

NOTES ON FORESTRY OVERSEAS

by D.W.R. Stewart

- A. CANADA, with a land area greater than that of Australia is the one country in the British Commonwealth with forest resources greatly in excess of its needs. It therefore has a substantial export of both paper and timber, mostly to the U.S.A. Its area of productive forest is about 5/6ths the area of Western Australia.

The well forested province of British Columbia in the west is more than half the size of W.A., and as one third of it carries productive forest, its forest area is about eighteen times that of W.A. Along the west coast it includes Vancouver Island, which alone has nearly three times the forest area of W.A. It is of interest that 50% of the national income of British Columbia comes from forest products.

On Vancouver Island, the writer had the opportunity of seeing something of the logging and forestry operations of a Company whose activities were the mainstay of a town of more than 20,000 people, producing saw timber, pulp and paper. It was one of many such operations on the Island. The annual log intake was approximately 60% greater in volume than that of the combined intake for all sawmills in Western Australia. About half the intake provided saw timber and the balance, pulp and paper. The raw material came both from private land owned by the Company, and State Forest on which cutting rights were held under a "tree farm" licence.

The "tree farm" licence system enables a Company owning extensive forest areas to obtain rights to Crown timber on adjoining land with a view to the provision of raw material for a long period of years under systematic planning. It first requires that the Company puts its own land under sound management with working plans approved by the Forest Service and subsequently supervised by it, to ensure that conditions are observed and all cut-over forest is adequately regenerated. The Company is responsible for all fire control in both the State and private areas concerned and for their effective regeneration after logging.

RAINFALL ranges from 35" on some of the drier East coast sites to more than 100" in some west coast localities. Elevations range from sea level to 5,000 feet with a number of peaks above 5,000 feet.

The commercial species are mainly Douglas fir and Western Hemlock, with some Western Red Cedar and small occurrences of Spruce and Silver Fir.

The Douglas Fir occurs on the lower rainfall areas and Southern aspects, while Hemlock has a definite preference for the wetter sites towards the Western coast and the Northern and Western aspects.

OPERATIONS.

The bush camp from which operations were controlled and directed, was some 30 miles from the town. Of some 600 men employed there, 400 lived at the

camp, either as married men in suitable houses or single men in bunk houses with a communal mess. Some 200 men travelled daily from the township.

The terrain was rugged and mountainous, and had all been logged many decades ago by locomotives operating up the valleys, but a great deal of timber on the upper slopes (say above 2,000 feet) had been left, as well as some of the more difficult patches at lower levels. All logging was down to a long inlet which penetrated deeply from the West coast, and the logs were then floated in rafts to the processing plant. The present operation is all road logging with an intensive system of roads involving heavy side cutting, so located that the maximum snigging distance does not exceed some 15 chains to any selected yarding site. The high lead logging system is used, but it is no longer the practice to rig selected spar trees. A locally developed unit, the "Tyee logger" carries its own demountable steel spar, some 70 to 80 feet long which, with diesel engine and winches is mounted on a heavy tank chassis. This permits a wider and more flexible selection of yarding sites and rapid movement and setting up on new sites. The old whistle cord for signalling the winch operator is now a thing of the past, and the "choker-setter" signals the winch operator with a small portable transistor radio which gives a loud series of squeals in the driver's cab to a pre-determined code. This is readily heard above the noise of the machinery.

The Company cuts over some 24,000 acres per year on a clear felling basis. The average virgin stand yields some 240 loads per acre, while good quality virgin forest may yield up to 400 loads per acre. However, with many of the areas being re-logged, and areas of inferior forest, the overall average yield would be about 70 loads per acre.

Road construction costs are high, ranging from \$A22,000 to \$A27,000 per mile. Some 15 miles of road through the bush camp to the water-front are sealed with bitumen and the log road system feeds into this bitumen section. Approximately 30 miles of road per year are constructed by the engineering branch.

From the bush camp, the Company has some 30 odd log trucks operating continuously, plus 6 trucks run by contractors. These deliver some 3,330 loads per day to the holding pond in the inlet from which the logs are taken some distance to a sorting yard where they are sorted into species and classes of log before being made up in rafts to proceed up the inlet to the processing plant.

REGENERATION.

It is surprising to learn that despite the great difference in climate, topography, species, etc., the problems of regenerating the forest to the desired species have much in common with our own problems in the Karri forest. Abundant regeneration follows good seed years, but the forester is plagued by uncertain and widely spaced seed years, fire control problems, the need for a satisfactory seed bed, and the intense competition of weed species if early regeneration is not achieved. It is also surprising to find that about 60% of the area is re-stocked by artificial planting of the desired species raised in nurseries as two year and three year old stock. Slash burning is essential in advance of planting so that at least 60% of the cut-over area must have the slash burnt under careful control. Weather conditions limit safe and effective burning to relatively few days in the autumn after rains following dry sunny weather. Natural regeneration where successful also has its problems. It is usually greatly over-stocked, and at 8 to 15 years of age it is spaced out by hand to some 500 per acre at a cost of \$A15 to

\$A16 per acre. Where hand planting is effected, planters set about 800 plants per man day, at a spacing of 10 feet by 10 feet. It is of interest that penalties are provided where the Company fails to carry out the slash removal burns. It is something of the order of \$10 per acre for the first year, but if carried out during the second year, there is a partial remission of this, while if not done until the third year, there is an even smaller remission of the penalty moneys.

The controlled burning of slash under prescribed conditions was seen in October (cf. April here). Under the forest canopy the litter was too damp to burn. From a fireline cleared outside the standing forest, it was burnt downhill, making slow progress for several chains only. It would then be lit up next day from the next lowest road on the contour to burn uphill to the previous day's burn.

Usually it is two to three years after felling before planting is carried out. Weed control measures both by aerial spraying and ground spraying may be necessary, particularly for alder which readily takes possession of the site. Up to 6,000 acres per year may be so treated, of which perhaps 2,000 would be by helicopter and 4,000 by ground spraying. Following regeneration, unwanted seed trees may be felled or given a basal treatment with 2-4-D or 2-4-5-T. Where alder has taken possession in some of the earlier cuttings, its removal is deemed too costly and it is left in the hope that it can be used in the future, presumably as a pulping timber.

CONTROL

All the forest work is under the control of a considerable forestry staff, and the Company probably employs far more professional foresters than does the W.A. Government. Many are locally trained, while others are overseas graduates. The divisional forester of the Company is in close liaison with Officers of the British Columbia Forest Service whose duties are to ensure that the terms and conditions of the working plan and "tree farm agreement" are observed, that cut-over forest is adequately re-stocked, and that fire protection measures are to the required standard. For land outside the tree farm licence areas, there is a general forest protection tax of 6 cents per acre.

COSTS.

A few costs will be of interest. Wages and salary rates are high by Australian standards. Fallers, for example, would average some \$A44 per day, while the best fallers could make up to \$A60 per day. The lower paid worker in the bush area earns some \$17 per day, while men operating machines, hauling and loading logs would get from \$20-\$21 per day. It must be remembered that severe winter conditions may close down logging operations for two or three months of the year, so that actual earnings for 9 or 10 months must keep a timber worker for the full year, unless he can obtain other employment during the "shut down".

The cost of logs delivered at the plant is from \$A15 to \$A18 per load.

Felling rates average about A21 to A22 cents per load.

Royalty and stumpage figures were not made available but it was mentioned that companies holding and operating on 'Timber leases' paid three charges, namely an annual rental per square mile, a royalty of a small sum per 1000 board feet removed, and a stumpage. Stumpage appraisal was based on market price of the product at key markets, or at ports and was worked out in considerable detail for each company and

and area. The stumpage was by far the largest of the three charges levied, and would be comparable to our 'royalty' as the calculated value of the standing tree to the sawmiller.

EXPORTS.

The Company loads direct from the plant to its own ships, and despatches its produce world-wide. Much of it goes to the East of the U.S.A. via the Panama Canal, while lesser quantities go as far afield as the United Kingdom, Japan and Australia.

The forests of British Columbia have been a tremendous source of wealth and employment since the early days of settlement more than 100 years ago. As in Australia, early exploitation was accompanied by and followed by much waste and forest degradation. It was claimed that some 20 million acres of forest now remain unstocked as a result of exploitation, fire and neglect. It is only in recent decades that positive steps have been taken on a large scale for preservation and sound management of this immensely valuable forest estate.