

The Function and Form of the Working Plan, with Special Reference to State Forests.

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The Meaning and Significance of Forest Management.

AMONG the recognised branches of forestry, forest management is somewhat peculiar. As a subject it is much harder to define than silviculture, mensuration or utilization. This is because it is not so much a separate subject as the application of knowledge of all branches of forest science towards a predetermined objective, the implementing of a prearranged policy. Every scrap of knowledge, whether it be regarding the climate, the soil, the plants or the produce, must be considered and used. It is hard to know where to draw the line between management and administration but for the purposes of my observations in this paper I shall regard forest management as the use and application of technical knowledge towards some end.

It is this comprehensiveness of the subject which makes it unlike the sources of knowledge on which it is dependant. Management in this sense does not change while all the factors, considerations and techniques on which it is based are constantly changing. The policy may change but you cannot have management without policy and once the policy is fixed, management is the ordered systematic progress towards the end which the policy lays down. We must decide in the first place whether we want to go from Dublin to Boston or Bombay. When we have decided that, we must consider which is the quickest, cheapest and safest way to get there. In forestry we may have changes in thinning grades and intervals, we may have pathological dangers or disasters, we may have new ways of raising seedlings or planting or felling or conversion. Any of these may be exciting and greatly affect our actions as foresters, but the manager still continues in his role of using these changes. Whether he uses buffaloes or track vehicles, rivers or roads, aeroplanes or theodolites, 'C' grade or 'X' grade thinnings, he must plan towards an end. So while we must expect and encourage advances in every possible direction of our knowledge, biological and economic, we must be ready and able to use such knowledge sensibly and intelligently to get what we want to get.

Planning the Basis of Management.

It is fashionable to-day to talk about "planned management." This seems to me to amount to an example of grammatical redundancy for management, as I understand it, is planning.

We can compare the forest manager to the farm or factory manager and while there is much in common, there are obvious reasons why the man in charge of the forest factory has certain special and peculiar problems and difficulties.

I prefer to think of the forest manager rather as an architect who has to design a building for a particular purpose; it may be a cathedral or a block of flats, a warehouse or a school. He has a choice of materials and methods and he must consider costs. But his building, once finished, is complete and he uses dead materials in its construction. The forest designed by the forest architect is composed of living things, its form is constantly changing and ideally it is perpetual.

In some ways the role of the general fits better, for he has a set objective, he uses men, weapons and tools to reach his objectives and he must be ready to change his tactics or direction as the campaign develops. He may have to scrap old weapons for new, he must have originality and resource and freedom of action and he must be prepared to reach his objective in stages and eventually hold it.

None of these parallels is completely satisfactory in assessing the functions and duties of a forest management officer, but one thing is common to them all; each must have a plan.

I consider that some kind of plan is inseparable from the idea of management and I shall attempt to indicate the form of plan I think we need at present in British and Irish forest management, because it is this part of forest management which changes with circumstances and which indeed must be capable of change.

The Present Position regarding Forest Working Plans.

The arguments that have been put forward can be found in any textbook on forestry. Working plans have been in operation on the Continent for over a hundred years. The case for some kind of planning is constantly advocated by enlightened and thoughtful foresters. In a recent copy of your Society's journal, one of your members is reported as saying that "it is only by planning and foresight that the best results can be achieved." Yet the fact is that it is rare to find any kind of written operating Working Plan for any forest in the British Isles. As foresters on both sides of the Irish Sea, we have paid lip service only to this doctrine. In theory planning is indispensable, in practice it is virtually non-existent. Why is this? It is true that there have been active critics and opponents of working plans and some who even consider them a waste of time. Let us consider some of the reasons for this apparent inconsistency between theory and practice.

The reasons are not simple and involve a number of considerations.

First, working plans were developed in connection with European forest management. Over a considerable period of years they have assumed a somewhat stereotyped pattern and in their modern form

are often complicated and formidable documents. Furthermore, they apply almost invariably to well established forests, the boundaries of which have not altered for many years. They are often, as the result of past planning, now in a state approaching normality and yielding an outturn of mature timber. They are concerned chiefly with matters of yield calculation and regulation. The forests and the conditions appear so different from ours that such working plans seem quite unsuitable. With much of this I agree and I do not advocate that we should copy them in their present form, but I would remind you that the forests covered by these plans were not always so perfect and the present form of the plans is an example of the evolution of the form and pattern of working plans. Nor do I agree that we must wait until we have reached a comparable or even a productive stage before we make our own plans. We require our own kind of plan for our own conditions and stage of forestry. There has, I believe, been much confusion and misunderstanding in attempting to apply the results of nineteenth century Mid European forest management to our forests.

Another reason for the absence of working plans is the doubt and uncertainty regarding the future. While the European forests developed in an atmosphere of comparative peace and economic stability, we live in a time of changing values and standards. The very areas of our forests are not definite or fixed. New methods and techniques are being proposed, new implements invented. This is a temptation to vacillate and postpone action. I agree that it is much easier to make a plan when you can depend on markets and values and when you know exactly what you want, but I suggest that it is precisely in such a bewilderingly changeable and uncertain economic climate that work and action must be planned and assessed. Because a new weapon may be invented tomorrow is no excuse for not planning the battle and I might add that Ireland has never been short of good generals. Planning must make use of research but it must not wait for the results of research. Again as one of your members has remarked "we should have a long term plan, apply the methods which we consider most suitable; record our mistakes and successes so that our work will not be in vain."

Closely connected with the postponing of planning because of uncertainty is the temptation to succumb to an *ad hoc* type of planning. It is the argument which results in day to day decisions, almost invariably without any record being kept. Now it is certainly asking for trouble to try to plan too far ahead in forestry these days, but it is also asking for trouble to depend on snap decisions and constantly changing tactics. By the very nature of forest operations, unless they are planned in advance with care and the appointed time and place prescribed, there is more than a chance that essential operations are neglected, confusion is created and no way provided of knowing in the future what has been done. We may not be able to plan 20 or even 10 years ahead, but some interim objective must be set and the plan made to reach it. We

must think ahead in forestry; we must consider the position as it exists and the only satisfactory way of doing this is to have a written plan for a stated period with written records and systematic periodic reviews and revisions (4). The day to day method of working may seem attractive, but it inevitably amounts to having no plan at all.

I cannot omit from this analysis of the reasons for the virtual non existence of working plans, the formidable nature of the work, because the preparation of even the simplest plan of any use involves much work. I am quite sure that the writing of plans has often been neglected for this reason but, like so many other things, the task does not get any easier by postponing action. I fear too that a lack of knowledge about the method and manner of compiling a working plan may sometimes be a still further explanation for lack of action.

Special reasons for urgency in the preparation of Plans.

Much that I have already said is an argument not only for the preparation of written working plans, but for the urgent and pressing need for them. There are several reasons why this is a matter which we can ill afford to delay. Practically all our forests are young. Many of them have been created on sites which were previously treeless. Here is a very great difference between our forest management and that of many other countries. It, however, presents a challenge and an opportunity. Both by planning the establishment and by recording the steps taken from the very beginning, it is possible to obtain a unique record. If this opportunity is lost it will mean that vitally important evidence will be missing when eventually the time comes to pass judgment on results. Such formative forestry may have its particular problems and uncertainties, but it has special advantages also if they are taken. The very uncertainty about the ultimate results of many of our actions makes it doubly necessary to state what is to be done and what has been done. Only then can we profit by mistakes and improve on methods. Some of our forests are already beyond the embryonic state and in the stage where yields in the form of thinnings are being produced. Soon this will assume much larger proportions. The need for a thinning plan for each forest is a matter of great urgency. As we know there are different ways of thinning the same species and different species will need different methods, are we to wait until we have satisfied ourselves about the results of various thinning methods before we make a plan? It will be necessary to decide now how we are going to thin any particular stand and when it is to be thinned. This should be clearly set forth for a stipulated period and adhered to. It is not a waste of time making working plans—it is a terrible waste of time not making them.

Functions of the Modern Plan.

So far I have attempted to explain the absence of working plans and to indicate the need to correct this state of affairs without delay. It will be clear from what has been said that the value of these plans is not only to assure that various operations are performed but to supply a record of the results. I consider that both these functions are exceedingly important.

I am well aware that the conception of normality or perfection and the ideal of a sustained output or maximum benefit should always be in the mind of the forest manager, but I would dare to suggest that for any one forest these things need not, at the present, submerge more immediate objectives of management (1). Indeed, in many cases the unit for sustained yield management is not known, the most desirable age or size for felling is in doubt, and even silvicultural systems are uncertain. Much has to be done before these questions become acute and indeed it is on the results of our methods and treatments that they will ultimately have to be decided. There is no need to disguise the fact that most of our forestry will for some time to come have to be a matter of trial and error and the only way we will progress towards greater perfection is by having a plan of action and an assessment of results. In forestry as in other occupations we have to examine ourselves. Every one of our forests should be in a sense an experimental area. The Swiss have shown us the value of a system of decision, and checking of results and redecision in the light of these results. How many cases do we know in these islands where we can go into a stand and obtain a complete record of what has happened there from the time the stand was established? It is the importance of factual evidence by repeated and systematic inventories, measurements and assessments which I particularly stress as the most desirable function of the plan. And it need not be imagined that this can be done without a plan. Each step must be planned with intention and only then will the record be systematic, continuous and complete. The State forests have here a great advantage over most private forestry for more often than not they have the chance to know the story from beginning to end. It need hardly be mentioned that this checking of results will not be confined to volumes and heights, diameters and numbers of stems, but should include costs and receipts.

One word more; it is by such a system of planning, step by step from the beginning, that flexibility and freedom of manoeuvre, so essential to good forest management, can be achieved. We are far too prone to forget that in forestry we are dealing with living things. Trees cannot be bullied into behaving as we want them to and indeed our influence upon them is very limited. If we are to get to know our forests and our trees really intimately, which is the real secret of success, then it is only by visiting them regularly and examining them and describing them that we can hope to do this (5).

The Form of the Plan.

While few will seriously criticise the principle of planning in forestry, there is considerable difference of opinion regarding the pattern or design which the present day forest working plan should take. This is a big subject and it is not possible in this paper to treat it as completely or competently as it deserves. Indeed the only satisfactory way to discuss the form of the plan is by demonstrations and examples. I will not, however, weary you with detail but confine myself to general conclusions which I have reached in the course of my study of this extremely interesting subject.

First of all, let me make it quite clear that what I have in mind is a written document which will cover a chosen period of years and become a permanent record. I envisage a form of plan which is well within the capacity of any well trained forest officer to compile. But I must say that the writing of working plans requires skill and this can rarely be achieved without practice.

Secondly, I am particularly thinking of the form of plan most suitable for State owned forests in their present state of development, and in that connection I do not consider that the so called Plan of Operations as proposed by the British Forestry Commission provides a satisfactory model for our purpose. It must be remembered that this document was designed for private estates participating in the dedication scheme and in that connection it is very sensible and practical. (6).

I think that for the proper management of State forests a considerably more complete and detailed form of plan is desirable, but, of course, the pattern will have to be worked out by the State service and all I will attempt to do is to make some suggestions. I strongly advise that very careful thought be given to the design of the framework, the kind of information to be collected and the way in which it is to be entered and presented before a final official form is laid down. In devising this I advise that a standard official form suitable for all State forests is preferable to different forms for different forests and consequently the selected pattern should be applicable to all conditions and variations. The use of a standard pattern greatly simplifies administration control and makes the necessary periodic revisions much easier.

The general division of working plans into three main parts dealing with the facts, the prescriptions and the records is so well known that I will assume this arrangement and headings for chapters and sections need not be detailed. Examples can be found in various textbooks (2) (3). In connection with what I have said earlier I place special importance on certain documents and features of the plan and I will confine myself to brief comment upon these.

First of all, I consider that a complete history of the area covered by the plan is exceedingly important. This is rarely given the attention it deserves. Such a record should contain all that is known about the

past ownership, management and administration. The importance of this section of part one of the plan is that in most State forests much valuable historical information is available, once compiled the record is complete, and if it is not done as soon after acquisition as possible, very important basic knowledge will be lost.

Next I place the greatest possible emphasis on the preparation of the Stock map. This is a document of paramount importance. I could well devote all my time to this item alone. Suffice it to say that in my experience a scale of six inches to the mile is a very satisfactory one for this purpose and the ordnance survey sheets are an excellent basis. It is absolutely essential that the stock map should be as complete as possible. It should show all change of age within, at least, ten year classes, and any change of species or mixture, using the unit of one acre as the lowest unit to be separately mapped. Of course, in the case of new forests, if the limits of any one year's planting are known it is desirable to indicate these. The system of symbols and colour scheme to show variations of age and species is a matter for very careful decision, the important thing is to have a general official system so that all government stock maps are prepared on exactly the same pattern. It is quite impossible to over emphasise the importance of this document and it deserves very great care in preparation.

Along with the stock map must be prepared the full description of each compartment or sub-compartment. In fact these two documents go together. The headings for the forms which contain the factual data regarding all that is shown on the map are the most difficult details, in my opinion, to decide. They must not be so elaborate as to be impracticable and yet they must contain enough information to fulfil the purpose of improving management. A pattern which I have found very satisfactory in practice is available for inspection but I suggest that a standard form of headings should be evolved by the State forest service. The programme of work under various headings of operations must be set forth. Again it is not possible to go into details, but a specimen form is submitted. On the whole, I am inclined to favour a five year programme for State forests. Especially with forests in their formative stage it is difficult to plan much further ahead and with a State service the question of revisions, as subsequent plans are called, should not present a serious obstacle. Prescriptions, no matter how carefully considered, will almost certainly have to be modified and it is most unwise to try to look too far ahead. However, a programme must be set with every intention that it is carried out.

This leads to the next feature of the design which I want to mention specially, namely the record of work done. This is the really pressing need in all State forests as I have tried to show earlier. The all-important thing is to see that everything that is done in the working plan area is put on record and the cost entered. The unit for record should be the compartment, but if sub-compartments are shown in the

stock map, these must have their separate case history. This is the real balance sheet of the forest and it is this feature which I consider must be an essential part of the working plan which we need at our present stage of development in forest management.

It might appear that I have so stressed the value and importance of records that these are indeed all that is needed, that all that is necessary is a careful diary of events or methodical log book. This is not my contention. The record must be, and indeed in practice only can be, of value if it is the record of the results of a prearranged scheme, plan, course or strategy. We as foresters must be architects and not jobbers.

Conclusions and Implications.

Having indicated, very superficially I fear, the general form our much needed plans for management should take, let us in conclusion glance briefly at what this involves.

We must see that forest officers are properly and thoroughly trained to prepare working plans. This in turn means an appreciation of careful and accurate work, lucid expression and good presentation. As a teacher of forestry I am constantly astonished and distressed at the inaptitude of students in draughtsmanship and their indifference to the value of really neat and well finished work. They have a great deal to learn from our continental forester friends in this respect. In our admiration of European forests and the silvicultural skill they reflect, we, too often, overlook, or are ignorant of, the efficiently constructed and beautifully executed plans and maps and records which have played no small part in the product of management which we admire.

I consider it desirable that the working plan for a forest should be written by the officer who is in charge of the forest, rather than that there should be a central and detached working plans branch of the service. There will have to be direction from above regarding the manner in which information is recorded, the standardisation of forms and tables, colour schemes for stock mapping and the system of costing, but I advocate the compilation of the plan by the officer who will be responsible for carrying it out. This, in turn would indicate a policy which avoids frequent movements and transfers of forest officers.

A good working plan can only be written by one who thoroughly knows his forest and, as sustained effort and continuous recording are such essential elements in good planning, it is of great importance that the writing of the plan should be entrusted to the right man. It is nothing short of tragic to have a good start made and not maintained.

The making of forest working plans is not easy; it involves intelligent sampling and much measurement; it requires the ability to compare results and form judgments and it takes time. But there is nothing about it which is impossible or impracticable.

The possession of a working plan will not, in itself, mean good

management but good management is impossible without a good plan. State forestry in Great Britain and Ireland is sadly in need of plans of management and Irish forestry has a great opportunity to lead the way.

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