SUSTAINED YIELD AS A BUSINESS ENTERPRISE¹

By F. D. MULHOLLAND

A man said to me the other day, "Why do you need another convention on sustained yield, surely you are threshing empty straw; that subject is exhausted." We have two days to demonstrate whether he still has anything to learn.

Because the program for this meeting limits the discussions to the obligations of certain groups to ensure the success of industrial sustained yield, it seemed desirable in this address to discuss sustained yield itself, its meaning, the stage it has reached in practice and some problems and issues which its introduction into our western forests has raised, in an attempt to create a background for the discussions which will follow.

BRITISH COLUMBIA'S INTRODUCTION TO "SUSTAINED YIELD"

The theme of Sustained Yield, chosen for this meeting in the West, is a very topical one for British Columbia at this stage in its forest development. Twenty-five years ago the term was practically unknown to our people. I remember a journal about that time once held it to be synonymous with selective logging, and argued against it as an impractical policy. Another explanation was that it required the planting of a young tree for every one logged.

In recent years it has become so important to loggers that its effect on their fortunes is a common topic of discussion at loggers' conventions. It became important following its recommendation by the Sloan Commission as a provincial policy and subsequent adoption in Public Working Circles and introduction into legislation requiring that the cut in a Forest Management Licence must be "adjusted to the sustained yield capacity of the licence area."

We can derive satisfaction from the fact that the western members of this Society (as it was then called) made strong recommendations to the Sloan Commission in 1944 for certain changes in land tenure and taxation designed to encourage greater participation by private enterprise in permanent forestry. We made it clear that a long period of conversion would be necessary before forests could be managed on a sustained yield basis, and stated that the maintenance of continuous growth by prompt reforestation, rather than restriction of cutting, should be the fundamental principle during the conversion period.

With respect to this, after considering all the evidence before him, Chief Justice Sloan made the flat statement in his report that "a sustained-yield programme is not possible on the Coast until the mature forests are replaced by young growing stock."

It is important to remember this when considering subsequent developments.

The term "sustained yield" was enthusiastically adopted as a slogan and

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became practically synonymous with good forestry. The Legislature proceeded with energy to pass laws, not only to encourage management directed towards the building of sustained yield forests, but to make the immediate practice of sustained yield management obligatory as a condition for those who wished to take advantage of the new systems of tenure and taxation which were introduced.

The Forest Service is to be congratulated on the way it is handling the difficult situation created by the great change in industrial and political atmosphere which resulted from the industry's realization that future supplies of wood by successive purchases of mature timber could no longer be relied upon and that they must be secured by the growth of new forests—in a word, the realization that forestry is a profitable business enterprise. For the actual machinery by which these problems and pressures are being resolved, and in particular for the ingenious device known as the Forest Management Licence, credit is due to the Province's Chief Forester, Dr. Orchard, and a discussion of the methods by which sustained yield is being introduced is not complete without mention of that fact.

Forest Management Licence contracts were the first to establish "sustained yield management" as the "primary object" for the Crown and private lands included in them and to require the immediate introduction of such management.

More recent legislation provides that Crown-granted land being used for forestry may be classified for reduced taxation as "tree-farm land" provided the owner undertakes to keep his land in a condition variously defined in the Statutes as "continuous productivity" or "on a sustained yield basis", even though the whole area may be immature. A farmer's wood-lot also must be managed on a sustained yield basis with an annual harvest not exceeding 10,000 cubic feet.

Now at this convention of foresters the discussions of sustained yield are to be limited to its function in forestry as a business enterprise, that is an enterprise making a profit, since no business can long continue without one. The theme is again divided into discussions on what should be done to prevent sustained yield and profit becoming mutually exclusive, by (a) the "Businessman" (b) the "Forester" and (c) the "Government."

In trying to analyse this programme with its neat division of obligations or duties two interesting features emerge. First, who are these people? Can the men concerned in this business be thus neatly segregated? The programme does not mention the man who puts his money into it, the land owner, the company stockholder, the industrial promoter. I will cover him in a sentence: his duties are to have faith and patience, pay the taxes and somehow manoeuvre a profit on his investment.

The businessman's job is put under the headings of markets, utilization, and labor. The forester's job is covered by reforestation, protection, and improvement of production. The government's contribution is called enabling legislation and services. These last are noble words, "enable" and "serve", much better for a government banner than "restrict" and "dictate."

But who are these people? We know foresters who are in government, foresters who are in business, we are not entirely unacquainted with government in business and business in government. This overlapping and intermingling leads to a sort of curiosity as to the other fellow's activities, a form of co-operation, if well-intentioned. We shall hear about this.

The other interesting feature is that the principle or policy of sustained yield itself is apparently no longer a subject for discussion, it is taken for granted, having been adopted by the Legislature. The question now is how, where, and by whom it is to be applied.

WHAT IS "SUSTAINED YIELD"?

It is taken for granted that sustained yield is good for us, therefore it is taken for granted that we know what it is. Of course you are foresters and every student learns at his forest school what sustained yield is, so perhaps you know, but do the loggers, the legislators who impose it by law, the general public, know what is meant by the term as written into our laws? The developments and legal requirements which I have mentioned make it important that the meaning should be generally understood and established.

The expression "sustained yield" has been so variously defined as to lead to confusion. It has become necessary for a person using it to explain what he means. As I see it, "sustained" in this sense means continuous, without interruption and without decrease. "Yield" means merchantable wood, on the truck, in the water, at the mill. Literally, therefore, it means daily production, but the effective unit of time for trees and men, income and taxes, is a year, *so sustained yield is equal or increasing annual production.*

With deference to some authorities who think otherwise, the moment you add the word "periodic" you have something else. You may have good forestry, but not sustained yield, whether the "period" is a whole rotation or only five years. You have "periodic yield." In some forests good forestry may require a yield varying by periods; it may be the best we can do. Management for sustained yield is not always under all conditions good forestry. You cannot, for example, apply sustained yield management to 100 acres of even-aged coast hemlock.

The term is also being loosely used for other concepts which, again with deference, would be made clearer by qualifying definitions. For example, "sustained yield capacity," meaning the hypothetical volume which a certain quality of forest land might produce if it were in the necessary condition to do it, should not be called sustained yield. Increment is not the same thing as yield, and the allowable cut which a forest can produce during the conversion period may be more or less than its ultimate sustained yield capacity and more or less than its current increment, depending upon the distribution of age-classes.

Here are some other definitions: Society of American Foresters, 1944, "continuous production with the aim of achieving, at the earliest practicable time, an approximate balance between net growth and harvest, by annual or somewhat longer periods."

The Sloan Commission, 1945, "a perpetual yield of wood of commercially usable quality from regional areas in yearly or periodic quantities of equal or increasing volume."

Forest Resources of B.C., 1937, "the continuous regional production of wood for stable permanent industries."

Brasnett of the Imperial Forestry Institute, Oxford, 1953, calls it "the steady supply which it is possible to cut annually or over a period of years from a forest without detriment to its productivity."

Professor Sir Wm. Schlich of Oxford, 1911, "continuous yield, brought to market annually in equal or approximately equal quantities." He adds that "generally, sustained yield is secured if all logged areas are restocked within a reasonable time and the young woods which spring up are properly tended, so that the soil continues to produce crops of wood."

Passing by the thought that some forest owners might prefer a sustained yield calculated in money rather than in wood volume, it is plain that these definitions cover a rather wide field from simple "keep the forest green" to the forester's ideal, the theoretical concept of a "normal forest" where the age classes are normally distributed and an equal volume matures each year. Perhaps some of the eminent authors of these definitions struggled to trim down the theoretical concept to fit a practical policy of administration.

"SUSTAINED YIELD" IN LAW

Now if it is difficult for foresters to define sustained yield, is it not a little dangerous to require it by law so specifically? It has been and is a good slogan, but we should not make a fetish of it. Sweden is satisfied to apply two simple principles in its forest law, prompt reforestation after cutting mature timber and no cutting of immature except for improvement of the stand. Do we need more at this stage? Can we get more by legal enactment?

If the sustained yield forest is not our destination, but rather a half-way-house to the unattainable utopia of the normal forest, we need not give it the attributes of the normal forest; we might decide that the term is still needed as a slogan but that its legal meaning is "*keep the forest green.*" In that case we can safely put it in our laws for immediate enforcement.

But if we don't like such watering down of the basic principle of sustained yield, and if we want it to mean something more than "keep the forests green", something nearer the normal forest, then let us not pretend we can have it by law. We do just that when our law says we can put an area of seedling trees on a sustained yield basis, or requires sustained yield management for an area of exclusively mature timber, or demands immediate application to any forest area, large or small, even though it cannot be done without excessive sacrifice of mature volumes and silvicultural principles. With all respect for the sincerity of our law-makers, they are in danger of demanding bad forestry under the guise of sustained yield management. In British Columbia we have achieved our aim; we have introduced sustained yield as a policy; are we now beginning to over-shoot the target?

Sustained yield as a simple "keep the trees growing" policy is enforceable by law because everyone is in favor of it, but sustained yield with the idea of regulated annual cut applied to every unit of ownership is a complicated technical system obtainable only by gradual conversion of the natural forests; this is not at all a subject for legal compulsion which may enforce bad forestry and discourage forest owners by impossible requirements. Conversion to sustained yield is already being encouraged by our Management Licence system, and it would have more success in tree-farms if the theoretical system devised by foresters (though rejected by the Sloan Commission) as an equitable method of assessment of forest land had not, by some mistake, been written also into the Statute for enforcement in actual practice in the woods.

It is illogical and confusing to have two meanings for the same expression. I suggest that as foresters we should keep the true meaning of sustained yield as our policy and objective, but eliminate the term from Statutes which demand it where it cannot or should not be enforced, lest we be compelled to decide between evading the law or prostituting this long-established principle.

Some of us forget, in our enthusiasm, that in our kind of country law should follow custom, not try to make it, and if we want to regulate the cut of our forests on a sustained yield basis, we should try more education and example before thinking up more laws. I haven't the least idea what the panel on government obligations is going to say, but I am glad they phrased the programme as they did: "enable" and "serve"; certainly.

As a country we have adopted sustained yield on the higher plane as a policy or objective, but we are *not yet on a sustained yield basis* in Management Licences, Public Working Circles, Tree Farms or any other of our wonderful mixture of tenures of forest land. Nor can we be in our lifetime, unless we lower the standard of the sustained yield principle. It doesn't help to pretend you are at the top of the mountain when you are only halfway up.

CO-OPERATION IN CONVERSION OF FORESTS

The fact is, of course, that we are just entering upon a period of conversion, gradually changing a forest unit here and another there from its long years of un-regulated, liquidation, type of exploitation. I don't need to tell you that foresters should have all the help they can get from governments, investors and taxpayers, in order to have a measure of success in this conversion during the first rotation, or even the second rotation, of the forests they are trying to convert. There should not be any pretence, while asking investors, operators and taxpayers for patience. Nor at this stage is there any merit in complacency. To replace the dwindling virgin old growth, we must grow trees in the woods as well as find them by manipulating systems of measurement and inventory to fit present standards of utilization or standards which are still of the future. And they must be produced profitably, on a sustained yield basis or otherwise.

There is no case for panic or hurry in this conversion of forests to sustained yield. Nature's beneficent processes, perhaps especially in the forest, are cumulative. Growth, though slow, is sustained. There is no excuse for

premature legal enactments, partly thought-out and undiscussed regulations. Sustained yield management is a job for foresters, not law-makers. This thing is not theory; it is not social service; it is not a crusade; it is industry; it is business.

Lowell Besley, former Dean of the Forestry Faculty at the University of British Columbia, when leaving last year for wider fields in the capital of the United States, pleaded for better co-operation between the groups that are represented on this programme. He said: "Government leader, forest industrialist, professional forester, logging boss, woods or millworker, forest products salesman and consumer, all need each other. Each of us must try to understand and respect the other fellow's problem and viewpoint." But, "It would seem that government and industry are on opposing teams. The spirit of co-operation that was building up following the Sloan report would appear to be on the wane." Perhaps Lowell over-drew the picture; at any rate we must take care not to give him grounds for such a criticism if he visits us again.

The Legislature delegated some of the responsibility for the introduction of sustained yield management to private enterprise, but it was not too sure of us yet and tied up its gift of enabling legislation with some cautious, almost disabling, provisions. It was said that the new laws would be worked out, weaknesses would be spotted and amendments enacted. The need for some mending and patching has become apparent. Not that anyone should become impatient and, of course, no recriminations are in order. Perhaps our comparatively new Government has plans.

PRINCIPLES AND PROBLEMS

I have mentioned the difficulty in introducing immediate sustained yield management in forest management licences and tree-farms as required by law. There are other interesting developments. The Act gives management to the licensee but there is creeping in an idea that it is really *joint management*, a principle seldom successful in business. A Swedish forester whom we have known for some years recently visited us; he told me that in the twenty-four years during which he had managed his large private forest he had never seen a government forester except when he went to Stockholm.

A subtle new principle was introduced by contract which I cannot find in the Statute—*limitation of the yield to a set maximum volume*—not a desirable feature in forest management.

In the establishment of these perpetual forests, location of *permanent forest boundaries* for most efficient operation is of prime importance. Attention must soon be given to the old, inaccurate compass surveys and our solemn laws attaching peculiar sanctity to ancient, sometimes long vanished, corner posts and boundary lines sketchily run in the past for purposes other than those for which they are now resuscitated by law, confirmed by contract and imposed upon frustrated foresters and logging engineers. This should not be too difficult with co-operation between the owner, the Forest Service and our air minded Surveyor-General. Because that is the answer, survey by air. This job should not be delayed; it will require friendly co-operation also between

licences where management licences adjoin and where the boundaries between need adjustment.

These management licences are *not at all of uniform consistency*, nor ready-made for the sustained yield management required by law and contract. Government contributions of mature timber in them vary all the way from none at all to 100%; all of them must go through a period of conversion, at the licensee's expense, before the full sustained yield capacity can be realized. Many changes may occur in the interval; the laboriously estimated yield capacity may be ruined by insects, fire, storm, or changes in requirements of industry, development of competitive industries, movements of people, war. It was long ago discovered that forecasts of yield for a whole rotation, or even less, were waste of time and money, except at the beginning of conversion, in order to get management started. *Periodic careful inventories serve the purpose better.* It has been said of the work of a famous German forester of a century ago, Heinrich Cotta, head of the Royal Forest School of Tharandt: "The great contribution of Cotta's school was the advance from allocation of woods to all periods of the rotation to allocation only to a short working plan period, with an age-class check and a review of the probable effects of the immediate proposals on the long-term plan. He introduced elasticity by demanding that no uneconomic crop should be retained longer than was necessary to avoid violent fluctuations in future yield."

It will be interesting to see whether our laws will permit industrial foresters to escape the error that Cotta is said to have corrected a century ago in Germany.

In both forms of tenure some remedy must be found, sooner or later, for the inefficiency caused by the *multitude of imposts*, stumpages, Royalties, rentals, fees, land taxes, school taxes and protection taxes, still payable. *Royalty* is an outstanding example; although it was originally a part payment, deferred until logging, for old growth timber on Crown-granted and licenced lands, it has been maintained on second-growth forests and is even payable on trees the owner planted himself, including the product of a tree-farm. This anomalous situation has been referred to many times in analyses of government forest policy.

Some of the information demanded for the purpose of taxing and checking sustained yield management of private tree-farms reminds me of the Norman King's Domesday Book, which I understand is required reading in an assessor's education. You can imagine the astonishment of a tree-farmer, with a few hundred acres of forest land, when he receives a government yield assessment quiz asking how many tank trucks he has; how many feet of fire hose; how long do his culverts last; how much does he pay his forester; what does it cost him to make out his tax returns; and how much to deal with the Forest Service. Yes indeed, "deal with." That brings visions to my mind, jolly parties with forest rangers and all that. These things are done from the best, the most sincere motives, and one regards with admiration such meticulous thoroughness.

TREE-FARMS AND THE "LITTLE MAN"

Certified tree-farms, by latest report, total less than 47,000 acres, a minute proportion of British Columbia's 89 million acres of productive forest land. I understand the Government would like to see more tree-farms. There is a place here for the "little" man, the independent man who wants to build a home and work in the woods, his own woods if possible.

Title to the forests has been in the Crown since William the Conqueror first stole them in England 900 years ago; so it was in this country when the white man took over. But the Crown has been disposing of them to the people ever since. Here in British Columbia, seven years ago, for the first time in our history, the sale of forest land without merchantable timber on it was prohibited by the Legislature. There were reasons for this, of course. But now that we have a Tree-Farm Law, *how easy it would be to qualify this prohibition in favor of tree-farming*; and if the Legislature fears an improbable land rush which might endanger the Crown's near-monopoly of 81 million acres of productive forest land, it could limit the area sold to any one applicant. As the law stands, it is inconsistent with the policy of encouraging private enterprise in forestry and contrary to the recommendations of the forestry profession to the Sloan Commission in 1944.

THE LOGGER

It is well for us, as foresters, to talk about our obligations—to consider also those of business and those of government—but we have left out perhaps the most important man of all—the logger. Without axe and saw there can be no forestry, sustained yield of otherwise. He comes very prominently into the picture, both in policy and in operation; and he has a habit of making himself heard when he feels it necessary. Some, especially the so-called small logging outfits, have opposed management licences, yet they want to take no responsibility for sustained yield themselves, which is, of course, their privilege. A prominent speaker once supported them, saying that the forest should always be available for the boy of each succeeding generation to take his axe on his shoulder and carve his fortune from the woods.

That is, of course, just what we intend sustained yield management to do. See to it that there will always be a logging industry. Don't think that the "small" man is excluded. If the little logging outfit can log the forests of the future, as he does now and has in the past, most efficiently under many conditions, he will certainly find opportunities in these management licences and tree-farms as well as in the Public Working Circles, and competition, as in the past, for his services and of course between him and other similar outfits.

TWO PHILOSOPHIES

Some have expressed the opinion that the "small" man is not efficient and has no place as a forest land owner in the grand sustained-yield plans for this Province and for Canada. In considering policy affecting so vitally so vast a proportion of our land surface, is it just, is it possible, to decide on a basis of "efficiency" alone and ignore human considerations, pride of ownership and the development of individuality? May I try to paint two pictures?

Seventeen years ago I sat in a bus on the Moscow road out of Leningrad. We passed a succession of abandoned small holdings, evidently market gardens and little farms. The empty cottages were broken, doors and windows missing, pathetic bits of furniture smashed, standing in desolate, weedy fields. The Russian with me said this was the site of a new State farm which they hadn't got around to developing yet. And what happened to the families that used to live there? Oh, they didn't like the idea of leaving their homes and had to be taken away. I have no doubt that area is now a fine, modern, well-managed State farm.

The same year I stood on a low hill in Sweden with a Swedish forester. All around, as far as eye could reach, the countryside was covered with green pine and spruce, dotted here and there with small fields and bright houses. A railway went down a valley, and through a small village with a church and its Swedish bell-tower, and a sawmill. My friend told me that the woods we were looking at were small estate and farm forests, had been logged continuously for 200 years and still produced as much as ever.

There are the two philosophies; which is yours? Either will get you sustained yield, at a price, a different price.

The theme of this meeting is sustained yield forestry as a business, by private enterprise. The program itself indicates one basis for success, co-operation, during the conversion period and after.

I have tried to paint the background for you. It indicates, I believe, that we need, while we gradually bring the forests under sustained-yield management:

- (1) *binding laws to keep the forests green*
- (2) *education by examples of Crown forests under conversion*
- (3) *sustained yield in the forest and out of the lawbooks*

Whether you think of sustained yield as a theoretical concept of perfection, to be approached by gradual steps, or as a technical term for "keeping Canada green", it is still ahead of us. Here in British Columbia we are fortunate; our forest inventory is high and our trees grow fast. The "sustained yield" of keeping the land stocked, of periodic cuts gradually approaching the theoretical capacity and supporting industries without having to trim them too closely to that capacity, *is well within the reach of this generation*. At present our chief pre-occupation must be to prevent loss by fires and insects and provide prompt reforestation. But we must not be satisfied with that.

As time goes on and demands on the forest increase, we shall look more and more closely at the former concept as we approach it, the normal forest, always the forester's inspiration and guide, as the stars by which a mariner directs his course, never expecting to reach them, but using them to guide him to a series of satisfactory ports of call for profitable business on the way.

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