THE EFFECTS OF UTILIZATION DEVELOPMENTS AND TRENDS ON THE FOREST ¹

By J. E. LIERSCH ²

Great progress has been made in better utilization on the Coast of British Columbia during the last decade. The effect on our coastal forest is profound.

Developments during this period, however, have been and are still proceeding at such a rapid rate that we have not yet accumulated any precise data.

My observations, therefore, are of a general nature.

Buoyant economic conditions and the pressure of high costs have been the prime movers towards better utilization. These conditions have encouraged us to take more of the bad with the good from the forest and to increase greatly the volume and value of end products per unit of wood harvested.

The effects of this higher utilization on the forest have all been beneficial. The benefits fall into three major categories:

1. Increased recovery of usable material per acre.
2. Better regeneration.
3. Reduced fire hazard.

The increased demand and prices for lumber products have allowed mills to use smaller logs. This in turn has led to widespread use of swede gangs, with consequent great reduction in wastage due to saw kerf.

Soaring demand for plywood has enabled us to obtain maximum value for clear, old-growth Douglas fir.

As you may know, our lumber market has been based traditionally on Douglas fir, and the demands of war and immediate postwar markets have led to excessive pressures on this species.

Keen demand, however, has also enabled us to merchandise lumber from our western hemlock successfully. Since we have three times as much hemlock as fir, it is obvious that this trend has brought our harvest more in line with our resources.

Laminating and gluing has extended the use of wood for structural timbers from clear stock on the one hand, and increased the use of small pieces for box ends, furniture stock and similar products on the other.

The tremendous demand for pulp and paper, however, has been the most important factor in improved utilization. This improvement has taken two directions:

- (1) the use of sawmill residue, and
- (2) greater recovery of salvage from the forest floor.

To give an example of the magnitude of what has been accomplished: Last year chemical pulp manufactured on the Coast from sawmill residue, salvage logs and small wood was valued at \$40,000,000. This was almost

¹ A paper presented at the 48th Annual Meeting of the Canadian Institute of Forestry, held at Chicoutimi, Quebec, October 2 - 5, 1956.

² Vice-President, Powell River Company Limited, Vancouver, B.C.

twenty per cent of the market value of our pulp and paper production in 1955. At present thirty-eight per cent of all wood consumed in pulp mills is derived from sawmill residue and forest salvage.

Seven years ago there were virtually no facilities for the manufacture or utilization of this material. Canada's first whole log hydraulic barker and chipper was installed on the Coast in 1946. This was an event of tremendous importance. Now virtually every large modern sawmill has similar barking equipment, along with chippers. Slabs and edgings formerly fed into waste burners are now going to pulp mills. The waste burners are rapidly becoming relics of the past. The percentage of this residue wood to total wood consumed in pulp mills has risen from 1.8% in 1947 to 26.3% in 1954.

Of greater significance in a forestry sense, however, is the increased recovery from the forest floor. This has only become possible through increased value of wood. As most of you here no doubt know, the size of our timber and the rugged nature of coastal terrain has required special techniques and very large and expensive equipment capable of moving heavy loads.

Salvage logging required new techniques and equipment and development of new mill machines and processes. Fortunately we had full co-operation from the government in our early experiments, in addition to recognition of the cost factors involved.

Where salvage is practical, we are able to obtain six to eight thousand board feet per acre of material formerly wasted and our use of this material is increasing yearly.

We have no comprehensive data on the effects on the forest of this greater recovery of slash, but we have made certain observations. In the past, slash was always our most critical fire problem. We found a high proportion of our fires started in slash and the fire pattern followed areas of slash accumulation near our cold decking, loading and high lead areas. For many years controversy raged as to whether or not this slash should be burned to eliminate this hazard, because in many cases, when burned, it destroyed humus and retarded regeneration. Removal of a higher proportion of this material has done much to solve this vexing problem. Clearing the ground has allowed the Forest Service to modify regulations requiring broadcast burning of slash. In many cases burning of slash is now required only to clean up debris around landings.

Where slash was left to decay, it impeded natural regeneration by covering the ground. One study of areas logged from 1935 to 1940 showed, for example, that during the first seven years following the logging of a predominantly hemlock area, undecomposed slash occupied one-quarter of the ground area. This delay in regeneration: (a) tends to produce stands of uneven age in which the seedlings established early develop into rough, limby trees which tend to suppress the later arrivals, causing a poorly formed stand at the end of the first rotation; and (b) adds years to the cutting cycle. During these wasted years while one-quarter of the ground is lying idle interest and carrying charges must be borne. The net result is higher cost per unit of second crop.

We prepared graphs on this study. The most significant feature shown by these graphs is the relationship of slash to the regeneration period. For at

least seven years after logging, the slash and logging debris covering almost one-quarter of the ground area totally excluded coniferous reproduction. After seven years, the slash started to decay and seedlings gradually established themselves in the decaying material. By the time twelve years has elapsed, slash has almost ceased to be a factor preventing regeneration. During the period a second crop is being established in heavy slash areas, the fire hazard, of course, is very greatly increased due to the presence of undecayed material on the forest floor.

To summarize, then: in a hemlock forest, we find that recovery of salvage material from the forest floor speeds up regeneration and results in a higher quality, even-aged stand. The critical fire hazard created by slash among young growth is greatly reduced, or alternatively, we avoid the need of broadcast burning, which is so harmful to soil fertility.

Hardwoods have been a forestry problem which we are just beginning to tackle. Some of our best sites were logged in early days and grew up to alder and other hardwoods, which have in the past been regarded strictly as weed species, occupying potential coniferous sites and preventing regeneration. We are faced with the problem of either cutting down and destroying these alder stands to make room for fir plantings, which is prohibitively expensive as a business venture, or developing alder as a lumber or pulp species.

Studies have been initiated into utilization of alder either for lumber or pulp, and the results appear encouraging. Debarking is a problem, for example,

and experiments indicate chemical debarking of standing trees is practical. Research is further advanced in the Pacific Northwest States than in B.C., but we stand to benefit from this work.

Lumber grades are being established for alder and maple, and alder is being used in one plant as a pulp species. An important question is whether alder or cottonwood, with its fast growth, might not ultimately be a more economic species to grow on certain sites than the traditional coniferous species. In any event, utilization of hardwoods would mean bringing back into use hundreds of thousands of acres of highly productive land on the Coast.

A general economic effect of the postwar period has been a tremendous move toward integration. Lumber companies have expanded into plywood and pulp and paper. Pulp and paper companies, in turn, have entered the lumber and plywood field. This has all meant very large accumulations of capital in large scale industrial enterprises.

Modern corporations of this type look forward to continuing in business indefinitely into the future, in contrast to smaller, family-owned enterprises, which formed a large proportion of our industry in years past.

The future of these large corporations demands a continuing supply of wood. Forest farming, therefore, has become a matter vital to their continued existence. The result is a continually greater interest in good forest practice and expanded research into silviculture and protection.

SUMMARY

High prices and demand have brought rapid advances in utilization and better forest practice. All indications point to increasing demands on our forests in the future.

It must be borne in mind, however, that our industry is overwhelmingly dependent on export in competition with other wood producing countries who are equally alert to the potentialities of the future. In the final analysis, our ability to maintain a position in this highly competitive world market will be the governing factor in determining how intensive our utilization or forestry practices will become in the years ahead.