SOME IMPRESSIONS OF AUSTRALIAN FORESTRY.

By F. E. HUTCHINSON.

In response to the Editor's request for some impressions of Australian forestry, I have attempted to set down certain personal impressions and experiences which I hope will be of some interest. I trust, however, that no one will expect a serious dissertation on any phase of Australian forestry. That, if desired, may be much better obtained by approaching one of the many keen and able young foresters who are so earnestly dealing with the concrete problems of forestry in the six States of this Commonwealth. My aim is to give diversion not discourse. In fact when it comes to topics such as snakes I won't even guarantee perfect truthfulness.

First impressions of the forest were obtained close at hand, in a trip through the hill country to the east of Melbourne. This is the mountain ash country, where *Eucalyptus regnans* and *E. gigantea*, form a belt of commercial forest along the slopes of the main dividing range from the commencement of the range, close to Melbourne right through into Southern N.S.W. This belt of "ash" species is rather well defined, lying along the steep slopes of the range proper, from about 1,500 to 3,500 or 4,000 feet. It is the most important milling type in Victoria at the present time though this prominence is due mainly to the fact that rugged topography and unpenetrability have caused it to remain as the last of the forest areas to be exploited. It alone of the native forest types possesses extensive virgin stands, and the sawmilling industry has thus become concentrated in this belt in spite of the very unfavourable working conditions. Though the majority of the mills are well within a hundred mile radius of Melbourne, their transport difficulties are surprising with many handlings involved between stump and merchant's yard. A special feature of this district is the extensive use of "haulages," *i.e.*, inclines, or lowering winches used to surmount the broad sweeping slopes that rise steeply from the foothills to the series of flat topped ridges and broken plateaux of the upper levels.

Practically every operation has at least one lowering winch, many having several, both for bringing in the logs to the mill, and also for lowering the sawn timber from mill to valley floor beneath. A typical case illustrates the handling that may be necessary. From the bush landing to the mill, three miles away, the trucks are first hauled by horses along a gentle upgrade to the brow of a slope, down which they are dropped by a lowering winch. A second horse-drawn section then gives way to a second lowering winch which holds the truck on a long grade ending in the mill yard, the total drop in elevation from bush to mill being roughly 1,000 feet. The mill itself is perched on a shoulder of the hill well over 2,000 feet above sea level, and from this point the sawn timber, stacked on the usual bogie and wooden bunk trucks, is run down into the valley to connect with a

narrow gauge steel tramline operated by the Forestry Commission to serve a number of mills in the same area. By this means it is delivered to a siding on a narrow gauge branch line of the Victorian Railways, where the timber is restacked into the Railway trucks, to go twenty miles to the connection with the standard broad (5 ft. 3 in.) gauge line, where the timber must be transhipped again on to broad-gauge trucks for the 70 mile run to Melbourne.

One bush haulage seen rose 1,100 feet in 3,300. The empty trucks made the trip up in three minutes, while the down trip was done in one minute. Riding up, sitting on the bunk, facing backward, was rather a strain on the nerves, but coming down, standing on the end of the bunk, clinging to the smooth side of a mighty log, was exhilarating in the extreme.

In the bush, felling and snigging are done on lines familiar to New Zealanders. Although the mountain ash reach enormous total heights, between two and three hundred feet at their best, the usual milling length is from 50 to 80 feet with diameters ranging from 4 to 6 feet D.B.H. Snigging is done by steam winch, with ground snigging line and return line, in most cases, though a few instances of high lead and overhead operations may be found.

One case was seen where high leading was used for initial assembling, followed by an overhead (North Bend equipment) to cross a series of rocky gullies lying between the bush area and the head of the haulage.

The mills are generally of the one type, similar to that used in New Zealand, *i.e.* a breaking down bench, usually with twin circular saws, and a breastbench. A swinging docking saw, and a subsidiary picket bench for recutting dockings and offcuts into handle stock, lattice, palings, etc., complete the equipment. The breastbench is manned by four men—the sawyer being assisted at the front by a man who sets the gauge, handles the clutch governing the powered feed rolls, and pulls the front end of the flitch into place ; while two men tail out. With this crew a fast bench can put through 12,000 feet a day, though the usual output is about 8,000 feet. Some mills still have no power on the feed rolls other than that of the stopman, applied by a hand crane slipped on the end of the roll. After winding on the feed-in roll until the flitch is well into the saw, he slips the crane off and advances to the feeding-out roll, where he winds again until the flitch has emerged.

The material cut from the mountain ash is very largely flooring lining and weatherboard stock. This is all quarter-sawn, requiring in big logs a very detailed breaking down and sizing up. Once this is completed, however, double flitching is frequently practised when ripping off flooring and lining stock.

The central portion of practically every log is discarded as being "heart" (*i.e.* brittle core), the affected portion in large butts being often as great as 12 ins. by 12 ins. or even more. This is usually disposed of by breaking down all round, and then running the platform back

to a skid or chute leading to the "heart heap." All refuse is destroyed by burning, usually in open fires, and what with a bark fire on the log skids, a heart fire, docking fire and sawdust fire, many mills work constantly in a circle of flame and no matter what the direction of wind, an acrid smoke pursues one through the mill.

From Victoria to Tasmania was not a great change in environment. The grading work took us all along the northern coast from west to east. Conditions encountered were essentially the same as in Victoria—the species were ash eucalypts, being cut into the same classes of stock for the same mainland market. Logging conditions were easier, with much flat country, and use of horses, bullocks and caterpillar tractors.

Mills were much the same, though on a more permanent basis than in Victoria, usually in settlements of some size with harbour facilities, the logs being brought in by lorry, private tram or rail.

Minor species milled are blackwood and myrtle (*Nothofagus Cunninghamii*). This latter is a very handsome tree, closely resembling the Southland beech, but with larger, glossier leaves, and showing in the spring a striking contrast between the deep green of the old leaves the bright copper colour of the new shoots. Over extensive areas of high country in north-western Tasmania, myrtle is the dominant species, though it is not greatly milled at present. It finds a mainland market for shoe heels, and is used locally for flooring and construction, but it is held to be less mild than Southland beech, and does not compete with the latter in motor body and similar work.

Conclusion of the work in north-eastern Tasmania coincided with arrival of annual leave, which was spent in a motor tour of the eastern half of the island, giving an opportunity to see a little of the silvicultural work of the Tasmanian Forest Service. Christmas was spent at one of the camps for unemployed youths, a very snug little spot beside a clear mountain stream, the tents all with ferns or shrubs planted in front, lining the slab board walks, and the central area in front of the cookhouse coming up to new grass. These lads were engaged principally on "treatment" of advanced growth on old cutover lands. The area concerned was a 20,000 acre block of fairly rough country on which logging had gone on from two or three sides for perhaps forty years, and is now approaching exhaustion. No treatment or protection was afforded in early days, but much of the area contained young growth in various stages. Such portions were being taken in hand by thinning, underscrubbing, and ringbarking overstands of fire scarred and useless veterans, with the idea of accelerating the development of the young crop, and so shortening the gap before milling can begin again.

There is a great deal of such rehabilitation of devastated forests going on at present, not only in Tasmania, but also in most of the mainland States. It is in fact one of the chief activities in Australian forestry at the present time, and has been applied to many of the eucalypt types.

From Tasmania the scene shifts to the hoop pine* forests of northern New South Wales and south-eastern Queensland. Here, along the MacPherson Range, which forms the interstate boundary, conditions very like North Island scenes were encountered—mountain valleys with clear running creeks, fertile flats, green with grass or maize, cream cans by the roadside at every gate, open fords and creek crossing one to the mile, and steep hills, heavily bushed, rising abruptly on all sides. The bush greatly resembles that of North Auckland, too, from a distance. It is deep green in colour, not grey, with a full stand of broadleafed second and third tiers, out of which the hoop pine rise like the kauri, though more scattered in distribution, and running much smaller in diameter. The rough and broken country makes extraction difficult. Hand-logging is used at the start, the tree being felled and headed off, then stripped of its bark, sniped, and started with the jack, to go shooting end on down the hillside into the gully bed, where it will be picked up by a snigging line from a winch. The winches here were driven by car engines, connected by suitable gearing, as the difficulty of getting water on the upper levels puts the steam winch out of the question. Caterpillar tractor and wooden railed tram took the logs to the mill in the valley below.

Appropriately enough, the leading bushman here was from North Auckland, having worked in Tutamoe, and knowing Waipoua and Hau te Waki well. Actually, however, this operation is not typical of the hoop pine industry, but represents its most unfavourable conditions. Most of the hoop pine logging in Queensland is carried out on very easy country, and horses and bullocks do most of the snigging, with motor lorries doing the major part of the transport to mill or railway siding. The Queensland industry, which is much larger than that in New South Wales, is unique in that most of the sawing is done by city sawmills who buy their logs from the Forest Service for a set price delivered Brisbane or other key market towns. The Department then has the felling, snigging out and loading done by contract under its own supervision.

The Queensland policy is definitely concerned with the native species, and exotics play a very minor part in their activities. In the case of hoop pine, however, present technique is altogether centred round artificial regeneration in pure plantations on cleared ground. This has displaced the earlier efforts to secure and maintain natural regeneration in the natural forest, which proved slow and uncertain. After a decade of experiment a fairly standardised procedure is now in force. The forest is worked over intensively, removing everything of value down to hoop vines barely 10 inches in D.B.H. It is then gone through with slashers and axes and completely levelled. A good burn in the spring is followed immediately by the planting gang, who work among the stumps and logs, holding their lines as regularly as possible, using a grubber, and planting stock which comes from the nursery in a light brass tube about 6 inches long by 2 in diameter, so that the tree may be planted without disturbance of the root system.

*(*Araucaria Cunninghamii*).

These seedlings, although raised under shade in the nursery, go out into the full light and exposure of the Queensland climate without any ill effect. The rush of weeds which follows the fire is controlled by chipping and grubbing, four times in the first year, and then again a year later, after which the plantations are definitely established. Plantations established in this manner are now up to 10 years old, and show individual heights over 20 feet and diameters up to 4 inches. Pruning is now being experimented with, in the hope of holding the knotty core to 5 ins. diameter for 30 feet in height.

In the hoop pine districts one must learn a new language—not the ordinary Australian, in which most New Zealanders are themselves fairly proficient, but the technical speech. All through the South, the New Zealand idiom corresponds closely to the Australian, but in the North, one must be more careful. One no longer speaks of "bush." There is "forest," which means an open stand of scattered eucalypts, often of scrubby form, and there is "scrub," which means hoop pine and its associate broadleafed species, *i.e.*, heavy bush. There is also "brush," which is sometimes used synonymously with "scrub," but usually refers to a transition type between eucalypt and hoop pine, characterized by brush box (*Tristania conferta*). In the latter case, to be quite clear, prefix the obvious term of endearment to the word "brush." In the hoop pine type, also, the brawny fellers are no longer bushmen, but "scrubmen." Queensland technical literature is full of references to the "hoop pine rain forests" or the "hoop pine jungle." Such phrases are disconcerting at first to the New Zealander, whose rain forest begins at 50 inches, as most of the hoop pine forests receive considerably less than 40 inches per year, while even at their densest, as on the MacPherson Range, they are considerably lighter in undergrowth and third tier species than any of our podocarp types—about on a par with the Southland beech. In the North, of course, about Cairns, is a strip of real rain forest—100 to 140 inches, but that is outside my present experience.

In spite of its general resemblance to New Zealand bush, the hoop pine type has a few points about it that are not quite so nice. There are snakes, of course, quite as ubiquitous as earthquakes in New Zealand—in two years I have seen three live and three dead ones, in the bush and driving along country roads. One was a good six feet in length, but a lorry travelling just ahead of me had made an awful mess of it. But besides snakes, the gullies abound with leeches and the underbush with ticks, both capable of leaving nasty sores unless routine precautions are taken. Several types of nettle are found, including the stinging tree which goes up to 100 feet in height and 6 feet in diameter while thorny shrubs and vines lie in wait to ensnare the unwary.

From the hoop pine on the coastal watershed to the cypress pine* on the western downs is not really a great distance, but it takes one over the dividing range into the interior, with its low rainfall, and hot

*(*Callitris spp.*).

drying summer winds. Here, on extensive flats and old outwash plains of light sand is found the cypress pine, intermingled with tongues of ironbark and spotted gum on the hard sandstone ridges. The cypress pine, though small, and extremely knotty, provides the staple building timber of the inland, first because it is the only timber available, and second because of its great durability, and immunity from termite attack. So far, it has not moved greatly into the markets of the populous coastal districts, but with the diminution of supplies of hoop pine, cypress is coming to be regarded as an important future softwood. Natural regeneration is certain and abundant, given only fire protection, and the rate of growth while not rapid, is not excessively slow. Areas worked over in past times have already been shown to yield a very good second cutting after 25 years, so that foresters view the management of this type optimistically. Unique among Australian forest types, its increment is far above the present cutting, and an expanding market is the chief need. The forests are worked on a selection system by means of a girth limit—at present, 12 inches D.B.H., which yields trees running from 12 to 18 inches butt diameter by about 35 feet of used length to a 5 inch top, rather scatteringly distributed, but in a stand of almost perfect access—flat and almost entirely free of underbrush, so that the lorries may move in any direction. Mills are frequently temporary in character, and are very simple in their equipment. Water is the great problem in this dry country, and many mills are entirely dry, running the saws with tractors, and bringing all their water for the camp by lorry perhaps for over twenty miles. Two circular saws, on the same spindle, with a wooden platform for the first, and a breastbench for the second, together with the tractor or steam traction engine, may constitute the entire plant, while it may quite possibly be set down in the full open without the slightest protection. In other cases, a shade roof may be provided. With shade temperatures up to 108°, such luxuries are appreciated by visitors from the South at least, though the men seemed quite indifferent to the sun.

In these forests, which are extensive and relatively virgin in character, there is quite a large animal and bird life. Kangaroos and wallabies, as well as goannas and similar reptiles, were plentiful, while dingoes were evident, though not often actually seen. The emu is a distinct rarity, for this district has been covered by the prickly pear eradication campaign, which included the killing of 48,000 of these birds as one of the subsidiary measures. But the early morning rally of the kookaburras, the constant call of pigeons, flocks of white ibis wheeling over the waterholes and camping in a snowy mass on a large dead tree, cockatoos and parrots of wonderful colouring, the evening flight of thousands of flying foxes are all characteristic features giving interest and charm to the countryside, more than offsetting the heat, the flies, and the constant need to be sparing with the water.

But having filled the allotted space, I must bring this rambling to a close. I have not mentioned South Australia, for there are no

native forests there, and to discuss their excellent plantations, would, in a New Zealand forestry journal, be equivalent to talking shop, which I promised not to do. Nor have I mentioned Sydney, with its harbour, where I indulged my well known propensities for yachts, but that must await a more suitable time. The Editor, I know, has his limits. *Kia ora ra koutou katoa.*

AN EARLY FOREST RECONNAISSANCE.

[*We take the opportunity of reprinting an excerpt from a report of C. E. Douglas written in* 1892. *Charlie Douglas will be a familiar name to all West Coasters and to many others, as one of the few men in New Zealand who have deserved the title of explorer. For years this intrepid old-timer wandered through the then quite unknown back country of Westland, a bushman, prospector, surveyor and chronicler* par excellence. *These observations on "Timber Scrub" should appeal to the modern forester, less perhaps, for their botanical accuracy than for their matter-of-factness and humour.—Ed.*]

"Timber Scrub.—As far as marketable timber is concerned, the Gordon (Little Waitaha) is one of the best rivers in Westland. As for getting it to a market, that is a different question. All along the Mount Rangitoto road and on both sides of the river, is red pine forest, with splendid spars, straight and tall. There are the usual kamahas, meros, totaras, and on the slopes of Rangitoto, yellow pines, but red pine may be considered as the prevailing timber. Near the silver mine, there is a small patch of the true manuka, the only specimens of that tree I have seen in Westland. The tree people call manuka, here, is not manuka at all, but a scrub variety of it, and its name I believe, is 'kilmogue.' I am not sure either about the name or the spelling, but it is something near it. In parts of Otago manuka forms large forests of valuable timber, with spars seventy feet long and growing as close together as an American or Norway pine forest. There is also to be seen on the Rangitoto road, some fine specimens of the bush cabbage, native palm, Coeur-de-leon or whatever its name is. It is not a very common plant, but has a wide range, being found here and there all over the country. Like the light-wood bulla-bulla nettles, it appears to spring up mysteriously on recent slips and road cuttings, although in general, only a few feet high. It sometimes hits out and people living in this country have no idea of the height it can attain to. I once had a talk with Prof. Kirk, Government botanist, about this plant. He asked me what height I had seen them grow. I said I once cut one down on the Paringa and it measured forty feet in length and the leaves were fifteen. He looked cornerways at me and muttered something about Ananias, no doubt ; yet I really took twenty feet off the height, as I knew he wouldn't believe in sixty."