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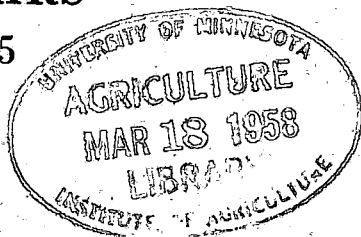
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**Agriculture
and Forestry:
Competition or
Coexistence?**

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GREAT BRITAIN

ALTHOUGH forestry and agriculture have much in common they are specific and independent industries. Superficially the factors they have in common tend to obscure their real differences and to mask some of the conflicts that arise between them. This is not to say, however, that they have not both complementary and supplementary associations.

The main purpose of this article is not only to establish the present status of British forestry in relation to production and marketing, but to trace its history in association with agriculture over the centuries so as to assess the more subtle factors which have influenced its development.

Poverty of British forests. Great Britain has a smaller proportion of land under forest than any other European country except Ireland and in much of this forest the density of timber stocking is low. In 1947-9 the forest area (excluding woods of less than 5 acres) was assessed at 3,448,362 acres (about 1.4 million hectares), which is 6.1 per cent. of the land area; but 36 per cent. of this total was classed as felled, devastated or scrub, and the average volume per acre over the whole forest area was estimated at only 771 hoppus feet¹ (69 cubic metres per ha.). The total volume of standing timber in the country is probably less than it has ever been in recorded history.

There are numerous reasons for the poverty of British forests, among which are the following:

(a) When the glaciers of the great ice age receded very few tree species succeeded in re-establishing themselves. The only timber-producing conifer was the Scots pine (*Pinus sylvestris*) and the natural distribution of this species is now confined to Scotland. The spruce, the silver fir and the larch, which clothe the mountain slopes of Central Europe, did not reach Britain, so the mountain sides are without a natural covering of coniferous forest.

(b) For many centuries farming in Britain was comparatively prosperous and this led, under the landlord and tenant system, to the

¹ 1 hoppus foot = 0.79 cu. ft.

widespread enclosures of commons and the clearing of woods. There are practically no communal forests in Britain.

(c) As Britain has extensive coalfields it was less important than in most other countries to ensure supplies of firewood.

(d) The industrial revolution and the adoption of free trade encouraged the importation of timber. As most of the imported timber came from natural forests, it could be bought more cheaply than timber could be grown in Britain.

(e) The market in former times for tanbark, charcoal and ship timber has greatly dwindled.

(f) More recently the forests have been impoverished by very heavy fellings during two world wars.

Types of forest. The woods which remain may be classified roughly into three main groups. Firstly, there are the small mature woods, surrounded by agricultural land, in places too steep or rough for cultivation, or on the less fertile fields which have been replanted, or on some that have been reserved as woodland or replanted so as to improve the shooting or other amenities of estates. Many of these woods have been cultivated as coppice, especially hazel coppice which provides sheep hurdles and other agricultural requirements. Some of the others have contained, and still contain, magnificent trees, including many exotics, and the beauty of estates is also enhanced by hedgerow trees which grow between the farm fields.

Secondly, there are the more extensive areas of poor land which have never been cleared for agriculture or were preserved as royal forests or private chases or, if they were cultivated in past centuries, have reverted naturally to forest. The third type of forest is found on the large blocks of poor, usually mountainous, land which have been afforested by private owners or, more recently, by the Forestry Commission.

Influence of two world wars on forest policy. Britain became so dependent on imported timber that 95 per cent. of her requirements were met from overseas. This caused little concern until, during two world wars, she was largely cut off from overseas supplies. Desperate efforts were then required to meet the country's needs as far as possible from home sources and, immediately after the First World War, the Forestry Commission was set up under the Forestry Act, 1919. The Second World War was followed by three important acts. That of 1945 extended the operations of the Commission, the Act of 1947

initiated a Dedication Scheme¹ for private woodlands, and the Act of 1951 introduced state control of felling in private woodland.

The policy adopted in 1945 envisaged an extension of the area to be planted each year; this would rise gradually from 35,000 acres (14,000 ha.) in the first year to 150,000 acres (60,000 ha.) in the tenth year; and, though achievement fell behind the programme in the first few years, the present speed of planting approaches the prescribed rate. It is hoped in fifty years' time to have an additional 3 million acres (1,200,000 ha.) under forest, most of the new land being afforested by the Forestry Commission.

Climate and soils. It is not an unreasonable claim that the British climate is more favourable to tree growth than is that of any other European country. The rainfall, apart from local extremes, ranges from about 30 in. to 60 in. (750 mm. to 1,500 mm.) and, as it is fairly evenly spread through the year, droughts are unusual. Extremes of temperature are rare though spring frosts are frequent.

Most of the good soils are devoted to agriculture, but there are small woods on these soils and it is in these woods that the fastest growth occurs. Other soils such as those on the greensands and some granites are rather poor for agriculture but are very useful for forest trees. In general, however, forestry has to be content with the poorer soils, and much of the new planting is taking place on high ground where, especially in the western counties, there is a layer of peat.

The present distribution of species. Owing to past policies, private and national, and to war fellings there are no normal forests in Britain, and the age distribution is very uneven. In conifers there is a heavy preponderance of the younger age classes, while most of the broad-leaved forest is old. There is a shortage of middle-aged stands both in conifers and hard-woods.

The present distribution of species in the high forest areas is shown

¹ The Dedication Scheme was introduced in the 1947 Forestry Act as a method of encouraging private owners to treat their woods in a more practical way than had been done previously. In the original scheme the woodland owner was required to observe four main obligations, as follows:

1. To use the land in such a way that timber production was the main object.
2. To work to a plan, to be approved by the Forestry Commission, laying down the main operations to be undertaken.
3. To employ skilled supervision.
4. To keep adequate accounts, except in certain specific cases of small estates.

In return the Forestry Commission provided financial assistance in the form of planting and maintenance grants, and loans. It also provided technical advice. The scheme has since been modified in certain respects and it is possible to have financial assistance for 'approved' schemes at half the rate for 'Dedication' schemes.

in Table I. Conifers predominate in Scotland and broad-leaved trees in England, but in Great Britain as a whole the two are about equal. Among conifers, Scots pine takes the lead owing to its adaptability to poor sandy and gravelly soils. Sitka spruce (*Picea sitchensis*) comes next as it is being planted extensively in the high rainfall areas in

TABLE I. *Areas under major tree species*

Total area of high forest (acres)	England	Scotland	Wales	Great Britain
	1,029,557	573,336	185,906	1,788,799
	%	%	%	%
<i>Conifers</i>				
Scots pine	14	36	4	20
Corsican pine	3	1	2	2
European larch	7	9	6	8
Japanese larch	2	3	8	3
Norway spruce	4	12	11	8
Sitka spruce	5	15	18	9
Douglas fir	2	2	5	2
Other conifers . . . . .	..	1	1	1
Total conifers	37	79	55	53
<i>Broad-leaved trees</i>				
Oak	33	8	26	24
Ash	7	1	6	5
Beech	11	9	4	9
Birch	5	1	5	3
Spanish chestnut	1	..	..	1
Sycamore	4	1	3	3
Elm	1	1	..	1
Other broad-leaved trees	1	..	1	1
Total broad-leaved trees	63	21	45	47

Wales and the west of Scotland. European larch (*Larix decidua*) and Norway spruce (*Picea abies*) are cultivated nearly to the same extent and are far ahead of all other conifers.

Oak (*Quercus* spp.) is still the predominant broad-leaved tree, followed by beech (*Fagus sylvatica*). But, as both these species are in general less profitable than others which can be grown on the soils they occupy, their preponderance is becoming less marked.

Methods of cultivation. Apart from coppice and coppice with standards, the accepted method of regeneration has been by clear felling and planting. Natural regeneration is not a common practice in Britain, partly because mast years are infrequent, except with a few species, partly because in most parts of Britain weed growth is strong,

partly because there are many rabbits and, perhaps, partly because our foresters have not had sufficient skill. Nevertheless, on heathland Scots pine will usually regenerate itself if scattered mother trees are left and in mixed hardwoods sycamore (*Acer pseudoplatanus*), which is an introduced species unpalatable to rabbits, and ash (*Fraxinus excelsior*) will frequently reproduce themselves adequately.

Under British conditions planting has many advantages over natural regeneration: it allows for the introduction of numerous exotic species which are generally more profitable than native trees; as planted trees are regularly spaced they are easier to find when weed growth is being cut and their larger size enables them to grow away from weeds more quickly; and since after felling one species, another species can be planted, it allows of a rotation of crops which is good for the soil; also, it generally saves several years in the establishment of a new crop. Nevertheless, planting is expensive and, where the land has to be protected from rabbits by wire netting, the average cost is from £50 to £60 an acre. This includes clearing the ground, protection against rabbits, plants and planting, filling gaps and weeding the plantation until the trees have their heads clear.

Thinning generally starts between the tenth and twentieth year after planting and is repeated at frequent intervals. It is usually a source of profit and by accelerating the growth of the trees which are left it shortens the time required to grow mature trees. During the nineteenth century very heavy thinnings were practised, but about 1900 this gave way to light thinning under German influence. The effect of this change has proved to be unfavourable and during recent years there has been a reversion to more drastic methods.

Change-over to conifers. Conifers are tending to replace the native broad-leaved trees in the old woods, partly because they are more profitable and give earlier returns, and partly to meet the great demand for soft-wood timber.

The most profitable species are Douglas fir and Sitka spruce which on good sites can provide a mean annual increment of over 200 hoppus feet per acre per annum (22 cu. metres per ha.). It has been estimated that with this rate of growth they may yield over 6 per cent. compound interest on the capital invested in growing them. Under less fertile conditions the return is lower and on poor soils, where only the slower growing conifers can be cultivated, the financial return from investment on planting may be less than 2 per cent.

Broad-leaved trees are still being planted, mainly in the eastern

counties where the rainfall is lower and on heavy or basic soils. It appears that on suitable soils poplar, ash and sycamore are the most profitable species.

Rotations and management. Most of the coniferous plantations are young and British foresters have been more concerned with building up a reasonable stock of standing timber than with felling or utilization. They have so far paid little attention to the more desirable lengths of rotations or the size of tree they should try to grow. But since the lack of regard for these concepts, which are fundamental to forest management, is associated with the absence of long-term working plans and with irregularities and inconsistencies in thinning practice foresters are becoming more conscious of the need for giving shape to their future timber industry.

A policy for future development. The fundamental financial aim of British foresters should be to conduct their industry in such a manner that, when the total cost of growing trees, felling, extracting and sawing them up, is taken into account, the resulting sawn timber can best compete with imported timber in the open market. How best to achieve this result depends on the solution of a number of problems the answers to which, in areas which allow of rapid growth, may be very different from those in the less fertile parts of Britain. Present experience indicates that in fast-growing areas, where the problem is most urgent, conifers should be grown to a breast height diameter of between 15 and 20 inches (38 to 50 cm.) which, with heavy thinning, can be attained in from thirty-five to fifty years, but sawmills will have to be designed to convert this size of tree in the most economical manner. In the south of Britain most mills are equipped with large band saws to handle the frequently overmature hardwoods from private estates and for these mills large conifers are preferred although their conversion is very expensive.

Sources of timber supplies. The exceptional reliance on imported supplies of timber is the most striking influence on the situation and policy of the timber and forest industries of the United Kingdom.

How this position of exceptional reliance came into being has already been partly explained. The woodlands were often the only department of a rural estate to remain under the direct control of the owner or his agent. Yet with one or two outstanding exceptions few owners of the smaller estates appear to have emphasized the commercial possibilities of their woodlands. It would be no exaggeration to suggest that the attitude of the owner to his woodlands was very much like

that of a house owner to his garden which is more a hobby than a business.

Even before the last war the net income of the private landowner had suffered from the combined effect of declines in farm rents and the increased cost of maintenance and taxation, and in these circumstances, combined with the war-time effect on the national economy, it would be reasonable to expect that greater individual and national attention would have been given to the possibilities of home-timber production. With the realization that a new attitude was being forced on private owners by economic circumstances, a kind of renaissance in the art of forestry might have been expected and from the national point of view it had become almost imperative. It is recognized that ownership of economic resources carries an obligation embodied in the general conception that these resources are held in trust for the benefit of the nation as a whole rather than for the individual. This was reflected in the rural legislation of 1947. Under the Agriculture Act of that year the rules of good husbandry for the occupier of farm land were made more precise and the rules of good estate management for owners of land were given statutory recognition for the first time. In the Forestry Act of that year the rules of good forestry were similarly introduced. In this legislation it was thus implied that greater efficiency in the use of important rural resources was necessary and the canons of efficient management suggested the minimum which would be acceptable.

Although the woodland contribution to the economy of the general run of private estates was relatively small, it brought some positive advantages because timber growing received certain taxation concessions. There were few products, for example, which provided as net income so large a proportion of the gross price as mature timber grown under Schedule B taxation, by which land was assessed for tax on its rental value rather than on its profits. On the other hand, much uncertainty about the level of prices for home-grown timber has prevented owners from making more of their woodlands. In the 1947 Agriculture Act, provision was made for stability as well as efficiency in the farming industry, but no such provision was introduced in the forestry legislation.

In the past, the home-grown timber production of Britain has failed to compete with the imported supplies because it operated on a small scale and because it was badly organized. The recent appointment of a Departmental Committee to suggest ways and means of promoting

stability in British forestry is a recognition of the need to improve the competitive power of the home-grown product.

Undoubtedly many ways of self-help may be suggested for increasing the efficiency of the home industry, but in view of the inroads made into the stock of growing timber during two wars it is clear that, in the stage of building up, the forest industry must bear all the marks of an infant industry which cries out for financial assistance if the objective of current policy is to be achieved.

Although the proportion of land devoted to timber growing is small there is considerable scope for making better use of the existing woodland area. This need was recognized in the Dedication Scheme for private woodlands already mentioned, which was introduced under the Forestry Act of 1947, and which had as its objective the growing of timber in perpetuity on the woodland area.

This background of some of the special problems of timber growing in Britain has been given so that the analysis of timber consumption can be put in perspective. To some extent the individual categories of timber have different problems and the power of home production to compete in these categories varies greatly.

In one sense this reliance on imports helps to give a broad guide to the pattern of consumption since the main categories of timber imports are shown separately in the Trade and Navigation Accounts of the United Kingdom. Since 1934 they have shown twelve main categories. In another sense these data do not go very far, since many of the categories are essentially of unprocessed timber and thus do not provide a direct clue to the ultimate form of consumption. The total production of home-grown timber is also difficult to establish. This was particularly so before the last war and, though felling was controlled during the war and has been controlled since, private woodland owners were permitted to fell up to a maximum of just over 3,000 cubic feet (85 cu. metres) a year beyond the amounts in their felling licences.

During the war it might have been expected that licensing of timber usage would have provided a clear measure of this pattern of consumption but, in fact, those data are not reliable as a guide to actual consumption in individual trades. The reports of the Census of Production in certain years give a useful picture of the output of certain timber-using industries and the cost of their materials, and a committee under the chairmanship of Sir Keith Price made an estimate of the probable requirements and supplies of timber for the

United Kingdom for the years 1949-53, their estimate showing the relative importance of some of the main consuming trades. But in spite of the limitations of the statistical data, which, however, have been much improved since the pre-war period, it is possible to show significant features of United Kingdom consumption. In the years between the two world wars about 96 per cent. of the timber requirement was imported and all but about 6 per cent. of consumption was of softwoods.

Softwood consumption. The main consumer of softwoods is the housing and building industry. After the devastation and absence of house building during the war, there was much scope for an active housing policy and the rate of new housing was soon raised to about 200,000 a year, and in more recent years to over 300,000. The general post-war demand for timber for reconstruction and repair, together with a decline—and indeed for a time a reversal—of the timber flow between east and west, and the restriction on dollar purchases had the effect of making timber extremely dear relative to other building materials. In this situation timber, as it had been during the war, was severely rationed by licensing. A limit was placed on the amount of softwoods which could be used in houses; not only was this set at 1.6 standards¹ (2 in Scotland)—compared with the pre-war average of about 2.5 standards—but appropriate 'economy memoranda' made it clear that the use of softwoods was banned for about eighty component parts of houses and the appropriate substitute—sometimes hardwoods, steel or concrete—was indicated.

Although such decisions can be regarded as arbitrary, and may be altered at short notice, many people in the timber trade fear that once substitutes for timber are introduced they may become permanent, even if timber prices return to competitive levels. The higher price of timber encouraged research on the use of substitutes as it did at the Building Research Station of the Department of Scientific and Industrial Research. Alteration in the technique of building, apart from the use of timber in buildings, has tended to reduce the demand for timbers. Pre-cast products do not require shuttering and scaffolding poles are now of steel. There has been a definite substitution of softwoods by hardwoods in recent years judging by the increased rates of total hardwood consumption.

No pre-war statistics of softwood consumption exist but Table 2 shows the quantities available in the last three years.

¹ 1 standard = 165 cu. ft.

While consumer licences for softwoods were not abolished until November 1953, consumption rose in that year by about one-quarter million standards above the one million standards to which it appears to have held in the previous seven years.

The main sources of sawn softwood supplies in 1953 were: Sweden (31 per cent.), Finland (23 per cent.), Canada (19 per cent.), U.S.S.R. (10 per cent.), when total imports amounted to 1,392,000 standards (6,505,000 cubic metres).

TABLE 2. *Softwood consumption*

	1951		1952		1953	
	(stds.)	('000 cu. metres)	(stds.)	('000 cu. metres)	(stds.)	('000 cu. metres)
Imported	1,095,840	5,121	1,056,240	4,936	1,254,600	5,863
Home-grown	46,080	215	36,840	172	45,000	210
	1,141,920	5,336	1,093,080	5,108	1,299,600	6,073

TABLE 3. *Hardwood consumption*

	1951		1952		1953	
	('000 cu. ft.)	('000 cu. metres)	('000 cu. ft.)	('000 cu. metres)	('000 cu. ft.)	('000 cu. metres)
Imported	59,520	1,688	39,360	1,115	46,680	1,323
Home-grown	34,560	980	30,000	850	28,920	819
	94,080	2,668	69,360	1,965	75,600	2,142

Hardwood consumption. Here, too, there is no pre-war record but Table 3 sets out the quantities used in the last few years.

The main overseas suppliers of hewn hardwoods in 1953 were: Nigeria (47 per cent.), Gold Coast (19 per cent.), French West Equatorial Africa (10 per cent.), when a total of 19,156,000 cubic feet (543,000 cubic metres) were imported.

For sawn hardwoods the proportions were: British West Africa 21 per cent., Yugoslavia 15 per cent., Malaya 13 per cent., France 10 per cent., Finland 5 per cent., when a total of 25,310,000 cubic feet (717,000 cubic metres) were imported.

Pitwood. The home production of pitwood which was raised to an average of over 600,000 Gothenburg standards¹ per annum for 1940-5 as a war-time measure fell back to a yearly average for 1949-53 of 207,000. The last two years have shown increases, with 245,520 in 1952 and 261,120 in 1953. The increase in 1953 is undoubtedly due

¹ 1 Gothenburg standard = 180 cu. ft.

to the use of the Scottish wind-blown timber resulting from the storms of that year. As the bulk of softwood timber grown in the United Kingdom is still immature, an increasing amount of thinnings is due to come from the state as well as from private forests and strenuous efforts are now being made to induce the National Coal Board to take as much as possible of its pit-prop requirements from home supplies. In this situation much concern is felt by the producers at the inroads made by steel where previously wood was used.

The main overseas suppliers of pitwood in recent years have been Finland, Sweden, U.S.S.R. and Canada; the first three sent about equal quantities in 1953, representing about 66 per cent. of a total of 389.5 piled cubic fathoms.¹ In 1952 the total was nearly twice as much, and of this amount Canada sent the unusually large proportion of 30 per cent. Here again, the decline in the 1953 import can be attributed to the Scottish production of wind-blown props. The high proportion thus gained in the home market for one year suggests a possibility that similar quantities could be taken from home supplies in other years.

Other timber categories. Statistics of home-grown timber are usually shown in the three categories of softwood, hardwood and pitwood, although the timber imports are analysed further into veneers, plywood, boxwood, sleepers, telegraph poles and staves. It is not always easy to determine the importance of home production in these outlets, although some indication can be provided.

Some impression of the pattern of consumption by groups of trades consuming hard- and softwoods in the United Kingdom can be gained from the Census of Production data in Table 4. The census includes only a limited number of trades where timber is important and applies only to establishments employing ten or more men. The writers are indebted to the Board of Trade for supplying detailed data used in compiling Tables 4 and 5. The data have been grouped to correspond as far as possible with some of the broad categories discussed in the Keith Price Report to which reference has already been made.

In view of the large number of different categories expressed in a variety of units of volume or specification, it is more convenient to show the relative importance of the individual exporting countries by expressing their trade in terms of value (Table 5). In view of the overwhelming preference for softwood in the trade, it is scarcely surprising that the north European countries and Canada should stand

¹ 1 piled cubic fathom = 216 cu. ft.

TABLE 4. *Consumption of timber in the United Kingdom in 1951**

	<i>Softwood</i>		<i>Hardwood</i>		<i>Unspecified</i>		<i>Pitwood</i>	
	('000 cu. ft.)	('000 cu. metres)	('000 cu. ft.)	('000 cu. metres)	('000 cu. ft.)	('000 cu. metres)	('000 stds.)	('000 cu. metres)
A. Building	47,096	1,334	6,439	182	..	..	..	..
B. Timber trade	112,578	3,188	65,356	1,851	2,430	69	737·8	348
C. Fuel and power	51	1	15	1	£523,000	..	..	..
D. Consumer-goods industries	1,212	34	2,535	72	..	..	..	..
E. Shipping	6,451	183	1,911	54	..	..	..	..
F. Food, drink and tobacco . .	992	28	272	8	..	..	..	..
G. Transport	2,667	76	438	12	..	..	..	..
H. Vehicles†	16,090	456	10,255	290	..	..	..	..
I. Engineering, chemical	18,762	531	7,916	224	47	1	..	..
J. Furniture	2,042	58	20,367	577	..	..	..	..
K. Packages and boxes	28,394	804	6,976	198	..	..	..	..
	236,335	6,693	122,480	3,469	£523,000 2,477	70	737·8	348

* Census of Production 1951 data relating to establishments employing ten or more men.

† Includes cars, railway carriages and wagons.

out as the main suppliers. During the war and post-war years of dollar shortage, West Africa has developed as an important source which has been well maintained in recent years.

TABLE 5. *Value of timber and timber manufactures imported into the United Kingdom, 1953, showing main supplying countries*

<i>Timber</i>		<i>Manufactured timber</i>	
<i>Country</i>	<i>Value</i>	<i>Country</i>	<i>Value</i>
	£		£
Sweden . . .	39,022,546	Finland . . .	3,378,393
Finland . . .	28,654,700	Sweden . . .	1,403,511
Canada . . .	28,062,049	U.S.S.R. . . .	1,063,631
U.S.S.R. . . .	13,610,897	Nigeria . . .	852,361
France . . .	8,920,848	France . . .	596,432
Nigeria . . .	5,631,311	W. Germany . . .	558,942
Yugoslavia . . .	5,089,345	Canada . . .	473,749
Brazil . . .	4,644,272	Czechoslovakia . . .	448,970
Gold Coast . . .	4,546,614	Others . . .	3,231,169
Others . . .	28,117,741		
Total imports . . .	£166,300,323		£12,007,068

Present economic situation. From this picture of the present position it seems rather paradoxical that forestry has not supplied a larger portion of home requirements. But while the unsaturated home market holds certain advantages, it also means that forestry here has to face world-wide price competition as well as the economic struggle with home agriculture for the use of local resources such as land and labour.

Substitution by steel and concrete, which received a strong impetus under the war-time restrictions, also threatens the timber industry. Softwood consumption in 1953 was 40 per cent. below the 1935-9 level (based in part on the Forestry Commission census of 1930 and therefore estimated only) and, while hardwoods were used in greater quantity up to 1951, a decline set in during the two years that followed. The consumption of pitwood appears to have fallen by 34 per cent. since 1935-9. Taking the three categories together, the decline in the volume of consumption has been 32 per cent. since before World War II.

Only part of the explanation of the paradox can be attributed to the principle of comparative advantage; other reasons lie deeper and are associated with the history of forestry and especially its competition with agriculture.

Historical influences. Both industries have long histories and have

witnessed many changes and vicissitudes from time to time which have left indelible marks on their present pattern. At a very early period there was community control, later the Crown took a direct part, while more recently economic considerations have prevailed.

The position and the relationship of the two industries in Britain is probably unique. On the continent of Europe and in North America, where conditions are comparable, the two are looked upon as being of equal merit for maintaining economically healthy conditions in the countryside; in fact, the two industries are often closely linked in providing productive labour for rural workers. This is rarely the case in Britain. Historical as well as natural factors have played a part in setting the picture and determining the economic limits to which home production can go in competition with overseas supplies.

In early times, Britain was a well-wooded country but the woodlands were soon at the mercy of the peasant. This was largely the position during the Roman occupation and up to the reign of Alfred (A.D. 871-901). From about that time a policy of limiting the right of access to woodlands was established. The Crown adopted a woodlands-conservation policy whereby the common people, including the peasants, were allowed only to take brushwood for fuel and to graze their pigs on acorns in addition to having the use of some seasonal pastures for cattle when conditions warranted it. During the Middle Ages, however, the Crown changed its policy and for economic reasons began to encourage the felling of forests to increase the areas of farmland, especially for sheep. As the feudal system grew in strength, the mainspring of power passed to the lords of the manor who then assumed responsibility for land utilization, including forests and woodlands, but carried on their policy of agricultural expansion at the expense of forest lands.

Thus, both the Crown and the feudal lords fostered the growth of enclosures and thereby weakened community control over land use. This ultimately led to the establishment of the landlord-and-tenant system whereby farm lands were rented out to tenants on long leases. Under these leases, the landlords reserved the right to all woodlands and to hedgerow timber and imposed severe penalties on any tenant who took, tampered with or damaged any trees in the preserved areas. The landlord also held the right to preserve all game for the recreation of himself and his friends. It was not until the Ground Game Act of 1880 that tenants were allowed to protect their crops against certain pests, such as rabbits, which under the Act were called

ground game. Another minor reservation was the free passage of the local foxhunt over farm land. The unwritten law that tenants should not destroy foxes, hares and other animals of the chase is well respected even today.

These restrictions, small in themselves, have tended to divorce the interest of the tenant farmer from that of the landlord as forester. In fact they have tended to create an attitude of mild antagonism towards forestry and an air of jealous suspicion when plans for woodland extension are proposed. So subtly did this growth of the landlords' dual role in land utilization proceed that it has been accepted almost as a natural law. Undoubtedly it has led to forest conservation and to considerable areas of land being planted to woods which otherwise would have remained in rough grazing or moorland and to the growth of a considerable number of hardwood trees along hedgerows and farm fences. Landlords, in the main, have taken a peculiar interest if not pride in forestry. The reasons are difficult to disentangle but it is safe to say that they are largely traditional, arising out of mixed motives—economic, sporting and amenity.

The major factor over the last three centuries has been undoubtedly economic. In medieval times the growth in foreign trade led to a demand for charcoal, tan-bark and, later, for timber to build ships. The economic motive for growing trees to meet the naval requirements was reinforced by the patriotic urge to ensure that the ships were inferior neither in number nor in quality to those of the enemy, the French in particular. It is said that landowners when riding around their estates would carry in their pockets acorns and seeds of other hardwood trees so that they could plant them in suitable sites along banks and hedges.

Simultaneously the growth of population, particularly in the eighteenth and nineteenth centuries, led to a greatly increased demand for food. This led in turn to increasing profits from farming and to more enclosures of common land and open fields for the purpose of establishing individual farms. So great was the demand for farm land that it is safe to assume that very little forest would have been left undisturbed had it not been for the motives mentioned earlier. Woodlands, although profitable, gave much lower and more uncertain returns at that time.

This was very much the state of affairs which prevailed until the Corn Laws were repealed in 1846. Landowners then, and subsequently even more so, felt that their control over land use was being

removed from them, first by economic forces under that Act, and later by the Agriculture Acts of the 70's and 80's. This feeling, together with the economic disincentives, persisted right up to World War I. At the end of that war, moreover, death duties were greatly increased and landowners found it increasingly difficult to improve or preserve their estates from the point of view either of forestry or of agriculture. In this dilemma private forestry has suffered most as, inherently, it demands longer term and therefore less certain investment.

Forestry and agriculture. It is at this stage and for this reason that the state had to establish a plan for forestry. Its main purpose was to increase the area of woodland on land marginal to agriculture. The underlying purpose was mainly strategic, partly economic (at one stage to provide employment) and partly to give part-time productive work to crofters and smallholders. None the less, the state schemes, under the direction of the Forestry Commission, although they have made considerable strides, still leave forestry mainly in the hands of private owners. The deeply ingrained notion that the bounds of forestry lie where agriculture leaves off would appear to be still the accepted principle, and the fact that no guaranteed market, such as is given to agriculture, has been given to forestry, puts it at a disadvantage. There are signs, however, that a more comprehensive outlook is being slowly evolved and the Dedication Scheme, which has been written into the 1947 Forestry Act, is a token of this.

Until recently it was no part of the state scheme to point out a way of reconciling the interests of agriculture and forestry, but the antagonism of the farmer towards the owner of scattered woodlands is so ingrained that its removal will not readily be accomplished. Few landowners show sympathy in a practical sense with the farmers' point of view and even governments cannot ignore the pressure of conflicting opinion organized by these groups.

If the state can effectively prevent outright competition between them, coexistence is likely to be the pattern of their future relationship.