Conference field trips highlighted the diversity of forestry and farm forestry in the Westland Region. The use of the wet impoverished pakihi sites were a feature of one day. However, we also saw other farm foresters growing shelterbelts and woodlots on more fertile sites. Both site types included a range of tree species. A visit to Wanganui Forest to see helicopter logging and a portable sawmill in operation in podocarp forest was a major highlight. Geoffrey Chavasse gave an excellent after-dinner talk about his time in Westland and this tied in nicely to an indigenous theme. On the last day beech silviculture was covered.

An excellent conference with a lot of fun times and interaction between people.

Next year's conference will be in the Bay of Plenty.

Don Mead

Site preparation of pakihi by V-blading at the West Coast Farm Forestry Conference. Photo: A. Bowker

LETTERS

Influence of site and discount rate on silviculture

Sir,

I am not sure what the Timberlands' regime is referred to by Geoff Fischer, but infer its main characteristics from the data he gives at age five. The age does not help much. It was, and is, better to use top height; I had assumed this was routine.

Quality of Upper Logs

I suppose the regime is a variant of what Dennis Richardson calls the direct sawlog regime. If this is so then, as long as the trunk holds together, the criterion for selection of the final crop is visible at top height of 10 to 12 metres. The criterion was, and is, as uninodal a length as possible above the pruned log. The objective of these wide-spaced, short rotation regimes is brutally simple and I had hoped would be apparent by now. It is clearwood and clear-cuttings, with some returns from animals, etc in the earliest years. The first result from pruning, assuming growth continues, is a clear-cuttings board, the lengths between defects increasing as the outside of the trunk is approached. The longest fully-clear boards will tend to be narrower. The first silvicultural work the Strategic Studies Group at the old FRI did was the cost of finger-jointing, and the clear-cutting lengths were measured in the

repeated grade studies. No doubt current research has refined these data.

Higher Stockings

With the drop-off in mortality, it is feasible to hold higher stockings than those proposed (as an interim measure in any case, it was apparent the mensuration base in 1968 was not at all comprehensive) 25 years ago. About four years ago I wrote a letter to The New Zealand Farmer proposing higher stocking with uninodal trees. It should now be possible to ease the restraint of the low early stocking a bit, if the log above the pruned one is UNINODAL. I hope the genetics people have this straight?

Effects of Interest Rate

This again seems to have been misunderstood. I have shown the effect of various interest rates on project ranking in the last of the 10 profitability papers (NZ Journal of Forestry Science 2(3) p 382). If regime B, say, is ahead at a 10 per cent discount rate, it is very likely to be ahead at three per cent. This is because of the characteristic expenditure and return flow in afforestation. I had sent a similar note on this to the Australian Journal some years ago.

Sigmoid Curve

The sigmoid curve for discount rates is an interesting idea and may well be true for all I know. I admit to being a sceptical economist a lot of the time as, whether the change in rates is sigmoidal or not, it is certain that interest rates change, and further, there is no objective way of choosing a rate. There is a Nobel Prize waiting for the solution of this topic. In the meantime, I took pragmatic refuge in the solu-

tion given in the paragraph above. I once surprised Treasury by protesting the interest rates they proposed were too low. This initially cheered them as unusual in forestry. But at high enough rates all that is necessary is a modest subsidy at that moment, and everything is covered by the ensuing interest. This is the only fun I have ever got out of that particular problem.

Commercial Thinning

Even if low interest rates apply, the "commercial thinning" remains self-contradictory. As soon as you make money by thinning, you can make a lot more by clearfelling. The crop acquires an additional opportunity cost that soon reduces the rotation. Surely by now the Zero interest doctrinaires can joint the Flat-earth Society?

R. Fenton

Forest valuation

Sir,

Investment in forest is becoming more popular and will become even more so as people look for places to invest their superannuation funds. For this to happen, and for it to reach its full potential, professional foresters must demonstrate their ability to account for the value of their forests.

In the past, accountants have placed the true value of forests in the too hard basket, and while quite prepared to go to extraordinary lengths to account for contents of sheds and cupboards etc, have shied away from treating forests in the same way. Today with computers and sophisticated forest models there are ade-

quate means to properly account for the everchanging value of standing forest.

There exists regional growth models of *Pinus radiata* forest for most areas of New Zealand. By selecting the appropriate model, checking and modifying it to suit the particular forest, the current value of a forest can be calculated.

To do this good records must be kept on an annual basis of the volume, type and value of all produce removed, together with percentage assessments of the various age classes in the forest. These figures must be used to check and, if necessary, modify the computer model being used, remembering always that it is the forest that is right, not the model.

In the past, great emphasis has been placed on how early a forest can be liquidated. I believe that this has been so that financiers can get the cash in their hands and decide where it should be invested next time round. If we look back to the '80s we will see that much of it would have vanished into high-flying companies no longer listed on the stock exchange. Forests deserve more consideration as to when they should be cut to give the maximum return to those who invested in them, which should particularly be the case when the investment is for superannuation purposes.

Let us take an example using the generalised yield table and assumed product values as shown in table 1.

A forest at age 25 shows a value of $89,615. If this is harvested and re-established, and allowing for the year lost in between crops, the second crop at age 20 has a value of $66,355. Had the first crop been allowed to grow on to age 46 it would be worth $199,840, a gain of $43,870 over the two crops and without the cost of re-establishment. Similarly a 36-year-old crop is worth $155,825 com-

pared with the 25-year-old and a 10-year-old growing crop at $89,615 + $20,610 = $110,225 again without the cost of establishment. So there is a gain of $45,600 by carrying the crop on to age 36.

The challenge to all foresters and to consultants in particular is to have accepted that they can establish forest values in this manner and that they can account for the changes that take place each year. This will include:
• Annual volume growth
• Change in log type volumes
• Changes in areas by age classes
• Volume harvested by log types and age classes
  – actual compared to tables
• Volume losses through other causes e.g. fire, windblown etc
• Changes in market prices by log types.
  Using these factors, they must show to the owners how the value changes have come about from one year's statement to the next. There must be no mumbo-jumbo but a clear statement of pluses and minuses taking last year's figures to the next year's statement.

Such an accounting shows clearly the changes in value that take place and the interaction of each of the following factors:
• growth in volume
• change in products
• reduction through harvesting
• loss from other causes
• change in market value of the various types of product on stump for that particular forest.

The investors are entitled to such an annual accounting. The industry for its own protection should account in this way to counteract "fly by night" promoters and to establish a track record of the performance of the forest manager. It will also enable the investor to compare the actual results with that forecast by the forest manager.

All this must be checked by a reputable forest consultant. The reputation of forestry as a sound investment will depend on how well the forest manager and the consultant do this job. The investors are entitled to such an accounting from the industry.

J.E. Henry

Response to
M.D. Wilcox commentary:
'Priorities for research on alternative wood species ... '

Sir,

There were disturbing implications in this paper. There are three possibilities that have been overlooked, and two prospects that need further justification than given in the paper.

1. *Cryptomeria japonica* (sugi) and *Chamaecyparis obtusa* (hinoki)

These are the two main Japanese plantation softwoods. I have designed silvicultural schedules for sugi to keep maximum stocking to produce a 10.5 or 12.5 cm square timber from two short logs. That is, one or two pieces per tree. So instead of pushing diameter growth to the limit, the idea, under New Zealand's growth conditions, would be to restrict it severely. The silviculture is almost exactly the opposite of the radiata clearwood regimes, but the rotations are about the same. The work is in a rough stage, and needs further input if anyone wishes to provide help. There is less data on hinoki, but reasonable leads on Lawson's cypress which would be an acceptable substitute. Again, the principle is to keep stands dense to suppress branch sizes; it may be possible to grow the hinoki-style crops from topped (and pollarded?) trees; there are examples in the shelterbelts around the Central North Island. Clearly, the work would benefit from sawing studies of appropriate material. The spacing of shelterbelts around kiwifruit orchards gives some ranges for trials. It would be easy to establish pruning trials. Pruning would be designed for Japanese preferences to provide a clear face on one to three surfaces of the square. I would anticipate the usual chorus to these proposals.

This is an application of **plantation concepts, growing designer crops for a specific market.** The Japanese market would be the main target, but the Imperial era led to considerable plantations of sugi in Taiwan; and to a lesser extent in South

TABLE 1 •

Sales Value on stump –

Pruned logs	$425 per cubic metre
Unpruned logs A	$220 per cubic metre
Unpruned logs B	$190 per cubic metre
Unpruned logs C	$160 per cubic metre
Pulpwood	$80 per cubic metre

Yields per hectare

Age	Total Recov. Volume m l.b/ha	Pruned	Log Types Unpruned A	Unpruned B	Unpruned C	Pulp	Value $/ha
10	108	18	11	10	38	32	20610
15	211	34	21	19	74	63	39560
20	353	57	36	31	124	106	66355
25	480	77	48	43	167	143	89615
30	611	109	86	88	165	164	121485
31	636	115	93	100	166	163	127935
35	727	133	121	148	165	159	150385
36	748	137	128	160	166	156	155825
40	825	151	159	208	159	149	176035
41	842	154	164	220	160	146	180610
45	905	169	181	258	157	140	196985
46	916	172	183	264	157	140	199840