EVERYTHING BUT THE SQUEAL

By P. M. MORLEY¹

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ABSTRACT

Foresters are now in a better position than at any time in the past to get the maximum use out of our forest resources. Since World War II, the forest industries in Canada have tended more and more towards multiple product operations. The problem of transportation is being solved either by more primary processing in the woods, by better use of "residues" at the mill, or by the formation of mill aggregates. In the future, we may look for more attention being paid towards the better utilization of logging residue.

One of the favourite criticisms that one forester likes to hurl at his fellows (when he has the chance, as I now have, to talk at you and not to you) is that foresters are inarticulate, poor publicists, and generally don't know enough to get out of the woods, and beat the drum about their profession. You must have heard this in the past, and since old habits die hard, will probably continue to hear it in the future. Actually, gentlemen, whatever may have been the case in former years, nothing could be more false at the present time. Foresters have raised the status of their profession in the post war years, and by so doing, have improved their own status so much (and here's the rub!) that they are no longer really foresters! Many foresters today now occupy executive and administrative positions, concerned not only with woodland operations but with manufacturing and sales as well. This should be a welcome change to those who have seen woodlands policy determined by a general manager whose background and training has often been entirely in the manufacturing end. The point I wish to make is that many men with forestry training now have the opportunity to practice an integration (within, of course, the limits imposed by economics) of the forest resources that they control, with the raw material that the mill or processing plant must obtain. This was not always so, as you know, and there are still many industries in Canada geared to a single product or to the extraction of a single species,

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neither of which permits good forest management. If we foresters can get the minimum amount of woodland to produce the maximum amount of quality wood product, which in turn can be utilized, with the minimum amount of waste residue, then, perhaps, we can hope to rival the claims of the hog processing yards, "We use everything but the squeal".

Such a program of development is at least partly under way within sections of the industry in Canada. As background, let us look at the period immediately following World War II, when the Ontario Government formed a Royal Commission, to inquire into the forests, and forest management of the Province, taking the name of its chairman, General Kennedy. The Kennedy report drew public attention to a situation which existed, already well known to foresters, wherein almost all the forest industries in the Province (as indeed was true of most of Canada at the time) were single product in nature, i.e. unrelated companies were carrying on sawmilling, pole extraction, pulpwood logging and so on. To add to a situation so wasteful of manpower, equipment, and resources, many companies were found to be milling logs that might better have been used at a pulp mill, while pulpwood companies were processing prime spruce logs which would have given high grade lumber. This practice was widespread. I personally recall an area that was logged over three times in four years, first by a company looking for top quality birch veneer logs, secondly by a contractor, who took out veneer and pine logs, thirdly by a sawmill operator who made a cut of hardwood sawlogs and pulpwood. What a waste of resource material! The residue of the trees felled for veneer logs was left to rot in the bush, and an adverse effect on the bush of three separate operations within the period resulted.

The Kennedy report recommended, as a solution to such wasteful practices, the formation of forest operating companies, which might service all the industries located in a particular major watershed. This recommendation was never implemented, probably because a dislocation of industry might be expected, and a seemingly too radical solution to our system of free enterprise might be involved. Be this as it may, most integration in the wood using industries has been brought about, either through economic necessity, or as a result of corporate consolidation. For example, Howard Smith Paper Mills, now one of the component companies in the Dominion Tar aggregate, has recently taken a much more aggressive approach towards utilization down to a 3" top. A visitor to their Mattawa limits will see sawlogs produced where possible, but the bulk of the production is in pulpwood of all species, which, after peeling and seasoning, goes to the mill at Merreton in Southern Ontario. However, since such integration is tied in with the problem of transportation of raw materials, I would like to enlarge on this theme.

The problem of transportation has always been important in Canada: in fact it is our greatest single problem. The result has been that many mills, either deliberately located close to their markets, at the expense of proximity to their raw material, or because of former poor forest practice, have found their present wood supply at a long distance from their mill. The water transportation routes, which were the only way to move wood from woods

to mill in the early days, are still the cheapest form of carrier, but to those industries lacking these facilities or having material which cannot be driven, owing to its nature, there are a number of alternatives.

One solution, of course, is to do as much of the primary processing as possible in the bush, thus eliminating transportation costs on residue. Thus, it is common practice for all poplar pulpwood to be sap-peeled and seasoned before shipment by rail or lake boat. Other companies such as Ontario Paper Company employ portable debarkers in the bush. Again Canada Creosoting, which formerly bought its raw poles in areas such as Algonquin Park, and debarked, and processed them at points such as Trenton and Delson, are now debarking at a central shipping point. This achieves the double purpose of a reduction in freight and also better preparation and supervision of the primary process. Another company, Canada Veneers, with a plant in the Pembroke area, has established a veneer mill and dryer 250 miles away in Western Quebec. This veneer mill saves on the transportation of bark, buttings, defects and log cores, which might amount to 50% of the original log, not to mention the reduction in moisture content. A third company at Dubreuville in the Algoma District has established a settlement with a sawmill central to its cutting area. Logs are cut, skidded and trucked tree length to the mill. The heavy even aged jack pine stands render such an operation quite feasible. Here the slasher, located at the sawmill permits much better control of log making than can be obtained in the bush. A further field, which is presently under investigation by the Pulp and Paper Research Institute of Canada, is the chipping of pulpwood in the bush and the passage of such chips, in suspension, through a pipe line to the mill. Such a method is one answer to the amount of dead mileage presently travelled by trucks and other carriers on the haul.

Another approach is to utilize material, formerly considered waste at the mill, and make it a saleable product. The biggest development here, in the last ten years, all over the country, is of course the production of chips from sawmill waste. There should be no sight better calculated to gladden the eye of a forester, than to see the old wood burners, which formerly ran hot, night and day, during the sawing season, now standing black and cold against the sky. As one who has worked with both the pulp and paper and lumber industry, I can think of no happier marriage: the pulp mill formerly depending on the vagaries of wood delivery, particularly in the purchase field, now assured of a steady source of supply; the sawmill provided with a steady market to bolster sagging lumber sales.

Chips are one answer to a sawmill's problems but should be viewed in their proper perspective. If chips bore their proportionate cost of the raw material, no sawmill would find it advantageous to produce them. Even the best price I have heard quoted f.o.b. mill for chips is a long way from the going price of the lowest grade of lumber. Thus, at my company's sawmill, we make chips only after we have obtained all we can in the regular pine grades down to a 6' board, and picked off from the slasher conveyor any material that will make 1" x 1" pickets down to 16" long, finally then making chips out of the residue. Sawdust disposal is also no problem, since we use our saw-

dust for fuel to generate steam to run the mill. We are also currently working on a study of making a bark compost with chemical additives, which we are told might serve as both soil conditioner and a fertilizer. If this is accomplished, then our mill will be fairly close to "everything but the squeal".

We might consider this problem of bark disposal for a moment. Bark in its normal wet uncompressed form in which it leaves the debarker, is hard to utilize even as fuel. (The claim is made that it takes as many BTU's to bring bark down to the point at which it can be burned, as bark itself provides on burning.) However, Thurso Pulp and Paper Company found that by installing a Fibre-making Process chain bark press which dewatered the bark down to about 55% bone dry, fuel costs were reduced some 15%, thus solving the disposal problem. Another line of development, by the Ontario Research Foundation, has shown that spruce bark extracted can become a useful source of tanning material, one ton of bark giving about 500 lbs. of extract. Other use possibilities are a conditioner for oil well drilling muds and a source of phenols.

The costs of transportation can be greatly reduced by what we might call "a mill aggregate". By this I mean a grouping of pulp mill, veneer mill, sawmill and mills making auxiliary products. The mills should be well located to make use both of the local supply and also to turn the residues of one mill into the supply of another. I believe this is the rule rather than the exception in Scandinavia and is becoming increasingly common on our West Coast. In Eastern Canada, the best example is Canadian International Paper's aggregate of mills at Gatineau, Quebec. Here there are mills producing newsprint, dissolving pulp, insulating board, hardboard, hardwood plywood and alcohol. The newsprint and dissolving pulp mills are furnished with spruce and jack pine from the Gatineau River drive. Pine and the larger spruce and jack pine logs are towed down the Ottawa to the Company's sawmill at Calumet, returning to Gatineau with a pulpwood tow taken from the Rouge River. The two board mills use poplar and denser hardwoods as well as the residue from the plywood mill, while the plywood mill gets its veneer logs from Company limits and local sources and the alcohol plant is partly supplied by the waste liquor from the sulphite mill. Bark and hogged veneer waste from these mills provide fuel for the steam plant. It is interesting to note here how improved techniques can alter the wood furnished to a mill. The insulating board mill at Gatineau was originally built to make use of mill screenings from the news mill. As refinements in screening took place, the size of screenings available dropped, while at the same time the demand for a stronger insulating board increased. As a substitute, jack pine, then an undesired species, and later poplar was used. Similarly, the alcohol plant was originally designed to be furnished 100% from the sugars in the waste liquor. Later, due to mill conversion from a calcium to an ammonia based sulphite, a greatly decreased sugar content in the liquor necessitated the purchase of molasses to supplement the original waste liquor furnish.

Another form of mill aggregate is the George Burchell and Sons' mill at South Nelson, N.B. This is a good example of how one species, Spruce, can be upgraded for end use. Beginning with a sawmill for Spruce lumber,

the Company was one of the pioneers in chip production from sawmill waste. It later went into prefabricating house components and just recently has established a spruce plywood mill, the first of its kind in Canada east of the Rockies.

What of the future? I believe the technical departments of our mills, with perhaps a nudge or two from our forester executive, will find ways to make use of all the species in our forest resource. I believe, also, that it will not be too long before methods will be devised to make use of the very high amount of "logging residue" from both residual trees, left because they are defective, and also from material not presently recovered from the tree. In this connection, reference might be made to a survey, conducted by the Forest Products Laboratories of Canada, in 1958, into the Wood Residues in the Pembroke Forest District of Ontario. This area supports a number of wood using industries, sawmills, pole and veneer operations but has no pulp mill, within a radius of one hundred miles. Such an area provides a good example of the enormous potential for utilization that exists in what we might term "the low end of the forest". The area is about 5,200 square miles in extent and includes Algonquin Park and the land north of the Park to the Ottawa River between Mattawa and Renfrew. The Ottawa Valley has long been, and still is, famous for its production of white pine, but the second growth pine stands are now largely concentrated in the eastern side of the district, in the sand plains of the Ottawa Valley. The western side of the district, which during the early part of the century also supported red and white pine, is now predominantly a tolerant hardwood association, of maple, birch and hemlock. The actual survey showed the usage in f.b.m., the residue in cords. For my purpose I have converted both to cunits to give a better comparison.

	Amount Used 'Cunits'	Amount in Residue 'Cunits'	% In Residue
Softwoods	102,218	102,387	50.4
Hardwoods	102,274	119,929	53.9
Total	204,492	222,316	52

Of this total about 20% of the original volume was in actual logging residue, the other 32% would be from standing timber not removed because of defect or of an unused species. I think you will agree that both types of residue offer a challenge towards better utilization.

My remarks have attempted to make an appraisal of some of the problems and possibilities of integration in the manufacturing field. In conclusion, I would like to quote from a submission made by Professor D. V. Love, given at the "Resources for Tomorrow" conference held in Ottawa.

"Canada contains 142 million acres of land, on which it is believed that intensive forestry, i.e. a high investment in labour and capital per unit area, can contribute to the national economy to a limited direct extent in returns

on investment and to a very considerable indirect extent through the encouragement of industrial expansion in the wood-using industries.

"At present, investments in the forest designed to improve the yield of the forest are largely limited to the construction of roads, the protection of the timber from fire and the measurement of the forest for purposes of planning. None of these operations contributes directly to the production of cheaper, better-quality wood for the expansion of industry. The trends of development in world demand for wood indicate that, as with certain Canadian foods, an abundant supply has little appeal for the potential buyer unless it can be provided at prices which he is prepared to pay. The development of Canada's forest resources must aim at the production of the best quality at the lowest cost. We may then sincerely hope that some of the savings resulting from wise use will foster lower prices and expanded utilization."