

PROTECTIVE BURNING

By J. L. HARRISON-SMITH

The days of scarce and not very efficient labour are still with us and nowhere is the effect felt more than on the maintenance side of exotic forest operations. Officers responsible for fire protection have had their share of difficulties and on the forests of the Whakatane Board Mills conditions have been no easier than elsewhere. On the Company's Matahina Plantation it has been necessary to evolve a system of fire protection which can be operated with very few men indeed: the result has been one which we are satisfied is the best possible under the circumstances. This brief description of the system is given in the hope that others may profit from our experience.

The Matahina Plantation is situated in the eastern Bay of Plenty just to the south-east of Mount Edgecumbe; it has a gross area of 22,000 acres, of which some 14,000 are planted in *Pinus radiata*, the rest still being in the original cover of scrub and fern. The soil is of a light pumice type, overlaid with about 6 inches of the recent Tarawera ash, a fairly fine black scoria. The topography is what optimistic land agents call rolling. The country is practically waterless with only one stream running through the southern part of the plantation.

The property is bordered on the north, south and part of the west by scrub country which stretches for miles; on the remainder of the western boundary there is indigenous forest and along the east flows the Rangitaiki River, for the most part in a deep gorge with fern and scrub on the banks. The bush is no great fire hazard but all the scrub country can become like tinder in a couple of days in the middle of summer. Every year in this no man's land there are scrub fires which must be kept out of the plantation. Possible fires within the boundaries of the forest are another problem and do not come within the scope of this note.

The present system evolved from the observations of a keen-eyed bulldozer driver who noticed that quite a narrow fire line would stop a scrub fire meeting it obliquely. He reasoned that, if fire-breaks could be arranged so that any approaching fire would be forced to meet one break obliquely, an effective firebreak system could be built up with much less expenditure of labour and machinery than necessary for the conventional single ploughed strip parallel with the edge of the trees. The system would be impracticable if one were confined to a narrow strip, but at Matahina there is no such restriction, for on much of the plantation the trees are well back from the legal boundary. The driver therefore had ample room in which to work and, taking a strip of land about a quarter of a mile wide, he proceeded to break it up into sections. For the most part only one or two cuts with a 12-foot bulldozer blade were made, the lines follow-

ing the ridges and gullies. They were so arranged that if a fire jumped the outside break it would meet one of the internal cuts obliquely and burn itself out at the apex of a section.

This was the system in use when the writer joined the staff, bringing with him vivid memories of the Taupo fires of early 1946. Having seen what could happen in really dangerous weather, when even the Waikato River was not an effective firebreak, he thought that the external firebreaks should be made still wider. But completely ploughing a strip even three chains wide was out of the question, for there was some 15 miles of boundary to deal with. Yet it seemed certain that sooner or later some careless hunter would set the no man's land alight in really dangerous weather. So, if a fire was inevitable, the obvious thing was to get in first and have it at a convenient time and in conditions of our own choosing.

With this in mind the process of sectioning the country was extended. As soon as the fern was dry enough in the spring, a burning-off program was begun. The object was to burn one section at a time, generally not more than five or ten acres. This proved very economical in labour: the usual crew was two labourers, the bulldozer driver with his machine and the man in charge. A ZC1 radio was always taken out in the truck and contact made with headquarters, while the State Forest Service fire control station was also kept informed of the location of the work. The presence of the radio gave a great feeling of security, for one knew that in the event of trouble, assistance would be speedily forthcoming. Far less country would have been covered in a given time if the radio had not been available.

As far as the actual burning was concerned, the usual practice was first to make an appreciation of the position, particularly as regards wind and topography. The bulldozer was then sent to a position commanding a good view of the section to be fired. While the driver was getting there, radio contact was established with headquarters and the State Forest Service station. Once or twice burning was started before the radio was operating: it was interesting to note that on each occasion the smoke was seen by one or more Forest Service lookouts within ten minutes of the fire being lit.

The position for lighting each section varied with prevailing weather conditions. If the fern was damp it was usual to light the bottom of a hill and let the fire sweep to the top; when it was dryer it was safer to light the section along the top of a ridge and let the fire burn down from the bulldozer cut; or there might be a combination of both methods, generally allowing the fire to burn down from the top some distance before the bottom was lit.

For lighting the usual torch used was a length of old rope sling from the logging operations. All the other conventional torches such as the kerosene-soaked piece of pumice on a wire and the length of pipe filled with kerosene were tried, and finally the flame thrower.

This latter, though without doubt very effective in fern that was at all reluctant to burn, was far too extravagant until converted to a kind of blowlamp by fitting a burner head somewhat like that of the Hauke Burner. As such it is by far the most effective torch yet used.

The burning was continued as long as conditions warranted; early in the spring it was possible to get in as much as two weeks continuous work if the rain held off, but as the summer advanced much shorter favourable periods occurred. In the hottest part of the summer it was usual to get in only two or three days burning after rain and then work would have to be suspended until the next fall. When burning was suspended the bulldozer driver continued making firebreaks and the few labourers were easily placed elsewhere.

The system is now in its second season and though as yet there has been no severe test of the protection afforded, we can at least watch any approaching scrub fire with some sense of security. It seems far better to proceed along the lines indicated than suddenly to have to rush men and equipment to deal with any neighbouring fire which may spring up in condition of extreme fire hazard. Once the burning off has been done we feel that we are fairly safe for three years. Any outside scrub fire which occurs during that time is in some measure looked on as beneficial—heretical view—for it means two or three more years of security in that locality.

TEAK GROWN IN WESTERN SAMOA

By H. R. ORMAN

Introduction.

During the 1939-45 War, the Forest Products Branch of the New Zealand State Forest Service, undertook, as part of its war programme, the investigation of various Pacific timbers in addition to its normal routine investigation of New Zealand ones. Such timbers as Fiji kauri (*Agathis vitiensis*), coco-nut (*Cocos nucifera*) and various tropical woods from the Solomon Islands area were examined and reported on. One of the timbers to be investigated in 1940 was teak (*Tectona grandis*) grown in Western Samoa, and it is considered that the possible appearance on the market of a limited supply of this wood from a source as close as Samoa will probably arouse some interest. Planting of teak has been carried out on other Pacific Islands including Fiji, but only in recent years, and some 20-30 years will have to elapse before timber is available from these sources.

A number of large plantations in Western Samoa are concerned principally with either coco-nuts (some of the largest planted areas