELD PER ACRE OF SPANISH CHESTNUT

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included.‡ s. d.			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included.‡ s. d.		Years since planted with 3-year-old trees.
25	...	...	...	...	...		1840	5	1/5	25	...	...	...	...	...	...	25
30	760	...	...	...	...		1080	6	1/5	30	3½	·39	1090	1	0 3	...	30
40	580	120	¼	0 3	1 10	0	500	9½	¼	36	5½	·40	1480	3	0 3	18 10 0	40
50	180	240	1¼	0 3	3 0	0	320	11½	⅓	40	7	·41	1780	5½	0 4¼	31 10 0	50
60	90	280	3	0 3	3 10	0	230	13½	⅓	43	8½	·42	2010	8¾	0 5¾	48 0 0	60
70	60	330	5½	0 4¼	6 0	0	170	16	⅓	45	10	·43	2150	12¾	0 6½	58 0 0	70
80	...	...	...	...	...		...	...	...	46	10½	·43	2590	15	0 7	75 10 0	80

* Only timber exceeding 8 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
Note.—The loss of 1s. 9d. per annum on an 80-year rotation is, at 3½ per cent. interest, equal to a capital loss of nearly £37 per acre.

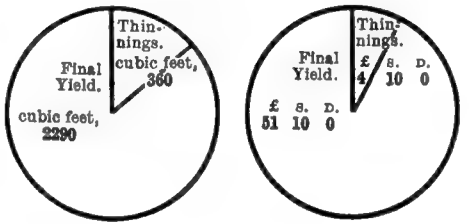
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
25	...	...	...	...	...	...	...
30	36	...	...	...	...	...	...
40	40	51	3¾	...	...	...	...
50	42	**54**	3⅛	6	loss of 0 1 8	loss of 0 2 10	0 9 1
60	44	51	2½	4⅞	loss of **0 1 0**	loss of **0 2 5**	0 13 8
70	**44**	47	2⅛	2⅞	loss of 0 1 5	loss of 0 2 10	0 15 10
80	44	44	1⅞	2⅝	loss of 0 1 9	loss of 0 3 9	0 17 10

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

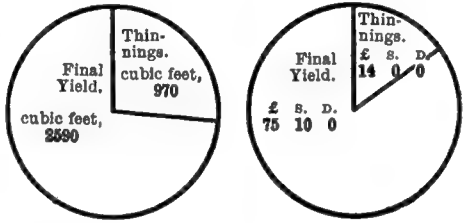
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***60-year*** rotation.



On an ***80-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***60 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

‡ These prices are equivalent to the following scale of prices :—

Timber 12 in. q.g. and over at 1s. per cub. foot.
,, 6 in. q.g. and under 12 in. at 8d. per cub. foot.
,, below 6 in. q.g. at 3d. per cub. foot.

THE YIELD OF OTHER BROAD-LEAVED TREES

THE following notes indicate approximately the returns which will be yielded in the case of other broad-leaved trees :—

Alder, up to the first 35 years, will yield about the same *volume* of timber as Spanish Chestnut.

Elm will yield about the same *volume* of timber as Spanish Chestnut, but the thinnings at all ages should be more severe. Hence the trees of the final crop will have a larger girth than the more densely grown Spanish Chestnut.

Lime, up to the first 40 years, will yield about the same *volume* of timber as Spanish Chestnut, and will require to be thinned in the same manner.

Red Oak (*Q. rubra*) will (?) yield about the same *volume* of timber as Spanish Chestnut, but the thinnings during the first 30 years should be rather more severe.

Sycamore will yield a *volume* of timber about half-way between that of Spanish Chestnut and Ash. On Quality II. land, an average annual increment of 74 cub. ft. on a 60-year rotation should be grown. Trees of the same height and girth should, up to the first 30 years, be grown at slightly greater distances apart than those indicated for Spanish Chestnut, but after that date the crop should be thinned so that the distance apart of the trees more nearly approaches that indicated in the case of Ash.

Turkey Oak will yield rather a greater *volume* of timber per acre than Ash ; trees having the same height and girth should be thinned in a similar manner.

CHAPTER III

YIELD TABLES FOR CONIFEROUS TREES

SOIL AND SITUATION } **QUALITY I.** (out of 4 qualities). (the best).

THE YIELD PER ACRE OF DOUGLAS FIR

[*A Provisional Table.**

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.† String measure, *under* bark.	Av. per tree.	Value Felled.‡ At per foot, "tops" included.			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.† String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.			
		c. feet, q.g.	c. feet.	s.	d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s.	d.	£ s. d.	
17	...	...	...	...		...	**2100**	4½	1/10	**47**	**3½**	·38	3,130	1½	0	3	39 0 0	17
21	800	200	...	0	3	2 10 0	**1300**	6	1/10	**57**	**4½**	·38	4,010	3	0	3½	58 10 0	21
25	410	280	¾	0	3	3 10 0	**890**	7	1/9	**66**	**5½**	·41	5,110	5¾	0	4	85 0 0	25
29	230	480	2¼	0	3	6 0 0	**660**	8	1/9	**74**	**6½**	·42	6,050	9	0	5	126 0 0	29
33	170	740	4	0	3½	11 0 0	**490**	9½	1/9	**81**	**7½**	·44	6,750	13¾	0	5½	154 10 0	33
37	120	850	7	0	4½	16 0 0	**370**	11	1/8	**87**	**8½**	·45	7,320	19¾	0	7§	189 0 0	37
43	125	1740	14	0	5½	40 0 0	**245**	13½	1/7	**94**	**10**	·47	7,660	31¼	0	8§	239 10 0	**43**
				Value Standing.														
50	75	1810	24	0	7½§	51 0 0	**170**	16	1/6	**101**	**12**	·47	8,040	47¼	0	8½§	276 0 0	50
60	60	2460	41	0	8½§	83 0 0	**110**	20	1/5	**110**	**14½**	·47	8,280	75¼	0	9§	304 0 0	60
70	30	1800	60	0	9§	65 10 0	**80**	23	1/5	**117**	**17**	·47	8,880	111	0	9§	328 10 0	70
80	20	1830	92	0	9§	67 10 0	**60**	27	1/5	**124**	**19½**	·47	9,120	151¾	0	9§	339 0 0	80
90	...	...	...	...		...	...	...	...	**130**	**21**	·47	11,000	183¼	0	9§	409 10 0	90

* Based partly upon investigations made by the author in America.
† Only timber exceeding 8 inches in diameter under bark has been included.
‡ Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
§ "Tops" below 6 inches (q.g.) at 3d. per cub. foot.

SOIL AND SITUATION } **QUALITY I. (the best).** **DOUGLAS FIR** [*Continued.*

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £8, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £8, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
17	184	...	...	...	...	...	...
21	200	270	...	...	...	...	...
25	224	345	7¼	...	1 13 7	1 9 9	...
29	242	355	6¼	...	2 3 10	1 19 4	...
33	256	**360**	5¼	6¾	2 7 8	2 1 11	4 17 3
37	264	354	4¾	7	2 12 2	2 5 5	5 13 1
43	278	347	4¼	6⅜	**2 18 3**	**2 9 7**	6 18 5
50	**283**	313	3½	4⅜	2 17 9	2 8 5	7 13 1
60	281	270	2⅞	3¼	2 11 9	2 4 2	8 3 10
70	275	240	2½	2⅝	2 8 8	1 19 6	**8 5 6**
80	267	207	2	2⅛	2 4 2	1 15 8	8 3 10
90	258	188	1⅞	1⅞	2 0 8	1 12 10	8 0 11

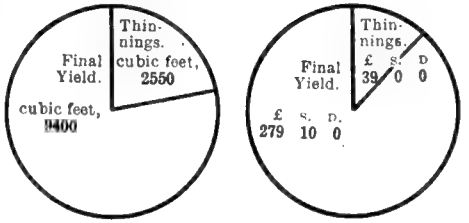
* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.

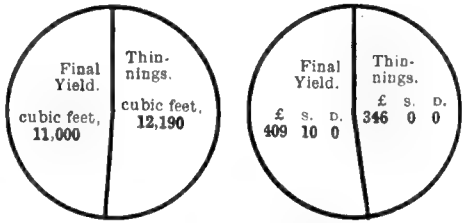
IN VOLUME. (To 3 inches diameter.)

IN VALUE.

On a ***43-year*** rotation.



On a ***90-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***45*** to ***48 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.	
Trees containing less than 3 cub. ft.	0	3	Including "tops" to 3 in. diameter.
,, 3 cub. ft. and less than 5 cub. ft.	0	3½	
,, 5 ,, ,, 7 ,,	0	4	
,, 7 ,, ,, 9 ,,	0	4½	
,, 9 ,, ,, 12 ,,	0	5	
,, 12 ,, ,, 15 ,,	0	5½	
,, 15 ,, ,, 20 ,,	0	7	"Tops" below 6 in. q.g. at 3d. per cub. ft.
,, 20 ,, ,, 30 ,,	0	7½	
,, 30 ,, ,, 40 ,,	0	8	
,, 40 ,, ,, 60 ,,	0	8½	
,, 60 ,, and over	0	9	

SOIL AND SITUATION } **QUALITY II.** (out of 4 qualities).

THE YIELD PER ACRE OF DOUGLAS FIR

[*A Provisional Table.**

Years since planted with 3-year-old trees.	Thinnings Removed.								Crop left after a Thinning.											Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.† String measure, *under* bark.	Av. per tree.	Value Felled.‡ At per foot, "tops" included.					Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.† String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.			
		c. feet, q.g.	c. feet.	s.	d.	£	s.	d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s.	d.	£	s.	d.
21	...	...	...	...		...			**2100**	4½	1/9	**40**	**3½**	·38	2650	1¼	0	3	33	0	0	21
26	760	90	...	0	3	1	0	0	**1340**	6	1/8	**49**	**4½**	·38	3480	2½	0	3	43	10	0	26
31	390	150	½	0	3	2	0	0	**950**	7	1/8	**57**	**5½**	·40	4490	4¾	0	3½	65	10	0	31
36	270	410	1½	0	3	5	0	0	**680**	8	1/8	**64**	**6½**	·42	5320	7¾	0	4½	100	0	0	36
41	170	510	3	0	3½	7	0	0	**510**	9	1/8	**70**	**7½**	·44	6140	12	0	5½	140	10	0	41
46	130	850	6½	0	4	14	0	0	**380**	10½	1/7	**75**	**8½**	·46	6490	17	0	7§	167	0	0	**46**
53	125	1290	10¼	0	5	27	0	0	**255**	13	1/6	**81**	**10**	·47	6710	26¼	0	7½§	197	10	0	53
				Value Standing.																		
60	75	1340	18	0	7§	34	10	0	**180**	15½	1/6	**87**	**11½**	·48	6760	37½	0	8§	216	0	0	60
70	55	1540	28	0	7½§	45	10	0	**125**	18½	1/5	**94**	**13½**	·48	7000	56	0	8½§	242	0	0	70
80	...	...	...	...		...			...	...	...	**100**	**14½**	·48	8600	68¾	0	9§	316	0	0	80

* Based partly upon investigations made by the author in America.
† Only timber exceeding 8 inches in diameter under bark has been included.
‡ Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
§ "Tops" below 6 inches (q.g.) at 8d. per cub. foot.

Soil and Situation } **QUALITY II.** **DOUGLAS FIR** *[Continued.*

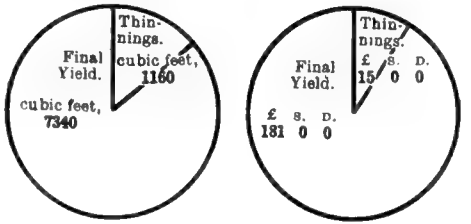
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £8, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
21	126	...	...	...	...	...	...
26	137	188	...	...	...	...	...
31	153	228	5¾	...	...	...	...
36	166	248	4⅞	...	...	...	...
41	178	**266**	4½	7⅝	1 4 7	1 0 1	3 7 11
46	184	240	3⅝	5	**1 5 9**	**1 0 8**	3 17 7
53	189	215	3	4¼	1 5 8	1 0 1	4 8 5
60	**190**	198	2¾	3⅜	1 4 8	0 18 6	4 15 2
70	188	178	2¼	2⅞	1 2 2	0 16 0	5 1 5
80	185	160	2	2⅝	1 0 4	0 14 0	5 6 8

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

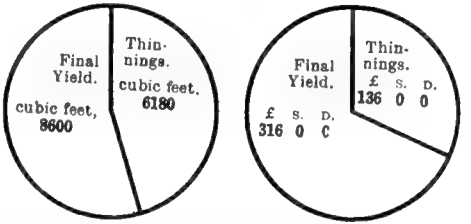
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME (To 3 inches diameter.) **IN VALUE.**

On a ***46-year*** rotation.



On an ***80-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***46*** to ***50 years,*** if interest is reckoned at 3½ per cent.
or ,, ***46*** ,, ,, ,, ,, 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.	
Trees containing less than 3 cub. ft.	0	3	Including "tops" to 3 in. diameter.
,, 3 cub. ft. and less than 5 cub. ft.	0	3½	
,, 5 ,, ,, 7 ,,	0	4	
,, 7 ,, ,, 9 ,,	0	4½	
,, 9 ,, ,, 12 ,,	0	5	
,, 12 ,, ,, 15 ,,	0	5½	
,, 15 ,, ,, 20 ,,	0	7	"Tops" below 6 in. q.g. at 3d. per cub. ft.
,, 20 ,, ,, 30 ,,	0	7½	
,, 30 ,, ,, 40 ,,	0	8	
,, 40 ,, ,, 60 ,,	0	8½	
,, 60 ,, and over	0	9	

SOIL AND SITUATION } **QUALITY I.** (out of 4 qualities). **(the best).**

THE YIELD PER ACRE OF LARCH (grown in close canopy)

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included. £ s. d.			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included. s. d.			
15	...	...	...	...			0 10 0	**800**	7½	½	**37**	...	...	560	...	...			15
20	160	50	...	1 15 0 per 100			2 10 0	**640**	8½	⅛	**47**	**3½**	·39	1000	1½	0 6	25 0 0		20
25	130	130	1	2 15 0 per 100			3 10 0	**510**	9	⅙	**55**	**4½**	·39	1540	3	0 6	38 10 0		25
30	100	170	1¾	0 0 6			4 0 0	**410**	10½	⅙	**62**	**5½**	·41	2140	5¼	0 6	53 10 0		30
35	90	420	4½	0 0 6			10 10 0	**320**	11½	⅙	**68**	**6½**	·41	2480	7¾	0 6½	67 0 0		35
40	90	540	6	0 0 6			13 10 0	**230**	13½	⅕	**73**	**7½**	·41	2600	11¼	0 10‡	79 0 0		40
48	80	710	9	0 0 10‡			20 10 0	**150**	17	⅕	**79**	**9**	·42	2760	18¼	1 0‡	115 10 0		**48**
60	50	790	16	0 1 0‡			32 10 0	**100**	21	¼	**85**	**11**	·43	3100	31	1 1‡	155 0 0		60
70	20	500	25	0 1 1‡			24 0 0	**80**	23	¼	**90**	**12½**	·44	3470	43½	1 2‡	195 0 0		70
80	...	...	...	...			...	...	...	...	**94**	**13½**	·44	4250	53	1 2‡	240 0 0		80

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 3d. per cub. foot.

SOIL AND SITUATION } **QUALITY I. (the best).** **LARCH (close canopy)** *[Continued.*

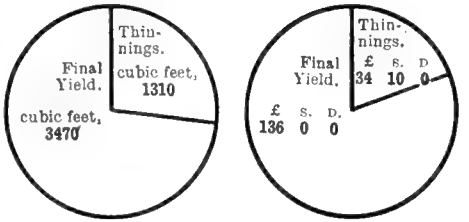
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
15	...	...	...	...	...	...	...
20	52	98	...	...	...	...	...
25	69	134	...	...	...	...	...
30	83	**154**	...	...	...	...	...
35	94	150	6	7⅜	...	...	...
40	98	132	4⅝	6⅜	1 0 5	0 17 1	2 8 10
48	**99**	110	3⅝	6½	**1 3 7**	**0 19 3**	3 3 6
60	98	94	2⅞	4	1 2 11	0 18 4	3 13 10
70	97	87	2½	3½	1 1 11	0 17 3	4 0 11
80	94	78	2	2	0 19 7	0 14 10	4 1 6

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

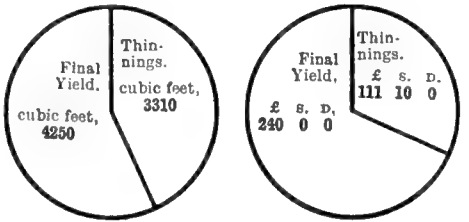
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***48-year*** rotation.



On an ***80-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***50*** to ***56 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

Trees containing less than ¾ cub. ft. at per 100 poles.

	Per cub. ft. s.	d.	
Trees containing less than 6½ cub. ft. . .	0	6	Including "tops" to 3 in. diameter.
,, 6½ cub. ft. and less than 8½ cub. ft.	0	6½	
,, 8½ ,, ,, 15 ,,	0	10	"Tops" below 6 in. q.g. at 3d. per cub. ft.
,, 15 ,, ,, 25 ,,	1	0	
,, 25 ,, ,, 35 ,,	1	1	
,, 35 ,, and over . . .	1	2	

SOIL AND SITUATION } **QUALITY I.** (out of 4 qualities). **(the best).**

THE YIELD PER ACRE OF LARCH (very heavily thinned)

Years since planted with 3-year-old trees.	Thinnings Removed.							Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.				Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.		
		c. feet. q.g.	c. feet.	£ s. d.			£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s. d.	£ s. d.	
15	...	...	...	...			1 0 0	**740**	7½	⅕	**37**	**3**	·35	560	...	...	...	15
18	170	10	...	1 3 0 per 100 poles			2 0 0	**570**	9	⅕	**44**	**3½**	·38	780	1½	0 6	19 10 0	18
22	160	80	½	1 18 0 per 100 poles			3 0 0	**410**	10½	⅕	**52**	**4½**	·38	1130	2¾	0 6	28 0 0	22
26	110	170	1½	0 0 6			4 10 0	**300**	12	⅕	**58**	**5½**	·39	1430	4¾	0 6	36 0 0	26
30	70	270	4	0 0 6			7 0 0	**230**	14	⅕	**63**	**6½**	·39	1640	7	0 6½	44 10 0	30
37	70	420	6	0 0 6			10 10 0	**160**	16½	¼	**70**	**8**	·40	1970	12¼	0 10‡	61 10 0	37
46	65	770	12	0 0 10‡			24 10 0	**95**	21½	¼	**78**	**10**	·40	2080	21¾	1 0‡	89 10 0	46
55	30	680	22½	0 1 0‡			30 0 0	**65**	26	⅓	**83**	**12**	·41	2210	34	1 1‡	111 0 0	**55**
65	20	780	39	0 1 2‡			43 0 0	**45**	31	⅓	**88**	**14**	·42	2240	50	1 2‡	126 0 0	65
80	...	...	...	...			...	...	...	...	**94**	**16**	·43	3240	72	1 2‡	186 0 0	80

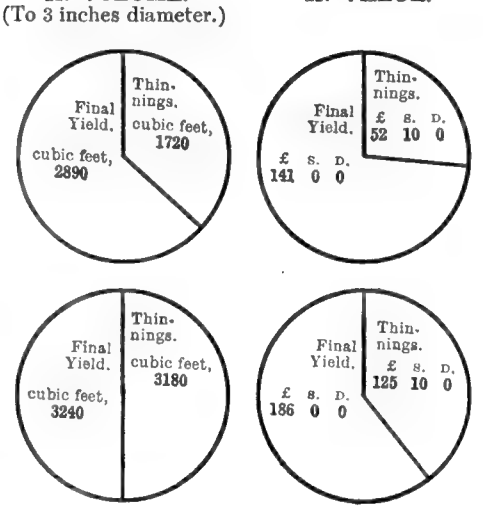
* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 3d. per cub. foot.

SOIL AND SITUATION } **QUALITY I. (the best).** **LARCH (very heavily thinned)** [*Continued.*

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
15	...	...	...	...	...	...	...
18	44	77	...	...	...	...	...
22	55	107	...	...	...	...	...
26	65	117	...	...	...	...	...
30	72	**120**	$7\frac{1}{8}$	...	0 15 6	0 13 8	1 12 10
37	76	107	$5\frac{1}{4}$	$6\frac{3}{4}$	0 17 7	0 15 3	2 0 6
46	83	98	$4\frac{5}{8}$	$6\frac{5}{8}$	1 1 0	0 17 10	2 14 3
55	**84**	90	$3\frac{5}{8}$	5	**1 1 9**	**0 18 0**	3 3 3
65	83	81	$3\frac{1}{8}$	$4\frac{1}{4}$	1 1 5	0 17 5	3 10 8
80	80	67	$2\frac{1}{2}$	$2\frac{5}{8}$	0 19 5	0 15 2	3 11 9

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***55*** to ***60 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

Trees containing less than ¾ cub. ft. at per 100 poles.

	Per cub. ft. s.	d.	
Trees containing less than 6½ cub. ft. . .	0	6	Including "tops" to 3 in. diameter.
,, 6½ cub. ft. and less than 8½ cub. ft.	0	6½	
,, 8½ ,, ,, ,, 15 ,,	0	10	"Tops" below 6 in. q.g. at 3d. per cub. ft.
,, 15 ,, ,, 25 ,,	1	0	
,, 25 ,, ,, 35 ,,	1	1	
,, 35 ,, and over . . .	1	2	

SOIL AND SITUATION } **QUALITY II.** (out of 4 qualities).

THE YIELD PER ACRE OF LARCH

Thinnings Removed.							Crop left after a Thinning.										Years since planted with 3-year-old trees.
Years since planted with 3-year-old trees.	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.		
		c. feet, q.g.	c. feet.	£ s. d.						Feet.	Inches.		c. feet, q.g.	c. feet.	s. d.	£ s. d.	
18	...	...	...	...			1 0 0	**880**	**7**	$\frac{1}{5}$	**33**	**2½**	...	440	...	...	...	18
23	140	...	...	1 13 0 per 100 poles			2 10 0	**740**	**7½**	$\frac{1}{6}$	**42**	**3**	·39	840	1	0 6	21 0 0	23
28	130	80	½	2 3 0 per 100 poles			3 0 0	**610**	**8½**	$\frac{1}{6}$	**49**	**4**	·40	1360	2¼	0 6	34 0 0	28
34	130	200	1¼	0 0 6			5 0 0	**480**	**9½**	$\frac{1}{6}$	**56**	**5**	·41	1910	4	0 6	48 0 0	34
40	130	280	2	0 0 6			7 0 0	**350**	11	$\frac{1}{6}$	**62**	**6**	·42	2280	6½	0 6	57 0 0	40
50	135	630	4¾	0 0 6			16 0 0	**215**	14	$\frac{1}{5}$	**69**	**7½**	·43	2520	11¾	0 10‡	78 0 0	**50**
65	95	780	8¼	0 0 6½			21 0 0	**120**	19	¼	**76**	**10**	·44	2850	23¾	1 0‡	128 0 0	**65**
80	...	...	...	...			...	...	...	...	**81**	**11½**	·44	3900	32	1 1‡	199 0 0	80

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 3d. per cub. foot.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
18	24	...	...	...	...	...	...
23	36	80	...	...	...	...	...
28	52	120	...	...	...	...	...
34	64	**125**	7¼	7¼	...	...	...
40	71	108	4⅞	4⅞	0 10 11	0 8 8	1 10 9
50	**74**	87	3¼	4⅞	0 11 6	**0 9 1**	1 18 6
65	74	74	2½	4	**0 12 0**	0 8 7	2 10 5
80	73	70	2	2⅞	0 10 6	0 7 0	2 17 11

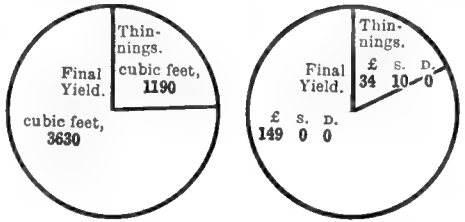
* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.

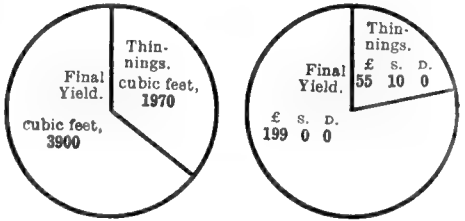
IN VOLUME. (To 3 inches diameter.)

IN VALUE.

On a ***65-year*** rotation.



On an ***80-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***65 years,*** if interest is reckoned at 3½ per cent.
or ,, ***55*** to ***60*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices:—

Trees containing less than ¾ cub. foot at per 100 poles.

	Per cub. ft. s.	d.	
Trees containing less than 6½ cub. ft. . . .	0	6	Including "tops" to 3 in. diameter.
,, 6½ cub. ft. and less than 8½ cub. ft.	0	6½	
,, 8½ ,, ,, 15 ,,	0	10	"Tops" below 6 in. q.g. at 3d. per cub. ft.
,, 15 ,, ,, 25 ,,	1	0	
,, 25 ,, ,, 35 ,,	1	1	
,, 35 ,, and over . . .	1	2	

SOIL AND SITUATION } **QUALITY III.** (out of 4 qualities).

THE YIELD PER ACRE OF LARCH

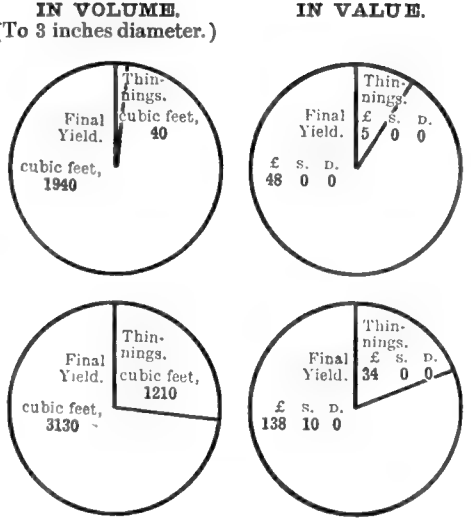
Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.											Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.			
		c. feet, q.g.	c. feet.	£ s. d.						Feet.	Inches.		c. feet, q.g.	c. feet.	s. d.		£ s. d.	
20	...	...	...	...			1100	6	¼	25	...	...	...	...	...		...	20
26	260	...	...	1 0 0 per 100 poles		2 10 0	840	7½	⅕	35	3	·39	770	1	0 6		19 0 0	26
33	190	40	...	1 6 0 per 100 poles		2 10 0	650	8	⅕	44	4	·41	1330	2	0 6		33 10 0	33
40	150	160	¾	2 4 0 per 100 poles		3 10 0	500	9½	⅕	51	5	·41	1780	3½	0 6		44 10 0	40
50	210	430	2	0 0 6		11 0 0	290	12	⅕	58	6½	·42	2040	7	0 6½		55 0 0	50
65	130	580	4½	0 0 6		14 10 0	160	16½	¼	64	8½	·43	2360	14½	0 10‡		84 0 0	65
80	...	...	...	...		...	...	...	...	68	9½	·43	3130	19½	1 0‡		138 10 0	80

* Only timber exceeding 3 inches in diameter under bark has been included.
† **Felled** thinnings have been valued at the same price per foot as the "**standing**" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 3d. per cub. foot.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
20	...	...	...	...	...	...	...
26	30	...	...	...	...	...	...
33	42	86	...	...	0 4 6	0 2 11	0 16 5
40	49	**87**	5¼	5¼	**0 5 0**	**0 3 1**	1 0 1
50	53	70	3¼	3⅞	0 4 9	0 2 5	1 3 11
65	**55**	61	2⅜	3⅞	0 4 7	0 2 3	1 10 11
80	54	51	1⅞	3¼	0 4 2	0 1 9	1 18 0

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***40*** to ***45 years,*** if interest is reckoned at 3½ per cent.
or ,, ***40*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

Trees containing less than ¾ cub. ft. at per 100 poles.

	Per cub. ft. s.	d.	
Trees containing less than 6½ cub. ft. . .	0	6	Including "tops" to 3 in. diameter.
,, 6½ cub. ft. and less than 8½ cub. ft.	0	6½	
,, 8½ ,, ,, 15 ,,	0	10	"Tops" below 6 in. q.g. at 8d. per cub. ft.
,, 15 ,, ,, 25 ,,	1	0	
,, 25 ,, ,, 35 ,,	1	1	
,, 35 ,, and over . . .	1	2	

SOIL AND SITUATION } **QUALITY IV.** (out of 4 qualities).

THE YIELD PER ACRE OF LARCH

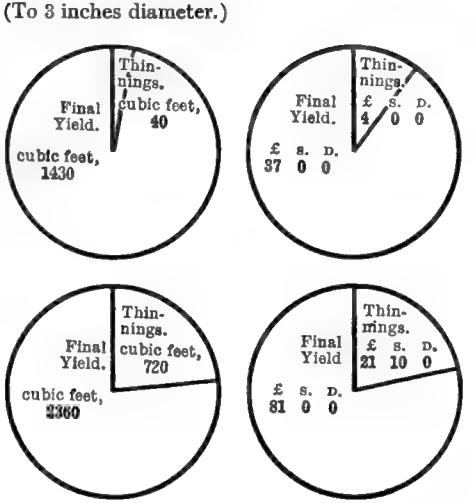
Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.									Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.		Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.		
		c. feet, q.g.	c. feet.	£ s. d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s. d.	£ s. d.	
29	...	...	...	...	2 0 0	**860**	7	¼	**31**	**3**	...	570	...	...	...	29
36	160	40	¼	1 6 0 per 100 poles	2 0 0	**700**	8	⅕	**38**	**3½**	·39	950	1¼	0 6	23 10 0	36
43	160	80	½	1 18 0 per 100 poles	3 0 0	**540**	9	⅕	**43**	**4½**	·40	1350	2½	0 6	34 0 0	**43**
50	180	230	1¼	0 0 6	5 10 0	**360**	11	¼	**47**	**5½**	·41	1490	4	0 6	37 0 0	50
65	160	370	2¼	0 0 6	9 0 0	**200**	14½	¼	**53**	**7½**	·43	1750	8¾	0 10‡	55 0 0	65
80	...	...	...	...	...	...	...	...	**56**	**8½**	·43	2360	11¾	0 10‡	81 0 0	80

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
‡ "Tops" below 6 inches (q.g.) at 3d. per cub. foot.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 8s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
29	19	...	...	...	...	...	...
36	27	60	7¾	...	0 0 1	loss of 0 0 11	0 9 2
43	34	**68**	5¾	6¼	**0 1 3**	**0 0 1**	0 13 5
50	37	53	3½	3½	0 0 11	loss of 0 0 5	0 14 6
65	38	42	2⅜	3½	0 0 10	loss of 0 0 10	0 18 8
80	**39**	40	2	2½	0 0 1	loss of 0 1 8	1 1 1

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***43*** to ***46 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

Trees containing less than ⅜ cub. ft. at per 100 poles.

	Per cub. ft. s.	d.	
Trees containing less than 6½ cub. ft. . .	0	6	Including "tops" to 8 in. diameter.
,, 6½ cub. ft. and less than 8½ cub. ft.	0	6½	
,, 8½ ,, ,, 15 ,,	0	10	"Tops" below 6 in. q.g. at 8d. per cub. ft.
,, 15 ,, ,, 25 ,,	1	0	
,, 25 ,, ,, 35 ,,	1	1	
,, 35 ,, and over . . .	1	2	

SOIL AND SITUATION } **QUALITY I.** (out of 4 qualities). (the best).

THE YIELD PER ACRE OF NORWAY SPRUCE

Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included. s. d.	£ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included. s. d.	£ s. d.	
29	...	...	...	...	...	**1450**	5½	⅑	**49**	**3½**	·36	2200	1½	0 3	27 10 0	29
36	450	160	¼	0 3	2 0 0	**1000**	6½	⅑	**59**	**4½**	·37	3000	3	0 3	37 10 0	36
43	290	330	1	0 3	4 0 0	**710**	8	⅑	**69**	**5½**	·41	4020	5¾	0 3½	59 10 0	43
50	220	680	3	0 3	8 10 0	**490**	9½	⅛	**78**	**6½**	·44	4660	9½	0 4	77 10 0	**50**
60	190	1200	6¼	0 3½	17 10 0	**300**	12	⅐	**89**	**8**	·45	5250	17½	0 4½	98 10 0	**60**
70	110	1340	12¼	0 4	22 10 0	**190**	15	⅙	**98**	**9½**	·46	5430	28½	0 5	113 0 0	70
80	...	...	...	...	...	...	...	...	**105**	**10½**	·47	6850	36	0 5½	157 0 0	80

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

SOIL AND SITUATION } **QUALITY I. (the best).** **NORWAY SPRUCE** [*Continued.*

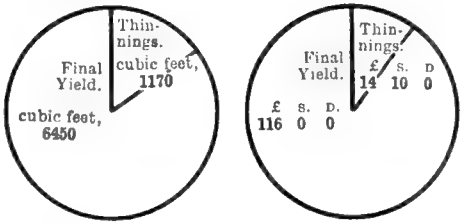
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
29	75	...	...	...	...	...	...
36	88	139	5¼	5¼	...	...	...
43	105	**193**	5¼	7¼	0 5 1	0 2 11	1 3 6
50	117	189	4	5¼	0 6 1	**0 3 9**	1 10 2
60	127	179	3¼	4	**0 6 3**	0 3 6	1 17 2
70	131	157	2½	3¼	0 5 6	0 2 8	2 1 9
80	**132**	138	2¼	3¼	0 5 2	0 2 2	2 7 1

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

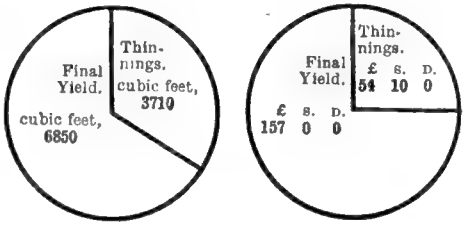
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***60-year*** rotation.



On an ***80-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***60*** to ***65 years,*** if interest is reckoned at 3½ per cent.
or ,, ***50*** to ***55*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices:—

	Per cub. ft. s.	d.	
Trees containing less than 5 cub. ft.	0	3	Including "tops" to 3 in. diameter.
,, 5 cub. ft. and less than 9 cub. ft.	0	3½	
,, 9 ,, ,, 14 ,,	0	4	
,, 14 ,, ,, 20 ,,	0	4½	
,, 20 ,, ,, 32 ,,	0	5	
,, 32 ,, and over	0	5½	

SOIL AND SITUATION } **QUALITY II.** (out of 4 qualities).

THE YIELD PER ACRE OF NORWAY SPRUCE

Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included. D.	£ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included. s. d.	£ s. d.	
26	...	...	...	...	...	2300		1/8	32	...	...	...	...	...	...	26
34	700	...	...	...	...	1600	5	1/8	43	3½	·38	2120	1½	0 3	26 10 0	34
42	600	160	¼	0 3	2 0 0	1000	6½	1/8	53	4½	·39	2900	3	0 3	36 0 0	42
50	320	320	1	0 3	4 0 0	680	8	1/8	62	5½	·41	3630	5¼	0 3½	53 0 0	50
60	270	760	2¾	0 3	9 10 0	410	10½	1/7	72	7	·43	4140	10	0 4	69 0 0	60
70	160	1040	6½	0 3½	15 0 0	250	13	1/6	80	8½	·45	4290	17	0 4½	80 10 0	70
80	...	...	...	...	...	...	...	...	86	9	·47	5420	21¾	0 5	113 0 0	80

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

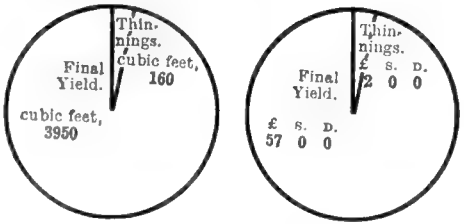
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
26	...	...	...	...	...	...	...
34	62	...	...	...	...	...	...
42	73	118	4½	4½	*Nil*	loss of 0 1 4	0 11 8
50	82	131	3⅞	5⅝	0 1 2	loss of **0 0 6**	0 17 6
60	90	127	3	3⅞	**0 1 3**	loss of 0 0 7	1 2 4
70	94	119	2½	3¼	0 0 10	loss of 0 1 1	1 6 2
80	96	113	2¼	3¼	0 0 8	loss of 0 1 4	1 10 6

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

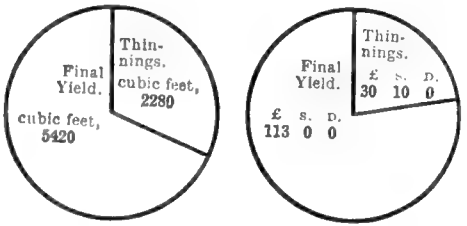
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***50-year*** rotation.



On an ***80-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***60 years,*** if interest is reckoned at 3½ per cent.
or ,, ***50*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.	
Trees containing less than 5 cub. ft. . . .	0	3	Including "tops" to 3 in. diameter.
,, 5 cub. ft. and less than 9 cub. ft.	0	3½	
,, 9 ,, ,, 14 ,,	0	4	
,, 14 ,, ,, 20 ,,	0	4½	
,, 20 ,, ,, 32 ,,	0	5	
,, 32 ,, and over . . .	0	5½	

SOIL AND SITUATION } **QUALITY III.** (out of 4 qualities).

THE YIELD PER ACRE OF NORWAY SPRUCE

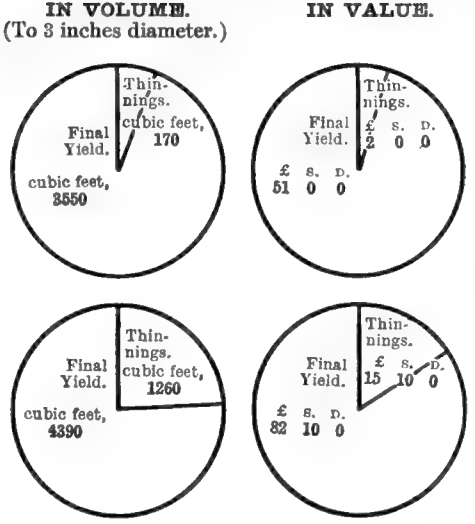
Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.		Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.		
		c. feet, q.g.	c. feet.	s. d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s. d.	£ s. d.	
30	...	...	...	...	...	**2400**	4	1/7	**29**	...	...	...	...	...	...	30
39	800	...	...	...	...	**1600**	5	1/8	**40**	3½	·36	1850	1	0 3	23 0 0	39
48	750	170	¼	0 3	2 0 0	**850**	7	1/7	**49**	4½	·40	2530	3	0 3	31 10 0	48
58	350	430	1¼	0 3	5 10 0	**500**	9½	1/6	**56**	**6**	·44	3120	6¼	0 3½	45 10 0	**58**
70	200	660	3¼	0 3	8 0 0	**300**	12	1/5	**63**	7½	·47	3550	11¾	0 4	59 0 0	70
80	...	...	...	...	...	...	...	...	**68**	**8**	·48	4390	14¾	0 4½	82 10 0	80

* Only timber exceeding 8 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "**standing**" timber left after a thinning.
Note.—The loss of 1s. 9d. per annum on an 80-year rotation is, at 3½ per cent. interest, equal to a capital loss of nearly £37 per acre.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
30	...	...	...	...	...	...	...
39	48	...	...	...	...	...	...
48	56	95	4⅛	4⅛	loss of 0 2 1	loss of 0 3 3	0 8 8
58	64	**102**	3¼	4¾	loss of **0 1 5**	loss of **0 2 10**	0 13 0
70	69	91	2½	3¼	loss of 0 1 8	loss of 0 3 2	0 16 3
80	70	84	2⅛	3¼	loss of 0 1 9	loss of 0 3 4	0 19 7

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***58*** to ***65 years,*** if interest is reckoned at 3½ per cent.
or ,, ***58*** to ***60*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices:—

	Per cub. ft. s.	d.	
Trees containing less than 5 cub. ft. . . .	0	3	Including "tops" to 3 in. diameter.
,, 5 cub. ft. and less than 9 cub. ft.	0	3½	
,, 9 ,, ,, 14 ,,	0	4	
,, 14 ,, ,, 20 ,,	0	4½	
,, 20 ,, ,, 32 ,,	0	5	
,, 32 ,, and over . . .	0	5½	

SOIL AND SITUATION } QUALITY IV. (out of 4 qualities).

THE YIELD PER ACRE OF NORWAY SPRUCE

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included. s. d.		£ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included. s. d.	£ s. d.	
33	...	...	...	...		...	2450	4	1/6	24	...	...	...	...	...	...	33
43	830	...	...	...		...	1620	5	1/6	32	3½	·39	1640	1	0 3	20 10 0	43
53	780	180	¼	0 3		2 0 0	840	7	1/6	39	5	·41	2100	2½	0 3	26 0 0	53
65	380	460	1¼	0 3		6 0 0	460	9½	1/5	46	6	·45	2450	5¼	0 3½	35 10 0	65
80	...	...	...	...		...	...	...	...	52	6½	·47	3270	7	0 3½	47 10 0	80

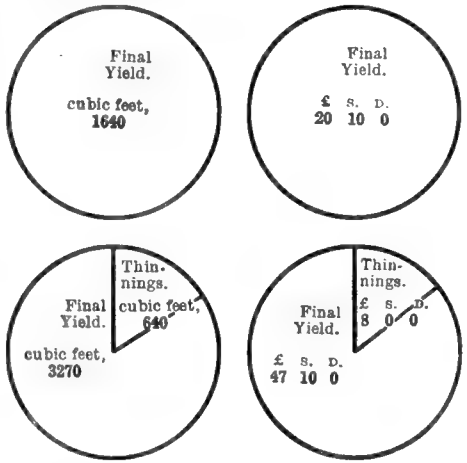
* Only timber exceeding 8 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
Note.—The loss of 3s. 9d. per annum on an 80-year rotation is, at 3½ per cent. interest, equal to a capital loss of nearly £79 per acre.

SOIL AND SITUATION } **QUALITY IV.** **NORWAY SPRUCE** *[Continued.*

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 8s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 8s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
33	...	...	...	...	...	...	...
43	38	...	...	...	loss of 0 3 3	loss of **0 4 2**	0 4 1
53	43	64	3	3	loss of 0 3 5	loss o 0 4 5	0 5 7
65	47	**67**	2⅝	3¾	loss of **0 3 2**	loss of 0 4 4	0 8 8
80	49	55	2	2	loss of 0 3 9	loss of 0 4 10	0 9 5

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***65*** ***years,*** if interest is reckoned at 3½ per cent.
or ,, ***43*** to ***45*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.	
Trees containing less than 5 cub. ft. . . .	0	3	Including "tops" to 3 in. diameter.
,, 5 cub. ft. and less than 9 cub. ft.	0	3½	
,, 9 ,, ,, 14 ,,	0	4	
,, 14 ,, ,, 20 ,,	0	4½	
,, 20 ,, ,, 32 ,,	0	5	
,, 32 ,, and over . . .	0	5½	

SOIL AND SITUATION } **QUALITY I.** (out of 4 qualities). (the best).

THE YIELD PER ACRE OF SCOTS PINE

Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.		Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.		
		c. feet, q.g.	c. feet.	s. d.	£ s. d.		Feet.		Feet.	Inches.		c. feet, q.g.	c. feet.	s. d.	£ s. d.	
18	...	...	...	...	...	1600	5	1/7	35	...	...	...	...	...	...	18
24	400	...	...	...	...	1200	6	1/7	44	3½	·37	1480	1¼	0 3	18 10 0	24
30	400	60	...	0 3	1 0 0	800	7½	1/7	52	4½	·40	2200	2¾	0 3	27 10 0	30
36	280	430	1½	0 3	5 10 0	520	9	1/7	59	5½	·41	2630	5	0 3½	38 10 0	36
42	130	440	3¼	0 3	5 10 0	390	10½	1/6	65	6½	·42	3030	7¾	0 4	50 10 0	42
50	110	620	5½	0 3½	9 0 0	280	12½	1/6	72	7½	·43	3350	12	0 5	70 0 0	50
60	110	900	8¼	0 4½	17 0 0	170	16	1/5	79	9½	·43	3540	21	0 6	88 10 0	60
70	55	850	15½	0 5½	19 10 0	115	19½	1/4	85	11	·44	3670	32	0 7	107 0 0	70
80	...	...	...	...	...	...	...	...	89	12	·45	4560	39¾	0 7	133 0 0	80

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

SOIL AND SITUATION } **QUALITY I. (the best).** **SCOTS PINE** [*Continued.*

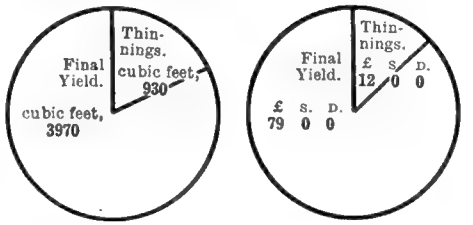
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
18	...	...	...	...	...	...	...
24	62	...	...	...	...	...	...
30	75	130	...	...	...	...	...
36	87	**143**	5½	7⅝	...	...	...
42	94	140	4⅝	6⅛	0 5 4	0 3 5	1 2 9
50	98	118	3⅜	5½	0 6 6	**0 4 2**	1 9 8
60	**100**	109	2¾	4	**0 6 6**	0 4 0	1 15 10
70	99	98	2⅜	3½	0 6 3	0 3 5	2 0 11
80	98	89	2⅛	2⅛	0 5 2	0 2 4	2 1 9

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***50-year*** rotation.



On an ***80-year*** rotation.

The most profitable rotation
(according to the yields and prices indicated)

Is one of ***60 years,*** if interest is reckoned at 3½ per cent.
or ,, ***50*** to ***55*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.
Trees containing less than 4 cub. ft. . . .	0	3
,, 4 cub. ft. and less than 6 cub. ft.	0	3½
,, 6 ,, ,, 8 ,,	0	4
,, 8 ,, ,, 10 ,,	0	4½
,, 10 ,, ,, 15 ,,	0	5
,, 15 ,, ,, 20 ,,	0	5½
,, 20 ,, ,, 25 ,,	0	6
,, 25 ,, ,, 30 ,,	0	6½
,, 30 ,, ,, 40 ,,	0	7
,, 40 ,, and over . . .	0	7½

} Including "tops" to 3 in. diameter.

SOIL AND SITUATION } **QUALITY II.** (out of 4 qualities).

THE YIELD PER ACRE OF SCOTS PINE.

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.		
		c. feet, q.g.	c. feet.	s.	d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s.	d.	£ s. d.
21	...	...	...	...		...	**1900**	5	$\frac{1}{6}$	**29**	...	...	730	...	...		...	21
28	600	...	...	...		...	**1300**	6	$\frac{1}{6}$	**38**	**3**	·38	1360	1	0	3	17 0 0	28
35	400	60	...	0	3	1 0 0	**900**	7	$\frac{1}{6}$	**45**	**4**	·40	2020	$2\frac{1}{4}$	0	3	25 0 0	35
42	300	370	$1\frac{1}{4}$	0	3	4 10 0	**600**	$8\frac{1}{2}$	$\frac{1}{6}$	**51**	**5**	·42	2410	4	0	$3\frac{1}{2}$	35 0 0	42
50	210	490	$2\frac{1}{4}$	0	3	6 0 0	**390**	$10\frac{1}{2}$	$\frac{1}{6}$	**58**	$\mathbf{6\frac{1}{2}}$	·42	2710	7	0	4	45 0 0	50
60	160	800	5	0	$3\frac{1}{2}$	11 10 0	**230**	14	$\frac{1}{5}$	**65**	**8**	·43	2760	12	0	5	57 10 0	**60**
70	70	630	9	0	$4\frac{1}{2}$	12 0 0	**160**	$16\frac{1}{2}$	$\frac{1}{4}$	**71**	**9**	·44	2880	$17\frac{3}{4}$	0	$5\frac{1}{2}$	67 0 0	70
80	...	...	...	...		...	...	...	...	**74**	$\mathbf{9\frac{1}{2}}$	·46	3520	22	0	6	88 0 0	80

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

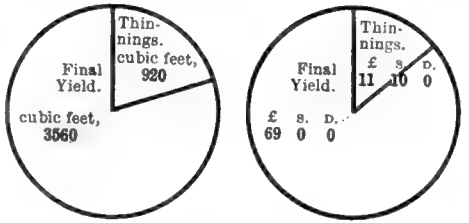
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
21	35	...	...	...	...	...	...
28	48	90	...	...	...	...	...
35	59	103	6	6	...	...	...
42	67	**108**	4½	6⅜	0 0 6	loss of 0 0 10	0 12 10
50	73	99	3½	4⅝	0 1 0	loss of 0 0 7	0 16 7
60	**75**	85	2⅝	4¼	**0 1 4**	loss of **0 0 6**	1 1 1
70	75	75	2⅜	3⅛	0 0 10	loss of 0 1 0	1 3 8
80	73	64	2	2⅝	0 0 6	loss of 0 1 5	1 5 5

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

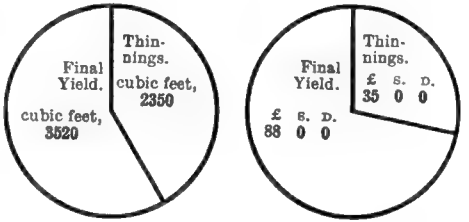
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***60-year*** rotation.



On an ***80-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***60 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

						Per cub. ft. s.	d.	
Trees containing	less than 4 cub. ft.					0	3	Including "tops" to 3 in. diameter.
,,	4 cub. ft.	and less than	6	cub. ft.		0	3½	
,,	6	,,	,,	8	,,	0	4	
,,	8	,,	,,	10	,,	0	4½	
,,	10	,,	,,	15	,,	0	5	
,,	15	,,	,,	20	,,	0	5½	
,,	20	,,	,,	25	,,	0	6	
,,	25	,,	,,	30	,,	0	6½	
,,	30	,,	,,	40	,,	0	7	
,,	40	,,	and over			0	7½	

SOIL AND SITUATION } **QUALITY III.** (out of 4 qualities).

THE YIELD PER ACRE OF SCOTS PINE

Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.		Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.		
		c. feet, q.g.	c. feet.	s. d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s. d.	£ s. d.	
24	...	...	...	...	...	**1920**	5	1/5	**26**	...	...	...	...	...	...	24
32	620	...	...	...	...	**1300**	6	1/6	**34**	**3**	·40	1300	**1**	0 3	16 0 0	32
40	370	30	...	...	0 10 0	**930**	7	1/6	**41**	**4**	·42	1950	2	0 3	24 10 0	40
50	380	380	1	0 3	5 0 0	**550**	9	1/5	**48**	**5½**	·43	2380	**4¼**	0 3½	34 10 0	**50**
60	210	510	2½	0 3	6 10 0	**340**	11½	1/5	**54**	**6½**	·44	2570	**7½**	0 4	43 0 0	60
70	120	580	5	0 3½	8 10 0	**220**	14	1/4	**59**	**8**	·45	2590	**11¾**	0 5	54 0 0	**70**
80	...	...	...	...	...	...	...	...	**62**	**8½**	·46	3130	**14¼**	0 5	65 0 0	80

* Only timber exceeding 3 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
Note.—The loss of 2s. per annum on an 80-year rotation is, at 3½ per cent. interest, equal to a capital loss of £42 per acre.

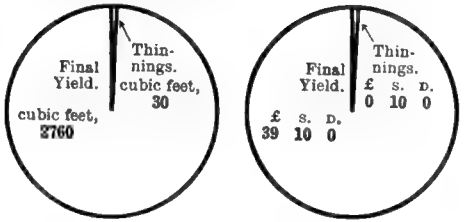
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 4d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
24	...	...	...	...	...	...	...
32	41	...	...	...	...	...	...
40	49	**85**	5½	5½	loss of 0 2 1	loss of 0 3 1	0 6 5
50	56	81	3½	4⅝	loss of 0 1 5	loss of **0 2 9**	0 10 4
60	58	70	2⅜	3½	loss of 0 1 6	loss of 0 2 10	0 13 0
70	**59**	62	2	3¾	loss of **0 1 5**	loss of 0 2 11	0 16 3
80	58	54	1⅞	1⅞	loss of 0 2 0	loss of 0 3 2	0 16 6

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

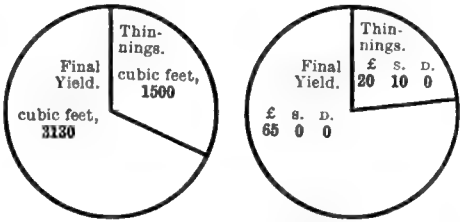
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***50-year*** rotation.



On an ***80-year*** rotation.



The most profitable rotation
(according to the yields and prices indicated)

Is one of ***70 years,*** if interest is reckoned at 3½ per cent.
or ,, ***50*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.	
Trees containing less than 4 cub. ft. . . .	0	3	Including "tops" to 3 in. diameter.
,, 4 cub. ft. and less than 6 cub. ft.	0	3½	
,, 6 ,, ,, 8 ,,	0	4	
,, 8 ,, ,, 10 ,,	0	4½	
,, 10 ,, ,, 15 ,,	0	5	
,, 15 ,, ,, 20 ,,	0	5½	
,, 20 ,, ,, 25 ,,	0	6	
,, 25 ,, ,, 30 ,,	0	6½	
,, 30 ,, ,, 40 ,,	0	7	
,, 40 ,, and over . . .	0	7½	

SOIL AND SITUATION } **QUALITY IV.** (out of 4 qualities.)

THE YIELD PER ACRE OF SCOTS PINE

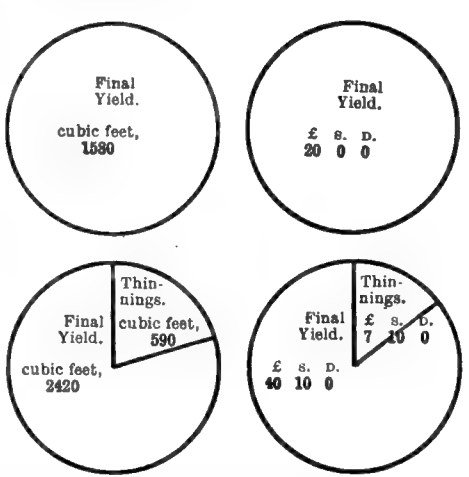
Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.		Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.		
		c. feet, q.g.	c. feet.	s. d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s. d.	£ s. d.	
27	...	...	...	...	...	**3000**	4	1/5	**19**	...	...	...	...	...	...	27
36	...	...	...	...	...	**1460**	5½	1/5	**27**	**3**	·41	1090	¾	0 3	13 10 0	36
45	530	...	...	...	...	**930**	7	1/5	**33**	**4**	·43	1580	1⅝	0 3	20 0 0	**45**
55	370	220	½	0 3	3 0 0	**560**	9	¼	**39**	**5**	·45	1830	3¼	0 3	23 0 0	55
65	220	370	1¾	0 3	4 10 0	**340**	11½	¼	**44**	**6½**	·45	1870	5½	0 3½	27 0 0	65
80	...	...	...	...	...	..	...	...	**48**	**7**	·46	2420	7¼	0 4	40 10 0	80

* Only timber exceeding 8 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.
Note.—The loss of 4s. 1d. per annum on an 80-year rotation is, at 3½ per cent. interest, equal to a capital loss of nearly £86 per acre.

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 8s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 8s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
27	...	...	...	...	...	...	...
36	30	...	...	...	loss of 0 4 1	loss of 0 4 10	0 1 7
45	35	**55**	4⅛	4⅛	**loss of 0 3 8**	**loss of 0 4 6**	0 3 6
55	37	47	2⅝	2⅝	loss of 0 3 10	loss of 0 4 9	0 4 7
65	**38**	41	2	3⅛	loss of 0 3 11	loss of 0 4 11	0 5 11
80	37	37	1¾	2⅝	loss of 0 4 1	loss of 0 5 2	0 7 8

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***45*** to ***48 years,*** if interest is reckoned at 3½ per cent.
or ,, ***45*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

				Per cub. ft. s.	d.	
Trees containing less than 4 cub. ft. . . .				0	3	Including "tops" to 3 in. diameter.
,, 4 cub. ft. and less than	6	cub. ft.		0	3½	
,, 6	,,	,,	8 ,,	0	4	
,, 8	,,	,,	10 ,,	0	4½	
,, 10	,,	,,	15 ,,	0	5	
,, 15	,,	,,	20 ,,	0	5½	
,, 20	,,	,,	25 ,,	0	6	
,, 25	,,	,,	30 ,,	0	6½	
,, 30	,,	,,	40 ,,	0	7	
,, 40	,, and over . . .			0	7½	

Soil and Situation } **QUALITY II.** (out of 4 qualities). **THE YIELD PER ACRE OF SILVER FIR** (*Abies pectinata*) [*A Provisional Table.*

Years since planted with 3-year-old trees.	Thinnings Removed.					Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included. s. d.	Value Felled.† £ s. d.	Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included. s. d.	Value Standing. £ s. d.	
34	...	...	...	...	...	**2260**	4½	⅛	**35**	**3**	·35	1730	¾	...	...	34
42	990	140	...	0 3	2 0 0	**1270**	6	⅛	**46**	**4½**	·36	2670	2	0 3	33 10 0	42
50	420	210	½	0 3	2 10 0	**850**	7	⅛	**57**	**5½**	·39	3790	4½	0 3	47 10 0	50
60	380	940	2½	0 3	12 0 0	**470**	9½	⅐	**69**	**7**	·42	4610	9¾	0 4	77 0 0	60
70	150	940	6½	0 3½	13 10 0	**320**	11½	⅐	**79**	**8½**	·44	5520	17¼	0 4½	103 10 0	**70**
80	90	980	10¾	0 4	16 10 0	**230**	14	⅙	**87**	**10**	·46	6270	27¼	0 5	130 10 0	80
90	...	...	...	...	...	...	...	...	**92**	**11**	·46	7830	34	0 5½	179 10 0	90

* Only timber exceeding 8 inches in diameter under bark has been included.
† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

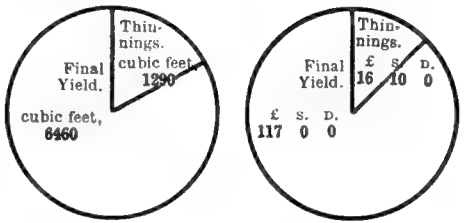
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
34	51	...	...	...	...	...	...
42	67	135	6⅛	...	...	...	...
50	83	166	5	5	...	...	...
60	98	176	3¾	6	0 2 2	*Nil*	1 5 4
70	111	**185**	3¼	4⅛	**0 2 6**	**0 0 1**	1 12 6
80	118	173	2¾	3½	0 2 4	loss of 0 0 3	1 18 9
90	123	156	2¼	3⅛	0 2 1	loss of 0 0 7	2 4 11

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

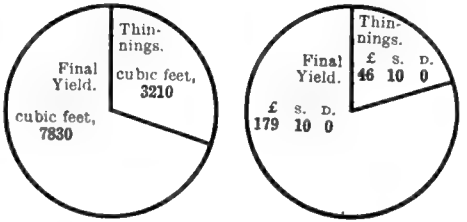
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***70-year*** rotation.



On a ***90-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***70 years,*** if interest is reckoned at 3½ or 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.	
Trees containing less than 5 cub. ft. . . .	0	3	
,, 5 cub. ft. and less than 9 cub. ft.	0	3½	Including "tops" to 3 in. diameter.
,, 9 ,, ,, 14 ,,	0	4	
,, 14 ,, ,, 20 ,,	0	4½	
,, 20 ,, ,, 32 ,,	0	5	
,, 32 ,, and over . . .	0	5½	

Soil and Situation | **QUALITY I.** (out of 4 qualities). **(the best).**

THE YIELD PER ACRE OF SITKA SPRUCE

[A Provisional Table.

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.										Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark.	Av. per tree.	Value Felled.† At per foot, "tops" included.			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark.	Av. per tree.	Value Standing. At per foot, "tops" included.		
		c. feet, q.g.	c. feet.	s.	d.	£ s. d.				Feet.	Inches.		c. feet, q.g.	c. feet.	s.	d.	£ s. d.	
17	...	...	...	...		...	**2100**	4½	1/10	**47**	**3½**	·38	3,130	1½	...		...	17
21	800	200	...	0	3	2 10 0	**1300**	6	1/10	**57**	**4½**	·38	4,010	3	0	3	50 0 0	21
25	410	280	¾	0	3	3 10 0	**890**	7	1/9	**66**	**5½**	·41	5,110	5¾	0	3½	74 10 0	25
29	230	480	2¼	0	3	6 0 0	**660**	8	1/9	**74**	**6½**	·42	6,050	9	0	4	101 0 0	29
33	170	740	4¼	0	3	9 0 0	**490**	9½	1/9	**81**	**7½**	·44	6,750	13¾	0	4	112 10 0	33
37	120	850	7	0	3½	12 10 0	**370**	11	1/8	**87**	**8½**	·45	7,320	19¾	0	4½	137 0 0	37
43	125	1740	14	0	4½	32 10 0	**245**	13½	1/7	**94**	**10**	·47	7,660	31¼	0	5	160 0 0	**43**
				Value Standing.														
50	75	1810	24	0	5	37 10 0	**170**	16	1/6	**101**	**12**	·47	8,040	47¼	0	5½	184 0 0	50
60	60	2460	41	0	5½	56 10 0	**110**	20	1/5	**110**	**14½**	·47	8,280	75¼	0	5½	190 0 0	60
70	30	1800	60	0	5½	41 0 0	**80**	23	1/5	**117**	**17**	·47	8,880	111	0	5½	203 10 0	70
80	...	...	...	...		...	...	...	...	**124**	**18½**	·47	10,950	137	0	5½	251 0 0	80

* Only timber exceeding 8 inches in diameter under bark has been included.

† Felled thinnings have been valued at the same price per foot as the "standing" timber left after a thinning.

Note.—In the above table the *volume* of timber has been taken from the table for Douglas Fir (Quality I.), but the timber has been valued on a different basis.

SOIL AND SITUATION } **QUALITY I. (the best).** **SITKA SPRUCE** *[Continued.*

Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 4s., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
17	184	...	...	...	...	...	...
21	200	270	...	...	...	...	...
25	224	345	7¼	...	...	...	...
29	242	355	6¼	...	1 17 1	1 13 5	3 8 0
33	256	**360**	5¼	4⅝	1 16 5	1 11 11	3 11 7
37	264	354	4¾	7	1 19 4	1 14 4	4 3 1
43	278	347	4¼	5⅝	**2 1 6**	**1 15 7**	4 16 6
50	**283**	313	3½	4⅝	2 1 5	1 15 1	5 6 9
60	281	270	2⅞	2⅞	1 18 1	1 10 10	**5 9 1**
70	275	240	2½	2½	1 14 0	1 7 8	5 8 6
80	267	207	2	2	1 11 2	1 5 2	5 6 4

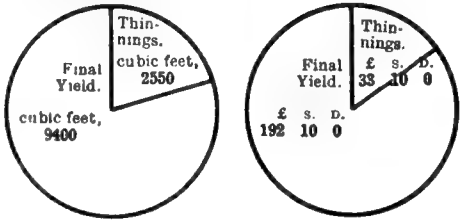
* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

Diagrams showing proportion of Thinnings to Final Crop.

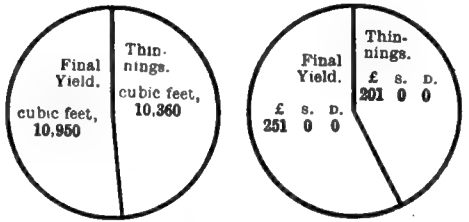
IN VOLUME. (To 3 inches diameter.)

IN VALUE.

On a ***43-year*** rotation.



On an ***80-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***48 years,*** if interest is reckoned at 3½ per cent.
or ,, ***45*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices :—

	Per cub. ft. s.	d.
Trees containing less than 5 cub. ft. . . .	0	3
,, 5 cub. ft. and less than 9 cub. ft.	0	3½
,, 9 ,, ,, 14 ,,	0	4
,, 14 ,, ,, 20 ,,	0	4½
,, 20 ,, ,, 32 ,,	0	5
,, 32 ,, and over . . .	0	5½

Including "tops" to 8 in. diameter.

THE YIELD PER ACRE OF SITKA SPRUCE

Years since planted with 3-year-old trees.	Thinnings Removed.						Crop left after a Thinning.											Years since planted with 3-year-old trees.
	Poles cut.	Cubic feet cut.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Felled.† At per foot, "tops" included. s. d.			Trees left.	Feet apart of trees left.	Ratio of Height.	Average Height. To the very top of trees. Feet.	Average quarter girth at 5 feet. String measure, *under* bark, omitting fractions of ½ inch. Inches.	Form Factor, girthing at 5 feet. String measure, omitting fractions of ½ inch.	Cubic feet left.* String measure, *under* bark. c. feet, q.g.	Av. per tree. c. feet.	Value Standing. At per foot, "tops" included. s. d.			
21	...	...	...	...		...	**2100**	...	...	**40**	**3½**	·38	2650	1¼	0	3	33	0	0	21
26	760	90	...	0	3	1 0 0	**1340**	5½	1/9	**49**	**4½**	·38	3480	2½	0	3	43	10	0	26
31	390	150	...	0	3	2 0 0	**950**	6½	1/9	**57**	**5½**	·40	4490	4¾	0	3	56	0	0	31
36	270	410	1½	0	3	5 0 0	**680**	8	1/8	**64**	**6½**	·42	5320	7¾	0	3½	77	10	0	36
41	170	510	3	0	3	6 10 0	**510**	9	1/8	**70**	**7½**	·44	6140	12	0	4	102	10	0	41
46	130	850	6½	0	3½	12 10 0	**380**	10½	1/7	**75**	**8½**	·46	6490	17	0	4½	122	0	0	**46**
53	125	1290	10¼	0	4	21 10 0	**255**	13	1/6	**81**	**10**	·47	6710	26¼	0	5	140	0	0	53
				Value Standing.																
60	75	1340	18	0	4½	25 0 0	**180**	15½	1/6	**87**	**11½**	·48	6760	37½	0	5½	155	0	0	60
70	55	1540	28	0	5	32 0 0	**125**	18½	1/5	**94**	**13½**	·48	7000	56	0	5½	160	10	0	70
80	...	...	...	...		...	...	...	...	**100**	**14½**	·48	8600	68¾	0	5½	197	0	0	80

* Only timber exceeding 3 inches in diameter under bark has been included.

† Felled thinnings have been valued at the same price per foot as the "**standing**" timber left after a thinning.

Note.—In the above table the *volume* of timber has been taken from the table for Douglas Fir (Quality II.), but the timber has been valued on a different basis.

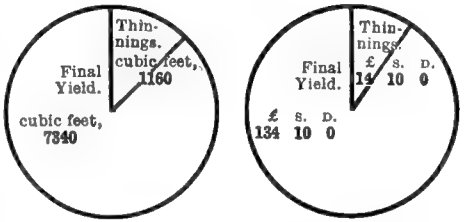
Years since planted with 3-year-old trees.	Increment. Average Annual Increment, including thinnings, from date of planting. c. feet, q.g.	Increment. During last period. Current Annual Increment. c. feet, q.g.	Increment. During last period. Per cent. Increment. In volume of timber.	Increment. During last period. Per cent. Increment. In value (gross).	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 3½ per cent. £ s. d.	Land Rentals per annum. From date of Planting. After deducting annual outgoings, 3s. 8d., and after paying back capital and interest on £5, the cost of planting, fencing, and cleaning the young crop, etc. At 4 per cent. £ s. d.	Annual Income from normally stocked forest. Equivalent nett average income per acre under various rotations (excluding value of sporting) from such areas of *normally stocked forest* as are actually under timber crops.* £ s. d.
21	126	...	...	...	...	...	...
26	137	188	...	...	...	...	...
31	153	228	5¾	5¾	...	...	...
36	166	248	4⅞	7⅝	...	...	...
41	178	**266**	4½	6¾	0 18 9	0 15 4	2 9 8
46	184	240	3⅝	5⅜	**1 0 0**	**0 16 1**	2 17 6
53	189	215	3	4	0 19 7	0 15 5	3 4 4
60	**190**	198	2¾	3⅝	0 18 9	0 14 3	3 9 8
70	188	178	2¼	2⅛	0 16 0	0 11 8	**3 9 11**
80	185	160	2	2	0 14 1	0 9 10	3 9 9

* This sum represents the average nett income per acre which will be earned upon the average *accumulated* capital when once the forest is in proper working rotation, *i.e.*, when it is normally stocked with crops of all ages from one year old up to maturity. The cost of replanting is estimated at £5 per acre, and it is assumed that the land is allowed to lie fallow for one year.

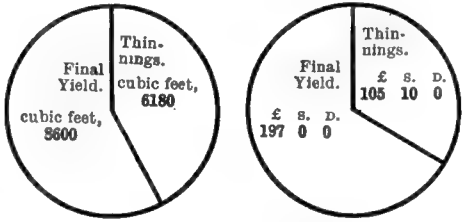
Diagrams showing proportion of Thinnings to Final Crop.

IN VOLUME. (To 3 inches diameter.) **IN VALUE.**

On a ***46-year*** rotation.



On an ***80-year*** rotation.



The most profitable rotation

(according to the yields and prices indicated)

Is one of ***50 years,*** if interest is reckoned at 3½ per cent.
or ,, ***46*** ,, ,, ,, at 4 per cent.

Prices of Timber (standing).

The timber has been valued according to the following scale of prices:—

	Per cub. ft. s.	d.
Trees containing less than 5 cub. ft. . . .	0	3
,, 5 cub. ft. and less than 9 cub. ft.	0	3½
,, 9 ,, ,, 14 ,,	0	4
,, 14 ,, ,, 20 ,,	0	4½
,, 20 ,, ,, 32 ,,	0	5
,, 32 ,, and over . . .	0	5½

Including "tops" to 8 in. diameter.

THE YIELD OF OTHER CONIFEROUS TREES.

THE following notes indicate approximately the returns which will be yielded in the case of other coniferous trees.

Corsican Pine will, on *Quality II.* land, yield about the same returns as are yielded by Scots Pine on *Quality I.* land. On Quality II. land, on an 80-years rotation, an average annual increment of 98 cub. ft. will be obtained, whereas on Quality I. land the average annual increment will be about 135 cub. ft. At 70 years of age it is possible, on Quality I. land, to grow a final crop of 5600 to 6300 cub. ft. per acre.

Thuya plicata will probably, on similar quality land, yield a greater volume of timber than Corsican Pine, but considerably less than Douglas Fir or Sitka Spruce.[1]

Abies grandis will probably yield about the same volume and value of timber as Sitka Spruce on land equally adapted to its growth.

Weymouth Pine will, on similar quality land, yield about the same volume of timber at all ages as Corsican Pine.

[1] Much land which is of Quality I. for Corsican Pine is only of Quality II. or III. for *Thuya plicata*.

CHAPTER IV

CONCLUSION

Summary of the Tables.—The financial results as indicated by the foregoing tables are very largely dependent upon the prices realised for the timber. The following table is a summary of the prices upon which the timber has been valued. In all cases "tops" to 3 inches in diameter have been valued.

PRICES OF TIMBER.

ASH.

	Per cub. ft. s.	d.	
Trees containing less than 4 cub. ft. . . .	0	3	Including "tops" to 3 in. diameter.
„ 4 cub. ft. and less than 7 cub. ft.	0	5	
„ 7 „ „ 10 „	0	7	
„ 10 „ „ 15 „	0	10	"Tops" below 6 in. q.g. at 3d. per cub. ft.
„ 15 „ „ 20 „	1	0	
„ 20 „ „ 30 „	1	3	
„ 30 „ „ 45 „	1	6	
„ 45 „ and over	1	8	

BEECH.

Timber 12 in. q.g. and over at 1s. per cub. ft.
„ 6 in. q.g and under 12 in. at 8d. per cub. ft.
„ below 6 in. q.g. at 3d. per cub. ft.

BIRCH.

	Per cub. ft. s.	d.	
Trees containing less than 4 cub. ft. . . .	0	3	Including "tops" to 3 in. diameter.
„ 4 cub. ft. and less than 5 cub. ft.	0	3¼	
„ 5 „ „ 7 „	0	3½	
„ 7 „ „ 8 „	0	4	
„ 8 „ „ 20 „	0	6	"Tops" below 6 in. q.g. at 3d. per cub. ft.
„ 20 „ and over . . .	0	6½	

BLACK POPLAR.

	Per cub. ft. s.	d.	
Trees containing less than 5 cub. ft. . . .	0	3	Including "tops" to 3 in. diameter.
„ 5 cub. ft. and less than 10 cub. ft.	0	4	
„ 10 „ „ 20 „	0	5	
„ 20 „ „ 35 „	0	6	"Tops" below 6 in. q.g. at 3d. per cub. ft.
„ 35 „ „ 50 „	0	7	
„ 50 „ and over	0	7½	

OAK.

Timber 12 in. q.g. and over at 1s. 9d. per cub. ft.
„ 6 in. q.g. and under 12 in. at 10d. per cub. ft.
„ below 6 in. q.g. at 3d. per cub. ft.

SPANISH CHESTNUT.

Timber 12 in. q.g. and over at 1s. per cub. ft.
„ 6 in. q.g. and under 12 in. at 8d. per cub. ft.
„ below 6 in. at 3d. per cub. ft.

PRICES OF TIMBER—*Continued.*

DOUGLAS FIR.

	Per cub. ft. s.	d.	
Trees containing less than 3 cub. ft. . . .	0	3	Including "tops" to 8 in. diameter.
„ 3 cub. ft. and less than 5 cub. ft.	0	3½	
„ 5 „ „ 7 „	0	4	
„ 7 „ „ 9 „	0	4½	
„ 9 „ „ 12 „	0	5	
„ 12 „ „ 15 „	0	5½	
„ 15 „ „ 20 „	0	7	"Tops" below 6 in. q.g. at 8d. per cub. ft.
„ 20 „ „ 30 „	0	7½	
„ 30 „ „ 40 „	0	8	
„ 40 „ „ 60 „	0	8½	
„ 60 „ and over . . .	0	9	

LARCH.

Trees containing less than ¾ cub. ft. at per 100 poles.

	Per cub. ft. s.	d.	
Trees containing less than 6½ cub. ft. . .	0	6	Including "tops" to 8 in. diameter.
„ 6½ cub. ft. and less than 8½ cub. ft.	0	6½	
„ 8½ „ „ 15 „	0	10	"Tops" below 6 in. q.g. at 8d. per cub. ft.
„ 15 „ „ 25 „	1	0	
„ 25 „ „ 35 „	1	1	
„ 35 „ and over . . .	1	2	

NORWAY SPRUCE, SITKA SPRUCE, AND SILVER FIR.

	Per cub. ft. s.	d.	
Trees containing less than 5 cub. ft. . . .	0	3	Including "tops" to 8 in. diameter.
„ 5 cub ft. and less than 9 cub. ft.	0	3½	
„ 9 „ „ 14 „	0	4	
„ 14 „ „ 20 „	0	4½	
„ 20 „ „ 32 „	0	5	
„ 32 „ and over . . .	0	5½	

SCOTS PINE.

	Per cub. ft. s.	d.	
Trees containing less than 4 cub. ft. . . .	0	3	Including "tops" to 8 in. diameter.
„ 4 cub. ft. and less than 6 cub. ft.	0	3½	
„ 6 „ „ 8 „	0	4	
„ 8 „ „ 10 „	0	4½	
„ 10 „ „ 15 „	0	5	
„ 15 „ „ 20 „	0	5½	
„ 20 „ „ 25 „	0	6	
„ 25 „ „ 30 „	0	6½	
„ 30 „ „ 40 „	0	7	
„ 40 „ and over . . .	0	7½	

The best land rentals per acre yielded by the different crops are shown in the following two tables. These rentals are extracted from the tables previously given; and, as explained on p. 8, they may be easily corrected whenever the cost of planting varies above or below £5 per acre.

LAND RENTALS YIELDED BY BROAD-LEAVED TREES.

Kind of Crop.	Quality of soil and situation.	Length of Rotation.	If the price per foot of timber, including "tops," equals.*	Land Rentals per annum. If planting, etc., cost £5 per acre.		Value of the final crop at the given date.	Notes.
				At 3½ per cent.	At 4 per cent.		
		Years.	s. d.	£ s. d.	s. d.	£ s. d.	
Spanish Chestnut .	I.	60	0 10	1 2 11	18 4	180 0 0	
Ash . . .	I.	60	1 6	1 0 7	15 5	198 0 0	
Black Poplar . .	II.	50	0 7	0 11 4	8 6	88 10 0	
Spanish Chestnut .	II.	70	0 9¼	0 10 5	7 7**	146 0 0	**Rotation 45 years, price 6¼d.
Ash . . .	II.	60	1 3	0 7 9	4 11	121 10 0	
Spanish Chestnut .	III.	52	0 6	0 3 5	1 5	69 0 0	
Birch . . .	I.	50	0 6	0 3 4	1 7	50 0 0	
Beech . . .	I.	62	0 6½	0 2 8	0 4	102 0 0	

* For Notes, see next page.

LAND RENTALS YIELDED BY BROAD-LEAVED TREES—*Continued.*

Kind of Crop.	Quality of soil and situation.	Length of Rotation.	If the price per foot of timber, including "tops," equals.*	Land Rentals per annum. If planting, etc., cost £5 per acre.		Value of the final crop at the given date.	Notes.
				At 3½ per cent.	At 4 per cent.		
		Years.	s. d.	£ s. d.	s. d.	£ s. d.	
Oak . . .	I.	95	1 4	0 2 2	loss of 0 5	183 10 0	
Ash . . .	III.	70	1 0	0 0 7	loss of 1 2**	82 0 0	**Rotation 52 years, price 7d., including "tops" to 3 in. diameter.
Spanish Chestnut .	IV.	60	0 5¾	loss of 0 1 0	loss of 2 5	51 10 0	
Beech . . .	II.	60	0 5¼	loss of 0 1 8	loss of 3 2	56 10 0	
Oak . . .	II.	110	1 3¼	loss of 0 2 0	loss of 3 8**	156 0 0	**Rotation 70 years, price 8d.
Beech . . .	III.	75	0 5½	loss of 0 3 4	loss of 4 7**	59 0 0	**Rotation 65 years, price 4½d.
Oak . . .	III.	110	1 0¾	loss of 0 3 9	loss of 4 10**	105 10 0	**Rotation 70 years, price 7d.
Ash . . .	IV.	70	0 7	loss of 0 3 9	loss of 4 9	36 10 0	
Beech . . .	IV.	80	0 5	loss of 0 4 6	loss of 5 6	42 10 0	
Oak . . .	IV.	80	0 6½	loss of 0 4 9	loss of 5 8	33 10 0	

* These prices are largely dependent upon the size of the trees, and vary therefore according to the length of the rotation adopted. *Vide* Chapter II. and p. 89.

Note.—**Sycamore** (if mixed with other trees to provide more valuable thinnings) should, at 3½ per cent. interest, yield a land rental of £1 per acre on Quality I. soil, and of 7s. 6d. per acre on Quality II. soil; and **Elm** at current prices should yield corresponding rentals of 16s. and 6s. 6d. respectively.

LAND RENTALS YIELDED BY CONIFEROUS TREES.

Kind of Crop.	Quality of soil and situation.	Length of Rotation. Years.	If the price per foot of timber, including "tops," equals.* s. d.	Land Rentals per annum. If planting, etc., cost £5 per acre. At 3½ per cent. £ s. d.	At 4 per cent. £ s. d.	Value of the final crop at the given date. £ s. d.	Notes.
Douglas Fir . .	I.	43	0 8	2 18 3	2 9 7	279 10 0	If planting cost £8 per acre.
Sitka Spruce . .	I.	43	0 5	2 1 6	1 15 7	192 10 0	Also for *Abies grandis.*
Douglas Fir . .	II.	46	0 7	1 5 9	1 0 8	181 0 0	If planting cost £8 per acre.
Larch . . .	I.	48	1 0	1 3 7	0 19 3	136 0 0	Grown in close canopy.
Larch . . .	I.	55	1 1	1 1 9	0 18 0	141 0 0	Very heavily thinned.
Sitka Spruce . .	II.	46	0 4½	1 0 0	0 16 1	134 10 0	Also for *Abies grandis.*
Larch . . .	II.	65	1 0	0 12 0	0 9 1**	149 0 0	**Rotation 50 years and price 10d.
Scots Pine . .	I.	60	0 6	0 6 6	0 4 2**	105 10 0	**Rotation 50 years and price 5d.
Norway Spruce .	I.	60	0 4½	0 6 3	0 3 9**	116 0 0	**Rotation 50 years and price 4d.
Larch . . .	III.	40	0 6	0 5 0	0 3 1	48 0 0	

* For Notes, see next page.

LAND RENTALS YIELDED BY CONIFEROUS TREES—*Continued.*

Kind of Crop.	Quality of soil and situation.	Length of Rotation. Years.	If the price per foot of timber, including "tops," equals.* s. d.	Land Rentals per annum. If planting, etc., cost £5 per acre. At 3½ per cent. £ s. d.	At 4 per cent. £ s. d.	Value of the final crop at the given date. £ s. d.	Notes.
Silver Fir . .	II.	70	0 4½	0 2 6	0 0 1	117 0 0	
Scots Pine . .	II.	60	0 5	0 1 4	loss of 0 0 6	69 0 0	
Larch . . .	IV.	43	0 6	0 1 3	loss of 0 0 1	37 0 0	
Norway Spruce .	II.	60	0 4	0 1 3	loss of 0 0 6**	78 10 0	**Rotation 50 years and price 3½d.
Scots Pine . .	III.	50	0 3½	loss of 0 1 5	loss of 0 2 9	39 10 0	If rotation 70 years and price per foot 5d., the result would be almost as good.
Norway Spruce .	III.	58	0 3½	loss of 0 1 5	loss of 0 2 10	51 0 0	
Norway Spruce .	IV.	65	0 3½	loss of 0 3 2	loss of 0 4 2**	41 10 0	**Rotation 43 years and price per foot 3d.
Scots Pine . .	IV.	45	0 3	loss of 0 3 8	loss of 0 4 6	20 0 0	

* These prices are largely dependent upon the size of the trees, and vary therefore according to the length of the rotation adopted. *Vide* Chapter III. and p. 90.

Note.—Speaking generally, there is little, if any, land in the East of England which is of Quality I. for either Douglas Fir, or Sitka Spruce, or *Abies grandis*, or *Thuya plicata*, as there is not sufficient rainfall or atmospheric moisture.

Corsican Pine and **Weymouth Pine** should, at 3½ per cent. interest, return land rentals equal to about 11s. per acre on Quality I. soil, and of about 6s. 6d. per acre on Quality II. soil if the timber were valued at the same price per foot as Scots Pine.

The following table shows the best land rentals per acre obtainable from the growth of various crops, and also the average annual increment (including thinnings) from the date of planting, where the soil and situation may be classed as Quality II. out of four qualities. The crops are placed in their order of merit.

LAND RENTALS ON QUALITY II. SOIL.

Kind of Crop.	Length of Rotation. Years.	If the price per foot of timber, including "tops," equals.* s. d.	Land Rentals per annum. If planting, etc., cost £5 per acre. At 3½ per cent. £ s. d.	At 4 per cent. £ s. d.	Average Annual Increment (including thinnings) from the date of planting. c. feet, q.g.	Nett Annual Income from a normally stocked forest, per acre.† £ s. d.	Notes.
Douglas Fir	46	0 7	1 5 9	1 0 8	184	3 17 7	
Sitka Spruce	46	0 4½	1 0 0	0 16 1	184	2 17 6	Also for *Abies grandis*.
Larch	65	1 0	0 12 0	0 9 1**	74	2 10 5	**Rotation 50 years, price 10d.
Black Poplar	50	0 7	0 11 4	0 8 6	97	1 17 6	
Spanish Chestnut	70	0 9¼	0 10 5	0 7 7**	97	2 13 6	**Rotation 45 years, price 6¼d.
Ash	60	1 3	0 7 9	0 4 11	58	1 19 9	
Corsican Pine	60	0 6	0 6 6	0 4 0	100	1 15 10	Also for Weymouth Pine.
Silver Fir	70	0 4½	0 2 6	0 0 1	111	1 12 6	
Scots Pine	60	0 5	0 1 4	loss of 0 0 6	75	1 1 1	
Norway Spruce	60	0 4	0 1 3	loss of 0 0 6**	90	1 2 4	**Rotation 50 years, price 3½d.
Beech	60	0 5¼	loss of 0 1 8	loss of 0 3 2	49	0 13 8	
Oak	110	1 3¼	loss of 0 2 0	loss of 0 3 10	41	1 12 5	

* These prices are largely dependent upon the size of the trees, and vary therefore according to the length of the rotation adopted. *Vide* Chapters II. and III. and pp. 89, 90.
† *Vide antea*, pp. 10, 11, and *The Practice of Forestry*, pp. 284-288.

On Quality II. land, **Sycamore** should yield a rental of 7s. 6d. per acre (*vide* note on p. 92), and **Elm** a rental of 6s. 6d. per acre.

Now, in as much as the prices obtainable for different kinds of timber are subject to such great variation, the following table, showing—in their order of merit—the *volume* of timber per acre produced by various crops at 60 years of age upon land where the soil and situation are of Quality II. is of much importance.

SOIL AND SITUATION } QUALITY II. THE YIELD PER ACRE IN CUBIC FEET OF TIMBER AT 60 YEARS OF AGE ON QUALITY II. SOIL.

Kind of Crop.	Volume of Thinnings. c. feet (q.g.) (to 3 inches diameter) string measurement, under bark.	Volume of Final Crop at 60 years. c. feet (q.g.) (to 3 inches diameter) string measurement, under bark.	Total (including thinnings). c. feet (q.g.) (to 3 inches diameter) string measurement, under bark.	Notes.
Douglas Fir and Sitka Spruce	3300	8100	11,400	Also for *Abies grandis*.
Corsican Pine and Weymouth Pine	1600	4400	6000	*Thuya plicata* will probably yield rather a greater volume.
Silver Fir	350	5550	5900	
Black Poplar	2360	3510	5870	
Spanish Chestnut	2020	3800	5820	
Elm	...	...	(about) 5600	Red Oak (*Q. rubra*) and Lime will probably yield about the same volume.
Norway Spruce	480	4900	5380	
Scots Pine	920	3560	4480	
Larch	1190	3260	4450	Also, approximately, for Sycamore.
Ash	920	2550	3470	
Beech	130	2830	2960	
Birch	...	...	(about) 2800	
Oak	460	1680	2140	

Note.—It is most important to remember that a given soil and situation is not necessarily of the same quality for all kinds of trees, *e.g.*, a soil may be Quality II. for Corsican Pine, and yet only Quality IV. for *Thuya plicata* or Douglas Fir.

Alder up to the first 35 years will yield about as much timber as Spanish Chestnut at the same date.

The following table shows approximately the value per acre of final crops of different kinds of trees at 60, 80, and 120 years of age. The trees are placed in their order of merit (financially). *Vide* pp. 91 to 95.

VALUE OF FINAL CROPS AT 60, 80, AND 120 YEARS.*

Crop.	Quality of Soil and Situation.	60 years. £ s. d.	80 years. £ s. d.	120 years. £ s. d.	Notes.
Douglas Fir . .	I.	387 0 0	406 0 0	...	Very heavy thinnings are made between the 60th and 80th years.
	II.	250 0 0	316 0 0	...	
Sitka Spruce . .	I.	246 0 0	251 0 0	...	Very heavy thinnings are made between the 60th and 80th years.
	II.	180 0 0	197 0 0	...	
Larch . . .	I.	187 0 0	240 0 0	...	
	I.	140 0 0	186 0 0	...	Very heavily thinned.
	II.	128 0 0	199 0 0	...	
	III.	85 0 0	138 0 0	...	
	IV.	53 0 0	81 0 0	...	
Black Poplar . .	II.	105 0 0	...	...	
Spanish Chestnut .	I.	180 0 0	230 0 0	...	
	II.	118 0 0	170 0 0	...	
	III.	84 0 0	110 0 0	...	
	IV.	51 0 0	75 0 0	...	
Ash	I.	198 0 0	280 0 0	...	
	II.	121 0 0	160 0 0	...	
	III.	57 0 0	94 0 0	...	
	IV.	25 0 0	41 0 0	...	

* For Notes, see next page.

VALUE OF FINAL CROPS AT 60, 80, AND 120 YEARS *—*Continued.*

Crop.	Quality of Soil and Situation.	60 years. £ s. d.	80 years. £ s. d.	120 years. £ s. d.	Notes.
Corsican Pine and Weymouth Pine	I.	130 0 0	210 0 0	...	Estimated.
	II.	105 0 0	133 0 0	...	
Silver Fir	II.	89 0 0	147 0 0	...	
Scots Pine	I.	105 0 0	133 0 0	...	
	II.	69 0 0	88 0 0	...	
	III.	49 0 0	65 0 0	...	
	IV.	27 0 0	40 0 0	...	
Norway Spruce	I.	116 0 0	157 0 0	...	
	II.	78 0 0	113 0 0	...	
	III.	53 0 0	82 0 0	...	
	IV.	34 0 0	47 0 0	...	
Beech	I.	97 0 0	126 0 0	225 0 0	
	II.	56 0 0	97 0 0	171 0 0	
	III.	32 0 0	67 0 0	108 0 0	
	IV.	19 0 0	42 0 0	74 0 0	
Oak	I.	65 0 0	109 0 0	264 0 0	Felled in winter, hence no value for bark has been taken into account.
	II.	41 0 0	72 0 0	180 0 0	
	III.	26 0 0	54 0 0	130 0 0	
	IV.	13 0 0	33 0 0	69 0 0	

* For prices of timber, *vide* tables in Chapters II. and III., and pp. 89, 90.

Note.—It should be remembered that the value of thinnings greatly affects the financial results of any particular crop, and the value of the final crops of different kinds of trees (of the same age) is only an approximate guide as to the relative advantage of one crop over another.

The following is a summary showing what are the best rotations, according to the data and prices previously indicated, under which the various crops should be grown.

With a view to avoiding unnecessary detail, the dates are given to the nearest decade or half decade, but, as already stated, such dates are largely determined by the respective prices obtainable for the timber at various ages.

And, so also, by the rate of interest which a landowner is content to receive. The lower the rate of interest at which money can be borrowed, the longer may the rotation be.

But, in the following summary, it is presumed that money can be borrowed at $3\frac{1}{2}$ or 4 per cent. interest; and unless there is a big difference in the length of rotation as indicated thereby, an average length of rotation is specified.

THE MOST PROFITABLE ROTATIONS.

Crop.	Quality of Soil and Situation.	Length of Rotation. With interest at $3\frac{1}{2}$ or 4 p.c. Years.	Notes.
BROAD-LEAVED TREES.			
Ash	I. & II.	60	
	III. & IV.	70	55 years on Quality III. land if 4 per cent. interest.
Beech	I. & II.	60 to 65	
	III.	75	65 to 70 years on Quality III. land if 4 per cent. interest.
	IV.	80	
Birch	I.	50	
Black Poplar	II.	50	
Oak	I.	100	
	II. & III.	110	70 years on Quality II. or III. land if 4 per cent. interest.
	IV.	80	
Spanish Chestnut	I. & IV.	60	
	II.	70	50 years on Quality II. land if 4 per cent. interest.
	III.	55	
CONIFEROUS TREES.			
Douglas Fir and Sitka Spruce	I. & II.	45 to 50	
Larch	I.	50	Grown in close canopy.
	I.	55 to 60	Very heavily thinned.
	II.	65	55 to 60 years on Quality II. land if 4 per cent. interest.
	III. & IV.	40 to 45	
Norway Spruce	I., II., & III.	60	
	IV.	65	45 years on Quality IV. land if 4 per cent. interest.
Scots Pine	I. & II.	60	
	III.	70	50 years on Quality III. land if 4 per cent. interest.
	IV.	45 to 48	
Silver Fir	II.	70	

Now, the foregoing table may be summarised in the following manner, if rotations based upon calculations made at $3\frac{1}{2}$ per cent. interest are alone considered.

SUMMARY OF TABLE SHOWING THE MOST PROFITABLE ROTATIONS.

Length of Rotation. Years.	Crop.	Quality of Soil and Situation.	Notes.	Length of Rotation. Years.	Crop.	Quality of Soil and Situation.	Notes.
50	Birch	I.		70	Ash	III. & IV.	
	Black Poplar	II.			Beech	III.	
	Douglas Fir	I. & II.			Spanish Chestnut	II.	
	Larch	I., III., & IV.	If grown in close canopy on Quality I. land.		Scots Pine	III.	Or 50 years.
			On Quality III. land the rotation may be prolonged to 70 years.		Silver Fir	II.	
	Scots Pine	III. & IV.					
	Sitka Spruce	I. & II.					
				80	Oak	IV.	
					Beech	IV.	
60	Ash	I. & II.					
	Beech	I. & II.					
	Spanish Chestnut	I., III., & IV.		100	Oak	I.	
	Larch	I. & II.	If very heavily thinned on Quality I. land.				
	Norway Spruce	I., II., III., & IV.					
	Scots Pine	I. & II.		110	Oak	II. & III.	

Note.—In cases where a lower rate of interest than $3\frac{1}{2}$ per cent. is sufficient, these rotations may be somewhat longer. *Vide* in Chapters II. and III. the columns relating to percentage increment in value.

The Normal Growing Stock. — Occasionally, for scientific purposes, it is desired to find out what should be the normal growing stock upon an area which is in proper working rotation, or, in other words, what amount of timber should such an area perpetually "carry," supposing that the amount felled annually exactly equalled a year's growth of timber over the whole area.

This amount (just after a felling) may be calculated from yield tables by the author's formula. Thus for every acre of normal forest (under any particular crop) felled annually as a final crop, if the number of years between each period in the yield table is the same—

Let G = the normal growing stock.

V_1, V_2, V_3, etc., the volume of timber at the 1st, 2nd, and 3rd periods, and so on, up to "p" periods.

p = the last period at the end of the rotation.

CI_2, CI_3, CI_4, etc. = the current annual increment at the 2nd, 3rd, and 4th periods, etc., and so on up to "p" periods.

N = the number of years between each period.

Then

$$G = N(V_1 + V_2 + V_3 + \cdots + V_{p-1}) + N \times \frac{N-1}{2}(CI_2 + CI_3 + CI_4 + \cdots + CI_p)$$

But if the number of years between each period varies—

Let N_2, N_3, N_4 = the number of years respectively between the 1st and 2nd periods, the 2nd and 3rd, the 3rd and 4th, and so on, up to "p" periods.

Then

$$G = \left\{(N_2V_1) + N_2 \times \frac{N_2-1}{2} \times CI_2\right\} + \left\{(N_3V_2) + N_3 \times \frac{N_3-1}{2} \times CI_3\right\} + \cdots \cdots + \left\{(N_pV_{p-1}) + N_p \times \frac{N_p-1}{2} \times CI_p\right\}$$

The Normal Annual Yield.—The normal annual yield in volume of timber which any normally stocked area under any particular crop is capable of yielding is, for every acre of normal forest felled annually, equal to the average annual increment multiplied by the number of years in the rotation. This amount includes the volume of all thinnings besides the one acre of mature timber felled as a final crop.

Forest Systems.—It will be observed that the foregoing tables refer only to crops grown in high

forest. But in the case of the thinly foliaged trees, such as Larch, Ash, and Oak, there is very little difference, so far as profit is concerned, if such crops be grown as pure crops in high forest or as standards, under the system of "Coppice with Standards," or, better still, as "High Forest with Coppice,"[1] provided always that a maximum number of standards be grown, and that the coppice is looked upon merely as a means of naturally pruning the young trees, and of keeping the soil clean and cool, and of providing some good "covert" for game.

In the author's opinion there is little doubt but that this latter system will in time to come entirely take the place of the former system.

The system of High Forest with Coppice is particularly suitable for the growth of Larch, especially when a pure crop of Larch is deemed to be too risky. In such a case it will be advisable to plant four or five rows of pure Larch, alternating with four or five rows of broad-leaved trees. Then, if the Larch fail altogether at an early date, the intended system of coppicing the broad-leaved trees can be abandoned, and there will be a sufficient number of broad-leaved trees growing close together to effect good natural pruning, and a perfect crop of broad-leaved trees may still be grown.

Mixtures of Trees.[1]—There is a point of very great importance with reference to the mixing of trees, and that is that by the addition of broad-leaved trees, such as Beech, Wych Elm, and Spanish Chestnut to a crop of some thinly-foliaged tree, such as Larch, it is often possible, especially at comparatively low altitudes, to convert a soil which would otherwise be of Quality III. for Larch, into one of Quality II. for Larch.

Here again, the system of High Forest with Coppice is often most advisable, especially if a maximum amount of Larch is required, for, under the above system, there will be practically a full crop of Larch after about the thirtieth year.

The improvement brought about by the broad-leaved trees is largely due to the fall of leaves, which act as a mulch to the soil, and keep it cool, clean, and moist, and it is owing to these dead leaves that rank grass and other growth is prevented from making an appearance.

[1] Vide *The Practice of Forestry*, Chapters II. and X.; *vide* also p. 226 for yield tables of trees grown under "Coppice with Standards."

[1] Readers are referred to Chapter V. of *The Practice of Forestry*.

The author has elsewhere[1] dealt at considerable length concerning the deleterious effects upon crops of trees of a soil-covering of grass, whereby the danger from late spring and early autumn frosts is so much increased, and also of the beneficial effects produced by dead leaves and humus, and he has laid much stress on the advisability of always having, if possible, a clean soil. But, in further reference to this matter, it should be noted that young plantations, made upon *perfectly clean*, finely tilled, arable land, especially if of a clayey nature, will sometimes suffer even more than plantations made upon grass-land, and the reason appears to be that the arable land "sets hard," and consequently the young roots become ruptured and dessicated in the hard, dry, surface soil. This, of course, would be avoided if the surface soil were kept cultivated, but, generally speaking, the cost of so doing is prohibitive. However, whenever grass-land is planted, at any rate at low altitudes, it will always be advisable to plough the sod under, for by this means the dangers due to a soil-covering of grass are largely avoided, and the decaying turf will prevent the soil from "running together" and "setting hard."

[1] Vide *The Practice of Forestry*, pp. 67, 68, 69, 142, 150, 170, 171.

Land at High Altitudes. — An apparent soil-covering of "grass" at high altitudes is usually not particularly detrimental, for, generally speaking, such a soil-covering consists mostly of moss, which, at any rate on sloping land, is beneficial rather than otherwise. Of course, if the soil-covering is really a thick sod of good turf, then its presence cannot be too strongly deprecated.

As regards the desirability of growing broad-leaved trees along with conifers at high altitudes, in order to obtain a better soil-covering of leaves and humus, there is, perhaps, not the same necessity for so doing as there is at low altitudes, nor are the benefits resulting therefrom so pronounced.

The reason why such is the case is that at high altitudes, when once the crops have "opened out," a soil-covering consisting largely of heather, whortleberry, and moss will exist, which will transpire but little moisture and make only small demands upon the fertility of the soil, and at the same time they will form a "loose" soil-covering, thus effecting conditions which are so different in every way from those produced by a dense soil-covering of grass.

And then, again, at high altitudes the chief factor determining the growth of timber is usually one of exposure, and, as often as not, any betterment of the

surface condition of the soil is not reflected in the subsequent growth of the crop.

As regards the best broad-leaved trees to plant at high altitudes, it will usually be found that, in this country, Beech and Hornbeam will grow the most successfully, and then perhaps Sycamore and Wych Elm.

The Financial Results of Afforestation.—A careful study of the foregoing tables will point to the fact that under certain circumstances, and with certain kinds of trees, the afforestation of land is likely to be attended by most profitable results, provided always that the current prices obtainable for timber do not fall, and that the afforested area escape any excessive or exceptional damage due to insects, fungi, fire, or storm.

However, it is not the poor, exposed, waste mountain land of this country that can be profitably planted. To attempt to plant any considerable areas of such land must, as shown hereafter, usually end in absolute failure. But there are vast areas of well-sheltered land at altitudes below 700 feet (above sea-level) which for agricultural purposes are worth rentals of less than 6s. or 7s. per acre, but which if "planted with timber" would easily yield returns equal to rentals of double this amount; especially is this the case on good, hilly land in a mountainous country, or on land with a northern aspect, which is as beneficial for tree growth as it is detrimental for purposes of husbandry.

Now much of this land is of Quality I. and Quality II. for various crops of trees, and a reference to the tables (on pages 91-95) will show that, on such land, trees such as Douglas Fir, Sitka Spruce, Larch, Spanish Chestnut, Black Poplar, Ash, and Corsican Pine are capable of yielding returns equal to rentals varying from 6s. 6d. up to £1 per acre, and even double this amount in the case of the two first-mentioned trees, provided always that $3\frac{1}{2}$ per cent. interest on the invested money is deemed sufficient.

But, on the other hand, even under the most favourable circumstances, it will seldom be advisable to plant either Scots Pine, Norway Spruce, Oak or Beech[1] unless, indeed, some other benefit is likely to accrue from the growing of such trees other than the mere production of timber, or unless such timber could be sold at very much higher prices than those which prevail at the present time.

[1] If land were of Quality I. for these trees it would, except perhaps sometimes in the case of Beech, be preferable to plant some other crop which would pay better.

However, it will sometimes be advantageous to make extensive plantations even though no direct profits are likely to accrue. Such instances exist in the case of water-catchment areas, where the presence of extensive woodlands will have a beneficial effect in regulating the water-supply and preventing sudden floods, etc. Or it may be necessary to make plantations in order to provide shelter for exposed farms. So, again, poorly-wooded agricultural estates may sometimes have their sale value very greatly increased by a certain amount of judicious planting, whereby an appreciation in the æsthetic value may be brought about or the amenities for game preservation increased.

The Financial Results of Planting Waste Mountain Land at High Altitudes.[1]—It may be taken as a general rule that the "planting line" is considerably higher in Wales than it is in Scotland. It may be stated that there is practically no land in Wales higher than 1250 feet above sea-level, and in Scotland above 1150 feet, upon which the growth of Larch, Scots Pine, or Norway Spruce will yield even as good returns as those shown in the foregoing tables for such crops when grown upon land where the soil and situation are of Quality IV. And, on the other hand, a very great proportion of the land below these altitudes is far too poor, ill-drained, and exposed for the growth of timber.

Now, when inspecting land with a view to its adaptability for afforestation, one of the safest guides by which to form an opinion lies in the nature of the surface-covering of such land. It may be taken as a general rule that any land which is growing bracken or gorse can also be planted with a fair chance of success, at any rate so far as the actual growth of timber is concerned, provided always that a reasonable amount of shelter exist; but if only heather cover the land, or whortleberry, then the chances of success are usually very remote, at any rate in a very great number of districts; and, on such land, any advice in favour of afforestation should be given only with the greatest caution.

It should be remembered that on mountain land climatic influences are, generally speaking, of far more importance as regards the success of tree growth than the actual quality of the soil, provided always that the latter is naturally well drained.

However, in respect of *selected* land at altitudes

[1] Between 700 and 1250 feet above sea-level; or, say, an average altitude of 900 feet for any large planted area.

varying from 750 to 1250 feet above sea-level in Wales and parts of England, and from 700 to 1150 feet in Scotland, average returns should be obtained from the growth of Larch, Scots Pine, and Norway Spruce which will be equal to an average of the returns shown for these crops when one-half of such land is equal to Quality III. and the other half is equal to Quality IV. Of course, there are considerable areas at altitudes between 750 and 1050 feet, especially in Wales, where the soil and situation are of Quality II., or even better, but the extent of such areas is relatively very small.

These returns are shown in the following table :—

AVERAGE RETURNS PER ACRE FROM CONIFEROUS CROPS ON MOUNTAIN LAND.

Crop.	Quality of Soil and Situation.	Length of Rotation.	Final Crop.		Land Rentals per annum.	Average Annual Increment, from the date of planting, including thinnings.	Annual Income from a normally stocked forest.†
			Cubic feet. String measure under bark.	Value.	From the date of planting, if planting, fencing, and "beating up" cost £5 per acre.* At 3½ per cent.		
		Years.	cub. ft. q.g.	£ s. d.	s. d.	cub. ft. q.g.	£ s. d.
Larch	III.	40	1940	48 0 0	5 0	49	1 0 1
	IV.	43	1450	37 0 0	1 3	34	0 13 5
Norway Spruce . .	III.	58	3550	51 0 0	Loss of 1 5	64	0 13 0
	IV.	65	2910	41 10 0	„ 3 2	47	0 8 8
Scots Pine . . .	III.	50	2760	39 10 0	„ 1 5	56	0 10 4
	IV.	45	1580	20 0 0	„ 3 8	35	0 3 6
Average of the six crops . . .		50	2365	39 10 0	Loss of 0 7 per acre per annum.‡	47	0 11 6

* The average annual outgoings have been estimated at 3s. 2d per acre (3s. 4d. on Quality III. soil and 3s. on Quality IV. soil).
† *Vide antea*, pp. 10 and 11, and *The Practice of Forestry*, pp. 284-288.
‡ This equals a capital loss of nearly £4 per acre at the end of the rotation.

Now, in thus taking an average a technical error is committed, if all the resultant averages are regarded as bearing a correct relation to each other. But, for all practical purposes, it may be stated that, according to the prices of timber prevailing at the present time, Larch, Norway Spruce, and Scots Pine, if grown under a 50-year rotation, upon *selected* mountain land at an average altitude of about 900 feet above sea-level, will yield a crop of about 2350 cubic feet (quarter girth measurement) per acre, and will be worth about £40, which, at $3\frac{1}{2}$ per cent. interest, represents a loss of rent equal to 6d. to 9d. per acre per annum, supposing that the cost of planting, fencing, and "beating up," etc., were £5 per acre, and that when once the forest is in proper working rotation the average annual income per acre will be about 11s. 6d.

So also, under like conditions, if the rotation were extended to 80 years, the average returns per acre would be:—3120 cubic feet, worth £76, which would represent a rent equal to a loss of 1s. 3d.[1] per acre per annum, and the average annual income from a normally stocked forest would be about 18s. 9d. per acre.

[1] This is equal to a capital loss of over £26 per acre at the end of the rotation.

However, it must be remembered that if the average cost of planting, fencing, keeping young plantations clean and replacing "deaths" can be reduced below £5 per acre the land-rentals will be correspondingly better (*vide*, p. 8).

Now, these returns are very different from the optimistic estimates set forth in the report upon afforestation issued by the Coast Erosion Commissioners; but it would seem that although these Commissioners examined a vast number of witnesses, they made no systematic attempt to acquire evidence as to the average volume or value of crops of timber of various ages grown upon mountain land in this country, in spite of the fact that there are in the aggregate enormous areas of coniferous crops of all ages now growing upon mountain land, and that every year a portion of these crops is being felled and harvested.

However, those who are interested in this report, and upon afforestation generally, are referred by the author to his criticisms thereon published elsewhere.[1]

[1] Vide *Transactions of the Surveyors' Institution*, Cardiff Meeting, May 1909; *Quarterly Journal of Forestry*, "Afforestation Schemes," October 1909; *Journal of the Board of Agriculture*, "The Financial Aspect of the Growth of Scots Pine," June 1910. *Vide* also note on next page.

But, inasmuch as the Commissioners' estimates were more than double the returns as specified herein, and this, too, even though the planting of land at much higher altitudes was in contemplation, and inasmuch as, according to their own findings, the ultimate accumulated capital sum which their scheme involved would amount to well over four hundred million pounds by the time that the forests were in proper working rotation, and this, too, on the assumption that huge sums of money could be borrowed at only 3 per cent. interest, it is evident that if their scheme were carried through, and if the present prices which prevail for timber remain unaltered, future generations would inherit a bankrupt undertaking, the liabilities relating to which would be sufficient to paralyse the arm of even the richest nation upon the earth.

Note.—The author also desires to draw attention to a consideration of the economic aspect of afforestation published by him in *The Practice of Forestry*, Chapter I., where *inter alia* he discusses the likelihood or otherwise of a timber famine. In reference to this matter he shows that whereas three-eighths of an acre of average forest land is sufficient per head of population for the requirements of Great Britain, yet as regards the supply of the whole of Europe, even if double this amount—namely three-quarters of an acre per head of population—be necessary, the present forest area of Europe is more than sufficient by over 400 million acres.

Now, although much of such forest land is at present too far distant from consuming centres for the profitable exploitation of timber, and therefore practically worthless, yet in years to come the existence of such vast areas of timber are bound to prevent anything approaching a real timber famine. But this is merely one of many considerations bearing upon this matter.

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