

THE END OF FORESTRY IN GREAT BRITAIN

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INTRODUCTION

In 1635, the Royal College of Physicians was entrusted with a bequest to sponsor an annual lecture "on some dead body, if possibly it can be procured, which shall then and there be dissected". The 1970 Goulstonian [*sic!*] lecturer added to this condition the plea that "the organ so dissected should be immediately transplanted". In echoing these words in my address I want to stress my intention to emulate the transplant surgeon rather than the morbid anatomist; my concern is not with a post-mortem on British forestry but, rather, the continuation of its vital functions. The deliberate ambiguity of my subject title enables me to consider the "end" of forestry not only in the sense of the demise but also as an objective. I shall argue that these two senses are not necessarily contradictory and that the desirable aims of forestry in Britain necessitate the demise of traditional policies, attitudes and sometimes practices. I propose to examine the future of economic production forestry in Britain and to suggest that its role is a limited one; I then want to discuss environmental forestry and to argue that the forester of the future must become a *resort* rather than a *resource* manager. Finally, I shall examine the implications of my argument in terms of forest policy, silviculture and management.

As a further preface — and because it seems customary for Chairmen of Sub-Section K* to present their *curricula vitae* — I must outline for your consideration my qualifications to speak as a transplant surgeon for British forestry. They are few indeed. Not long ago there were four Professors of Forestry in Britain: there is now only one — at Aberdeen. The rest of us have changed our titles — in my case to Professor of Forestry and Wood Science. Despite this new sobriquet and my location in a British university, I lay no claim to a detailed knowledge of British forestry. My training in forestry began only some ten years after I graduated from Oxford and after I had taught for six years at Aberdeen. It was not until I worked in New Zealand — in those magnificent stands of unthinned *Pinus radiata* — that I saw forests instead of woodlands; only when I watched 90-ton loads of logs thundering on their way to the pulp and sawmills did I see an industry instead of a rural pursuit; and only when I got to work with

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a slide-rule did I realize that private forestry could provide a 10 to 20% investment return rather than a means of avoiding tax. I also travelled fairly extensively and in some isolated and inaccessible areas: I learned a little about the role of forestry in economic development; a little about forest resources; a little about international trade; and a lot about people.

Since returning to Britain four years ago, my experience has been further enlarged by confrontation with the results of massive population growth in a spatially limited industrial environment. During my six-year absence, the number of private cars on British roads had risen by 75% to over 10 million; the urban population had increased to 80% (of 54 million); in country towns, high-density living cubes had escaped from the cities and stood as incongruously as packets of cornflakes on an empty table (*"urbs in rure"* — Fairbrother, 1970); indictable crime was up by 70%, mental illness by 30% and attempted suicide by 50%; for the first time, noise had become a significant biotic factor of the environment. On a more personal level, the Dorset village where I was raised had become a litter of caravans and its greystone houses serricorn with television aerials; my first university had acquired a clinical campus of glass and unfaced concrete; familiar hedgerows had vanished and beaches had become polluted.

Not all changes, of course, had been detrimental: our cities were cleaner and their new architecture more exciting than the old; I liked the sweep of the new motorways; ordinary people were more affluent; students were more concerned about social and economic injustice; and the permissive society had the supreme merit of honesty.

In some areas there was no discernible change at all: the armed forces still held on to more than a quarter of a million hectares of land, and the Scottish loch-side camp where I had served in the Royal Marines — although handed back to its owners — was still a slum settlement of dilapidated Nissen huts and hard standings; in Oxford they still debated proposed road schemes; the timber industry still talked of "revolution" (not, as one might suppose, a frenzied uprising of Luddites, but, rather, the reluctant abandonment to metrication of an antediluvian lumber measure derived from the space occupied by three dry barleycorns); the burning issues of forestry were still (as in the eighteenth century) hill farming and home-grown wood quality; the honours graduates still did not know the price of a stick of timber.

On the whole, the environment had deteriorated — and is continuing to do so. For me the New Phoenix has already arisen — neurotic, dyslectic and suffering badly from urban halitosis. My further education has given me a schizoid attitude both to the British environment and to forestry's role in it. I address you, then, as one who lays no claim to objectivity, but who is fiercely concerned with human ecology and with the future of forestry.

THE FUTURE OF PRODUCTION FORESTRY

A recent change I have not enumerated in my introduction relates to forest policy. Under the prodding of successive Committees on Estimates, the Forestry Commission is now commercially oriented. Private forestry, too, led by the Economic Forestry Group, is setting its sights fixedly on the pursuit of profit. Since, as taxpayers, we contribute significantly to both public and private forestry (currently some £40 million per year, including interest charges and losses to the Exchequer by way of tax concessions, etc.), we have an interest in examining very closely the viability of these enterprises, and the commercial justification for continued public investment in production forestry.

Numerous attempts (including some by my own department) have been made to refine the Food and Agriculture Organisation's global forecasts of supply and demand for forest products (see, for example, Grayson, 1969; Hummel and Grayson, 1969; T.T.J., 1970). According to Grayson (1969) the total value of deliveries of wood products from manufacturing firms and traders in Britain is of the order of £800 million per year; imports have exceeded £500 million since 1964 and reached £650 million in 1968. Britain now supplies 8% of the roundwood volume in total consumption. Forecasts of future roundwood requirements envisage an increase of 24% (9 million m³) between 1966 and 1975 and a further increase of 13% (6 million m³) between 1975 and 1980. Home production is expected to increase by 1.3 million and 1 million m³ over these respective periods, raising the proportion of home-grown supplies in total consumption to 9.9½% by 1975 and to 10.10½% by 1980. These percentage increases are small and, taken together with estimated additions to the present import bill of £140 million (1957) and £230 million (1980) — at 1968 price levels — provide a strong *a priori* argument for production forestry in Britain.

Any demand projection involves making assumptions. The basic assumptions of Grayson's forecasts are, first, that the relationship between changes in consumption variables and changes in income (Gross Domestic Product) will remain constant (varying estimates of G.D.P. are then evaluated) and, second, that real price falls over the period will be of the order of 1.1½% annually — with maximum rates of 1.7% for deliveries and 2.3% for imports also considered.

Apart from problems associated with the assessment of economic parameters (such as G.D.P.) and statistical reliability (both of import and home production records), what troubles me about exercises of this sort is their unavoidable failure to take account of technological and economic changes outside Britain and their implications for industries which are so heavily import-dependent. Certain features of the world forestry scene could (and in my view, will) violently upset the assumptions on which the role of home-grown timber in import substitution is predicted. These are: the probable growth of replacement materials in forest products use; the disappearing technological difference between hardwoods and

softwoods and consequent substitution among wood products (a feature excluded by the aggregative treatment of the Grayson analysis); and the probable effect on import prices of low-cost production (and reduced freight rates) from man-made forests in parts of the world climatically better suited to production forestry than Britain. The first feature — the incursion of replacement materials — has been magnificently overstated by Dawkins (see, for example, 1969). His argument that all "large-scale industrial uses of wood will be taken over by synthetic plastics and derivatives of the AlFeSiCa minerals within the next half-century" is persuasive; I believe it will be largely vindicated in the heavily-populated industrialized nations such as Britain, Holland and Japan, though I have reservations about his time-scale, and I do not accept its application to countries with a population density below 200/km². I also believe that substantial problems of pollution and of plastics disposal have to be solved before a world with no use for industrial cellulose becomes a reality anywhere.

The fact of hardwood-softwood interchangeability, on the other hand, is more immediate. In Europe, 25% of current pulpwood production is of hardwood (in Italy and Hungary it is over 85%), in strong contrast to the situation a decade ago; in the U.S.A., hardwood consumption in pulp manufacture rose from 17 to 24% of the total furnish between 1955 and 1965. In Japan, changes have been even more striking: in 1955 the pulp industry consumed 0.8 million m³ of hardwood, 85% of wood consumption being softwood; yet by 1967, softwood accounted for only 15% of the intake. These figures have to be considered in the context of an industry which 30 years ago regarded hardwood pulping as uneconomic — hardwood was accepted as a desirable addition to a softwood furnish, but certainly not as a pulpwood in its own right. For particle and fibre board, there are no established patterns in wood use, the furnish depending on the supplies available. The relative amounts of hardwood in European particle boards vary from nil to 97% and in fibre board from nil to 82%; in the U.S.A. the furnish to the two industries taken together was, in 1967, just over four million m³ of softwood and just under three million m³ of hardwood. In the field of solid wood products, also, hardwoods and softwoods can effectively substitute for each other over a wide range of products — softwood surfaces can be densified to take a decorative finish, while careful selection and seasoning of tropical hardwoods enables their greater use in construction. Price trends are already enabling the replacement of softwood by tropical hardwoods in joinery. The distinction between hardwoods and softwoods will become steadily less as time goes on.

If this prognosis is correct, there is no technical reason why tropical hardwoods should not substitute extensively for softwoods in the British market. There is certainly no shortage of them: using FAO global statistics and national returns, it has been demonstrated (Richardson, 1970) that at a projected 1985 rate of world imports (80 million m³ annually) there are sufficient tropical forest resources to last for 400 years! If the

political and institutional constraints upon the rational development of this resource can be overcome, and if harvesting and transport costs can be contained (I believe they can), tropical hardwoods will reach the British market more cheaply than home-grown softwoods. It has been postulated that for a mixed tropical hardwood pulp operation harvesting 330,000 m³/year, delivered wood costs could be of the order of \$9.00 (U.S.A.)/m³ (FAO, 1966).

The third feature of the world forestry scene I have mentioned — low cost production from man-made forests outside Britain — will also have a relatively rapid impact on production forestry economics. In New Zealand (Fenton *et al.*, 1968), forest production costs for a *Pinus radiata* sawlog regime (on a 10,000 hectare production unit, involving land clearance, thinning and pruning to 11 m — at a 7% interest rate and including social costs) amounts to \$45.00 (N.Z.)/hectare; production thinned at top height of 27.5 to 30.5 m to yield 161 m³/hectare pulpwood, and clearfelled at age 36 (42.72m top height; 55.9 to 58.5cmd.b.h.) the final net yield is 490 m³ of sawlogs and a further 200 m³ of pulpwood per hectare; the unit cost, therefore, is less than 73 cents per m³; ignoring the pulpwood, the sawlog production cost is \$1.17 (N.Z.) per m³. (In sterling, these costs are, respectively, 2½d and 4d per ft³.) Spears (1966) has demonstrated pulpwood production costs as low as \$4.20 (U.S.A.)/m³ (including stumpage, harvesting, transport for 16 km, 6% compound interest, plus 6% investment yield) for *Eucalyptus* and \$5.00 (U.S.A.) for pine. These are estimates derived from existing man-made forests, essentially unplanned and virtually unmanaged; they are in subtropical parts of the world with abundant low-cost land and labour resources. In the tropics, with even higher growth rates (perhaps of the order of 50 m³/hectare/year), the potential for low-cost production is yet greater. The development of bulk transport for wood and chips and improved handling facilities herald a reduction in unit delivered cost that will drastically modify our ideas about industrial forests in Europe.

In face of the evidence of replacement materials, substitution possibilities among wood products, and low-cost production in regions of very high yields, I do not believe that production from British forests will be competitive with imports, unless they are established on a scale well beyond anything we envisage at present. Rankin (1969) has postulated minimum regional forest areas of 40,000 to 60,000 hectares within a radius of 50 km, each supplying one pulp and paper mill (or a large-scale particle board plant) and eight single-shift sawmills of 35 thousand m³ input. The Forestry Commission (Hummel and Grayson, 1969) has discussed 16 "catchment areas" covering the whole country and estimated future production; these areas vary considerably in size and yield, reflecting variation in existing coniferous forest areas and current policy with regard to planting; the implication is that industrial establishment must be geared to forest areas rather than vice versa.

I do not claim to know what the economic minimum production forest area in Britain will prove to be when the sub-

tropical and tropical countries of the world get their exports moving; but I am confident that, for integrated utilization involving a chip product, it is well over 100,000 hectares within a 40 km radius of the plant. And where in Britain shall we find suitable areas of this magnitude which can be devoted to production forestry? Perhaps two in Scotland, two in England and one in Wales. Even then, the only hope for economic production will be in substantial improvements in managerial efficiency and in reduced growing, harvesting and processing costs. I see little prospect of (nor would I favour) protective tariffs or subsidies of the magnitude we now have in agriculture — and which would serve only to stifle the economic and social development of the under-privileged third world. Even if my prognoses are overly optimistic (or pessimistic, if evaluations are made within the confined viewpoint of British production forestry), and as much as half the existing forest area in Britain is to be devoted to economic production, we shall still have a million hectares — or two million if Jack Morrish (1969) has his way — to use for other than industrial wood production; we shall, I think, be grateful for it.

ENVIRONMENTAL FORESTRY

The case for environmental forestry has been argued long and often — if not always very coherently or objectively. When the concept of multiple-use forestry was first given international prominence at the Fifth World Forestry Congress in Seattle, foresters seized upon it as a means of justifying low investment returns from traditional production management. In Britain, the social values (although not the costs) of afforestation had been stressed for many years — prevention of rural depopulation, provision of employment, amenity, and so on; multiple-use gave us a new bit of jargon with which to distract the attention of the politicians and the public from the economic realities of timber production. The social worth of forestry we calculated by subtracting the quantifiable return on capital from the market rate — which made us realize just how substantial these intangible benefits had to be. We then set about convincing ourselves — and the public — that they were indeed enormous. The past decade has seen an upsurge of interest in “conservation” and “pollution” — band-wagons in tandem on which foresters have climbed, sometimes without discrimination but ever determined to extol the social and economic values of forestry with evangelical panache. There are now, for example, 64 national bodies represented on the Council for Nature, and more than 380 local clubs and societies are members! On average a new “amenity group” is formed every week. Our present widespread concern with the quality of our environment is unparalleled and the next decade will, undoubtedly, continue to spawn local and national pressure groups with similar fecundity.

It is not my purpose to question the aims or belittle the endeavours of the myriad organizations concerned in one way or another with the quality of the environment. I *do* suggest,

however, that, as foresters, our urgent desire to be associated with any group that offers a justification for our profession in Britain may provide us with strange bedfellows, and could lead to justifiable charges of promiscuity. I also want to suggest that, despite the proliferation of such associations, their members represent a small minority of the British public. Earlier this year I read a publication entitled *Conservation: An Upper-middle Class Social Movement*. It was not, as you might suppose, an extract from the thoughts of Chairman Mao, but a serious analysis of the contemporary conservation-preservation movement in the allegedly classless U.S.A. The authors (Harry *et al.*, 1969) conclude that "Membership in the conservation movement appears to be composed largely of upper-middle class occupations, especially professional occupations. In addition, it is primarily an urban-based movement that is somewhat isolated ideologically from the main streams of both liberal and conservative political thoughts." Making due allowance for conceptual differences between the U.S.A. and Britain, essentially similar conclusions could be drawn from British conservationists. I do not deride them; but I am concerned that foresters should recognize the limited interests they represent; and I am concerned that we should extend our horizons to embrace the interests of the population masses, rather than those of minority sections. One need not be a disciple of Marcuse to recognize that land ownership and resource management carry public as well as private responsibilities; the famous Nigerian credo — "land belongs to a vast family of which many are dead, a few are living, and countless numbers are still unborn" — must apply even in a capitalist society or that society will not survive.

The narrow attitudes of the town-based country lovers who for centuries have led the conservationist and rural amenity movements in Britain have long been apparent. Nan Fairbrother (1970) points out that the tendency to idealize country life is "a measure of our distance from reality"; and that much of what we want to preserve depends on poverty — either of poor returns from the land or of poor farmers. In literature "it is the recreation of the comfortable we hear about — the Izaak Waltons and Gilbert Whites and Mr Jorrockes and their modern equivalents". In his bicentenary year, it is perhaps not inappropriate to quote Wordsworth — who complained loudly and arrogantly about the Windermere railway bringing to the Lake District "at once uneducated persons in large bodies". He distinguished a minority who could appreciate mountain scenery and "artisans and labourers and the humbler classes of shop-keepers" who should not be encouraged "to ramble to a distance". Even that great traveller of the eighteenth century, Cobbett, bewailed "the facilities which now exist of moving human bodies from place to place" as "amongst the curses of the country". Still today — and, perhaps, in all of us — there is an element of desire to travel, provided that other people stay at home, and to enjoy the rural landscape as long as it remains isolated from the majority. Such attitudes are undemocratic, unrealistic and

unworthy — but they are implicit in many approaches to conservation.

There are two main components of environmental forestry — the development of recreational facilities and the management of landscape. In the first field, I suggest that it is high time for foresters to take the initiative in providing for the mass enjoyment of forest areas. We have, of course, already made a start — but, with one or two exceptions (Grizedale is the most notable), what a timid and unimaginative beginning it is. We have a few forest parks, a few camp sites (most of them not in the forest at all, but in open fields alongside it!), a few picnic areas, and a few half-hearted attempts to develop water resources for recreation. Excluding shooting, trout and salmon fishing — which in Britain because of cost are very much minority pursuits — our accomplishments in providing recreational facilities in private and state forests are nugatory. Our attitude is typified by the story of the state forest caravan park which, in its first year of operation, was used to capacity; before the second season, instead of doubling the park area to cope with demand, the forest authorities had the sign-posts indicating the existence of the site removed! In similar vein, Robert Barr (1968) complains about the Glen Trool Forest Park — “There is a four mile forest walk and a shilling guide to it, but the guide starts off with warnings not to start fires, to obey the country code, and to look for adders — hardly an invitation to use the walk.”

Because I believe it has intrinsic merit, I now want to state the case for regarding the recreational component of environmental forestry in Britain as “resort” rather than “resource” management. Briefly, my thesis is as follows:

- (1) The population of the United Kingdom currently stands at 56 million and by the year 2000 will reach 72 million. There will be a further increase in urban population to 91% of the total.
- (2) If it is accepted that outdoor recreation is beneficial to the community, it follows that facilities should be provided that will appeal to a majority of the population. And a predominantly urban population will want urban facilities.
- (3) Forests are unique among forms of land use in their ability to absorb large numbers of people (and their urban accoutrements — cars, transistor radios, etc.) unobtrusively and without destroying the environment. This is not true, for example, of moorlands, mountains and beaches. (A good example of the absorptive capacity of forests is provided by Yellowstone Park where, despite millions of visitors each year, beavers are returning to an area within 100 m of one of the principal camps — Wibberley, 1967).
- (4) At present, the recreational facilities provided in Britain's forests are designed (albeit inadequately) entirely to *satisfy* a demand — not to *create* one. The small minority

of the population who use them have no need to be convinced of their value: the vast majority who never go near them will have to be persuaded.

- (5) To so persuade them, urban facilities must be provided and in a way that goes well beyond car parks and camp sites. They *must* (as in many countries) include hotels, restaurants and public houses; they *could* include museums (the famous Van Gogh Gallery in the Hoge Veluwe in Holland, or the open-air Museum in Sweden provide precedents), zoos and game parks, marinas, intensive fishing (in the U.S.A. there are man-made lakes that are re-stocked daily during peak fishing periods), pleasure parks, car and motor-cycle race tracks — even discotheques and dance-halls. (There are parallels here in the way ski resorts have developed, as skiing has become more popular and, consequently, less exclusive — the self-contained urban environment of the Aviemore centre is a good example; and we can also learn much from those pioneers of popular rural recreation in Britain — the proprietors of country mansions like Longleat with its game park, Woburn and its pleasure grounds, and Beaulieu with its Motor Museum and folk festivals; perhaps, too, we can learn something from Sir Billy Butlin!)

The provision of popular facilities with majority appeal in forest areas provides a justification for environmental forestry in Britain, whether under state or private control. It could also establish the principle of payment for recreation in a country that will not, I suspect (*pace* Mutch, 1968), take kindly to the idea of spending money merely to walk or drive through trees.

The country in Europe from which we can best learn the fundamentals of recreation forestry is Denmark, where in state, municipal and private forests there is a realistic appreciation of the need for urban as well as rural facilities and an acute awareness of economics. In the 2,000 hectare Jaegersborg forest on the outskirts of Copenhagen, for example, the State Forest Service maintains a deer park containing 2,500 animals, two hotels, six camp sites (utilized to the extent of 300,000 person-nights in 1968), several restaurants, a golf course, a race-course, an old people's home, and a 10 hectare amusement park modelled on the lines of the famous Tivoli gardens (and capable of absorbing 60,000 visitors at a time). Apart from the roller-coaster which is owned by the Forest Service, the facilities are operated by concessionaires, who pay a percentage of their turnover ranging from 2% for tobacco sales to 35% for gambling halls. The park contains all the delights of an old-time fairground, as well as theatres, casinos and, even, strip-tease shows. (To hear a senior forest officer bemoan the lack of strippers because of competition from "porno", and express the hope that a bit of backlash may be forthcoming, is a never-to-be-forgotten experience!). The amusement park is in delightfully gaudy taste (the flowers are made of plastic, to discourage the depredations of deer!) and, sensibly, makes no attempt to blend with the forest

background; it is unashamedly extrovert and urban — and it yields an income of 3,000,000 kroner (£170,000) compared with 700,000 kroner (£39,000) from timber sales and 200,000 kroner (£11,000) from sales of deer — dead and alive.

At another extreme, in China, when the communists assumed control of the Buddhist religion, they also took over substantial forest areas associated with temples; the monks were allowed to remain as caretakers (supported in part by the local populace and in part by government), on condition that they maintain the fabric and, in many instances, provide restaurant facilities. The temple gardens are beautifully kept and the associated forests developed as pleasure parks (see Richardson, 1966b).

When British foresters begin to look beyond the limited margins of the nature trail, and can accept the need to provide for mass recreation (using urban facilities as an attractant and as a stepping stone to forest recreation), then — and only then — will forestry yield reasonable economic as well as social benefits. As Elliott (1969) has observed, these problems "will not be solved by book-keeping alone. Recreation is not a bonus to forestry. It is a challenge to forest management".

The second component of environmental forestry — landscape development — offers an equally exciting challenge to foresters, land managers and planners. The most realistic approach to current problems that I have read is Nan Fairbrother's delightful polemic *New Lives, New Landscapes*. This is a book I would commend to all foresters, and one that, if I were Prime Minister, I would make required reading for all ministers and senior civil servants — whether concerned with industrial technology or with the environment.

Miss Fairbrother's thesis is, briefly, as follows: Britain is an industrialized society that can no longer afford the luxury of sentimentality in its approach to land-use; while we admire the old rural landscape, we have abandoned the way of life (with its poverty, squalor — and life expectancy of 34 years) that created it; industrialization is as much a feature of the countryside — mechanized farming, urban housing and roads, the spread of electricity, mass motorized leisure, etc. — as it is of the towns, and we have no traditions for our new industrial landscape; in a society affluent as never before, educated to "a democratic transformation which is both cause and effect of industrial development", and in which "our commonest form of malnutrition is over-eating", any attempt to put back the clock, or even stop it, is Canute-like and stultifying (members of amenity societies she divides into three categories — reversers, shunters and translators; reversers "would like us all to live happily in a beautiful pre-industrial world, despite the fact that no one would now tolerate the pre-industrial life"; shunters, on the other hand, "accept that modern living means unattractive developments like cement works and pylons, but propose to shunt these into someone else's territory" — the controversies over London's third airport illustrate the shunters at work; while the translators "accept the future and aim to incorporate inevitable changes

with least harm, or even with benefit, to the environment"); our purpose, therefore, must be to evolve a new landscape that will reconcile the needs of a growing population in a changing industrial and social structure with the preservation of rural areas around and outside our cities.

Miss Fairbrother has an eminently quotable turn of phrase and an elegant (if sometimes cruel) wit. She attacks our schizoid attitude to industry: "We want the benefits, we do not want industry — or not where we can see it. (Unlike good social workers we love the sin and hate the sinner.) Yet since despite our escapist fantasies the Good Life as we enjoy it depends directly on industry, we might be thankful for processes which give so much to so many. We might even of course be *proud* of our industrial skills . . . we could begin by accepting industry as an integral part of our environment, learning to live with it as naturally as we did once with farming, instead of emotionally rejecting the foundation of our lives." She is ruthless in condemning the special pleading of preservationists who refuse to acknowledge that in lowland Britain farming is becoming industrialized — apropos our disappearing hedgerows, "it is useless trying to justify trees in terms of farming, for such unreal arguments are no protection against 10-ton bulldozers, and our wartime farmer had no illusions about trees on his farm. Every one of them . . . lost him money every year. . . ." She is equally scathing about indiscriminate prettifying in towns: "Rockerries on roundabouts and flowerbeds around factories are incongruities which nullify any potential merit the scene might have. . . ." And in a style reminiscent of Browning's Soliloquy of the Spanish Cloister she cocks a mischievous snook at our "Fitted-Carpet Complex" in relation to close-mown grass in and around new towns. "We shall only be making real progress, in fact, when AOIB means Area of Outstanding Industrial Beauty. . . ."

Despite her romps among the sacred cows of the amenity preservers, Miss Fairbrother's purpose is entirely serious; arguing that man's effect on the country landscape is almost entirely through vegetation control, she presents a case for the integration not only of land-users but of environments — "to provide appropriate settings for all our activities, and most specifically for the least attractive since these can only be saved by their settings — as they now are not" — with landscape regions zoned on the basis of local ecology — not the ecology of the academic, however, but of modern industrial man (" . . . the Scampi Belt . . . is not defined in terms of the pine-birch heaths of the Bagshot sands but of human strata"). She sees a role for environmental forestry not only in the countryside but also in the recreational landscape (multi-use belts of woody species — shrubs as well as trees — framing the urban landscape and separating the incompatible farms and cities) and in rehabilitating the "grey belt" — those ever-increasing urban-marginal areas of industrial land without a ground use (except as an open latrine for discarded oil drums, scrapped cars, and other such industrial vomit). She enters a plea for landscape surveys of use rather than quality; present surveys "are based on a policy of preserving the best

and leaving the rest to get worse" — and ignore the fact that it is in the ugly areas that most of us live. Most importantly, she outlines the powerful planning controls that exist in Britain, if only we are enlightened enough to develop new landscape policies and determined enough to implement them.

In Durham, of course, to commend these views is to preach to the converted. The landscape analysis carried out by the County Planning team in connection with the Durham motorway (see Atkinson, 1966) is a model of its kind which recognizes that for most of us our experience of landscape — and, indeed, our knowledge of the land we live in — is restricted to what we see from roads (usually travelling at high speed). To quote Miss Fairbrother again, "... the road is our environment and colours our consciousness, and the landscape exists as its extension". With a Landscape Advisory Committee for motorways and trunk roads, and the Forestry Commission planting for the Ministry of Transport, we can now travel hopefully. (And when the Forestry Commission seeks advice on its own roads from a Landscape Advisory Committee, when it opens them to unlimited public access, providing motorable surfaces, lay-bys and overlooks, then perhaps we shall have arrived.)

SOME IMPLICATIONS OF TRANSPLANT SURGERY IN BRITISH FORESTRY

The last part of my address is concerned with the effects that transplant surgery (and acceptance of the new role of resort management) could bring to forestry — and foresters — in Britain. The first and most important result would be the abandonment of that woolly concept, multiple-use. Production forestry would be for production; it would demand specialist techniques and specialist managers — men with an understanding not only of the biological facets of tree growth but skilled in economic and manpower planning, in harvesting and utilization technology, in the use of computers, and possessing a high level of managerial ability — men, above all, able and willing to make far-reaching decisions; it would be an exciting and demanding field, with no room for despondent mutterings about 3½% returns.

The new production forests would be industrial units — subject, of course, to the same controls as other industries, but freed from the constraints imposed by attempting to combine industrial production with unrealistic concepts of rural amenity. There could still be limited public access to the forests — perhaps guided tours of operations, as in other industries — but the over-riding determinant of management practice would at all times be industrial efficiency. The development of such forests — and their concomitant industries — calls for a new kind of co-operation between the state and private industry — perhaps along the lines of the Tasman enterprise in New Zealand — with long-term wood supply contracts from both Forestry Commission and private forests

within the complex, and a substantial governmental stake in the equity of the processing plants. Private forestry would undergo a healthy catharsis, with the injection of long-overdue professionalism into management and the threat (no longer and idle one) of compulsory acquisition in the event of failure to meet the requirements of the enterprise.

Along with these developments, environmental forestry would achieve its own stature and would cease to be a somewhat desperate professional apologia. Freed from production constraints, its foresters could seize the initiative in developing realistic recreational facilities and play a dynamic role in shaping rural and "grey belt" amenity. The challenge is every bit as exciting as to the production forester and requires the same order of enthusiasm and professional skill.

Think of the silvicultural possibilities! We could greatly extend the planting of hardwoods — chestnut, lime, hornbeam, wych elm, walnut, among others — beautiful and exciting species which (if we continue our present policies) the next generation of foresters will scarcely be able to recognize; we could diversify our coniferous species, selecting them not for their ability to fill the gaping maw of the pulpwood chipper but for the colour and grace they would give to our disturbed landscape; mixtures, uneven-aged forests, a much wider range of management objectives, a variety of silvicultural schedules and regeneration systems, even the return of what is biologically the most attractive system of all — coppice with uneven-aged standards — would be possible. To a forester nurtured upon Sitka spruce and gleyed podzols, to practise the sort of forestry he has hitherto only read about in textbooks would prove heady and stimulating wine.

We could, then, give free rein to imaginative silviculture with a clear conscience and a glorious disregard for the net discounted revenue from timber production: we could acquire land for planting in locations determined by the needs of people rather than the dictates of economic planners: we could accept our responsibilities with regard to the 250,000 hectares of derelict land in Britain instead of abandoning (as happened earlier this year) substantial planted areas of the industrial Pennines because "pollution made it economic": we could escape the (sometimes legitimate) charges of vandalism levelled when, in the name of economic forestry, we disfigure valley slopes with our regimented monocultures and scarring roads. (Nan Fairbrother suggests that there is a need for a country code for farmers —while they cannot afford to preserve the past at the cost of efficiency, they should "be expected to avoid needless ugliness in a countryside we all have to share"; there is an equally pressing need, I believe, for a similar code for foresters.)

But environmental forestry does not end here: if we adopted a policy of attracting people in large numbers into the forests — creating, rather than grudgingly satisfying, a demand for recreation — the opportunities would be virtually unlimited. The Forestry Commission (like other state enterprises such as British Rail and BOAC) could enter the hotel and catering fields; as in China and on the European continent, foresters

could become involved in the control of highly profitable and extrovert pleasure parks; we could prevent the water boards sterilizing reservoirs (and their landscapes) by edict and, through enlightened management of the surrounding forests, enable them to serve as gathering grounds for people as well as water (the purified water in New York City's domestic supply by the time it emerges from the tap has passed through, on average, six lavatories — there is no reason why reservoirs should not be used by swimmers and boating addicts as intensively as Brighton or Blackpool beaches); hydro-electric schemes, the more glamorous of which already serve as magnets for holiday-makers and day-trippers (the Central Electricity Generating Board has an award "for conspicuous services to tourism in Wales"), from elegant and appropriate centrepieces of industrial landscapes — their forests, too, could be managed as ancillary facilities, attracting (and absorbing) large numbers of urban visitors.

The environmental forester has a role, also, in hiding the scars of the urban and rural despoilers, who, despite planning controls, will always be with us — the ribbon developers given full rein by local councils, the surface miners and their spoil tips, and the local authorities who choose the most accessible sites, irrespective of landscape, to dump their garbage (outside Frankfurt there is a forest ski-run built over a mountain of city refuse; similarly, the new Western Forest outside Copenhagen plans for the creation of hills, ski-slopes and watersport facilities — and the Forest Service imposes a charge for the dumping of the spoil from which they will be built).

As with the new industrial production units, we shall need a new relationship between the state and private forestry, if recreation and landscape are to contribute adequately to the quality of the environment. Direct or hidden subsidies to private forestry must be made conditional upon public access to private forests (Denmark, with a population density well below that in Britain and no direct financial aid to private forestry, passed a law in 1969 requiring free access to all forests greater than 5 hectares in extent) and satisfactory compliance with whatever requirements the taxpayer — through his agents, the Forestry Commission — may deem appropriate; again, the control mechanisms already exist — they have only to be used.

CONCLUSION

Wide acceptance of the views aired in this paper — and, in particular, the concept of resort management — will not, I realize, be achieved overnight. The greatest obstacle, perhaps, is in the minds of our production-oriented foresters; to return to the surgical metaphor with which I began my address, the organ in need of transplantation is the heart. We have a policy and the means to implement it; but we lack in ourselves sufficient conviction of its merits, enthusiasm to communicate it to others, and determination to carry it through to its logical conclusions. Conviction, enthusiasm and determination —

they are all qualities generated in the heart. A major responsibility for their inspiration rests with those of us who stand outside the mainstream of forestry — those of us who are concerned with training the next generation of foresters and who have no axe to grind (only, perhaps, a very small adze!). In 1966 the University of Wales accepted for its Department of Forestry a policy (Richardson, 1966a) based on two main planks: the first, represented by our new degree in Wood Science and Industrial Economics, is functioning successfully; the second — development in the field of environmental forestry — is still rough-hewn and unseasoned. It also contains an element of cross-grain — one of my own students has described some of my views as “an old man’s fantasies” (I am 45, but age to youth is absolute and, “*Si jeunesse savait! Si vieillesse pouvait!*” was ever the lament of the disillusioned rebel) — but we take comfort from the knowledge that cross-grain can increase resistance to crushing and, if the plank is properly finished, will enhance the beauty of its figure.

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