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FORESTS DEPARTMENT OF WESTERN AUSTRALIA

FOREST NOTES

NUMBER 3 MARCH - 1962

Contents

EDITORIAL NOTE:

It is regretted that there has been so much delay in producing this, the 3rd issue of Forest Notes. Insufficient material to make up the issue has been the main cause.

Forest Notes it is felt, is an excellent medium for the exchange of information, technical and otherwise, between our very scattered staff.

The results of experiments and tests, technical information, wild life notes, printable incidents and happenings of interest to the staff would be acceptable. This is your publication and your help in keeping it going would be appreciated.

It had been hoped to publish a copy of Forest Notes at half-yearly intervals but, at the present rate of submission of material, a yearly issue is the best we can do.

FIREWOOD FALLING OPERATIONS
MUNDARING DIVISION

by N. K. James

Approximately 20% of the men employed by the Department at Mundaring are engaged on firewood falling (which is a recoupable project). This represents twelve men, including two Overseers.

These gangs work independently, one in the Eastern, and one in the Western portion of the Division. The gang operating in the Eastern area, follows closely behind the Charcoal Iron Steel Industry (Wundowie) bush operations. The Main reason for this being that the firewood on the ground (that is green mill tops) will dry out, and be ready for sale, at the same time as that being felled. The tops are burnt and the wood left to dry for three to four years. At the present time Wundowie are only able to burn completely dry wood.

The faller operates a Dennis Twin Circular Saw. The trees are felled, so as to leave a stump no more than three to six inches above ground level. This is to ensure that coppice re-growth is of a good standard. The height of the stump after falling is of course, in some cases, determined by the type of terrain. The yield per acre varies from 15 tons to 50 tons. Average yield would be about 25 tons per acre.

The tree marking to date, has been done by a F/Ranger or F/Guard. Trees which are considered unsuitable for milling purposes, or which have no future potential, are marked.

With the Charcoal Iron Steel Industry at Wundowie consuming approximately 400 tons daily for 7 days a week, it can be readily seen that an enormous quantity of firewood will be needed in the future. At the present time Wundowie obtain the bulk of their requirements from private property, but supply from this source will not last many years. Therefore large quantities of firewood will be required from the State Forest within a few years.

Supplies of firewood for brick kilns, wood yards, etc., are also in heavy demand, and we have one gang falling for that purpose.

TERMITES - ATTACKING SOUND HEALTHY TREES

by G. E. Brockway and D. H. Perry.

The Department often receives reports of attacks by termites on healthy growing trees, both young and old. Wherever it has been possible to investigate these reports it has invariably been found that the attack is confined to wood which has been changed or altered by some other agent, and very rarely apparently is sound live wood subjected to attack by these insects in the South-West part of the State.

Many cases of newly planted young trees being killed by termites have been reported, but when it has been possible to investigate these reports, here again it has generally been found that the tree had either been damaged by fungal attack

or mechanically, or was dying from drought or other cause. The termite attack, in other words, was a secondary cause of damage.

Recently, however, a number of young and apparently vigorous trees died suddenly in the Department's arboretum at Dryandra. Upon digging them up it was found that the root systems had been severed quite close to the base of the little trees, and whole sections eaten or removed. Examination failed to show the presence of any insect pest until recently when a sugar gum, Eucalyptus cladocalyx, was noticed to be showing symptoms of wilting. This tree was 19 inches high, healthy and vigorous, and was planted in June, 1960. When removed from the soil it was found that all the main roots had been severed and sections eaten, the damage being very similar to that which had caused a number of deaths of other young trees in the vicinity. Fortunately, in this case, the insect causing the trouble was present and activiely engaged in devouring the root tissue, and has been identified as a species of termite, Microceretermes distinctus. Both worker and soldier casts were present making identification positive. Thus we have the first authentic recorded attack by termites on a young and perfectly healthy tree.

Microceretermes distinctus has not previously been recorded as having much economic importance, its attacks generally being confined to weathered and decaying wood and debris lying on the ground.

Following the deaths in the 1959 planting in the Dryandra arboretum, action was taken to test the protective capacity of an insecticide applied to the soil around the root systems of the newly planted trees. 2% Dieldrin powder was the chemical used, and a small quantity was dusted into the soil back filled when planting the trees. The protection afforded by this treatment has up to the present proved 100% effective whilst 9% of the untreated trees have been killed.

TIMBER PRODUCTION 1959-60 GENERAL PURPOSE MILLS

by P. H. Barrett.

General Purpose hardwood mills (under permit) produced some 225,000 loads (68%) of the State's sawn output of 332,509 loads.

In order to compare the performance of mills of varying capacity, the 53 mills studied were grouped into:

18 Major Mills	- Log Intake	+ 12,000	loads/annum
22 Med. size Mills	- Log Intake	6,000 - 12,000	" "
13 Small Mills	- Log Intake	1,000 - 6,000	" "

Figures extracted give an indication of the average and range of performance of the mills in their respective groups. It should be noted that no attempt has been made to segregate mills of similar design operating in comparable bush. The figures are intended only to give a broad picture of the performance of general purpose mills during 1959-60.

The following table sets out in summarised form the results of the brief study:

Information		Mill Capacity		
		Major	Med. size	Small
Through mills	- total (loads)	459,700	174,842	33,083
" "	- average(")	25,539	7,947	2,545
" "	- range (")	13,251-44,332	6,147-10,668	1,096-5,250
sawn output	- total (loads)	144,532	59,264	10,499
" "	- average "	8,030	2,694	808
" "	- range "	3,991-14,347	1,858-3,716	393-1,376
Recovery %	- av. weighted	31.44	33.90	31.73
"	- range	27.85 - 38.41	26.51-49.61	25.71-45.86
* Input/man-day	- av.weighted	99	91	76
* " " "	- range cu.ft.	81-129	58-156	61-152
* Output/man-day	- av.weighted	31.1	30.8	27.1
* " " "	- range cu.ft.	22.8-41.8	18.3-54.5	18.3-53.7

* Based on number men under mill roof and mill landing. Assumes every man works 8 hours per day.

A HAPPY CHRISTMAS DAY

by David Watson

On Christmas Day 1950 we had rather a bad fire at Willowdale, and I was called upon to patrol a large section of the face after it had been suppressed. A number of problems presented themselves -

1. There was no access other than the burnt fire edge which we could move along,

2. Water was needed in fairly large quantities,

3. I was given the help of 14 New Australians just arrived in the country.

Their command of English was about as good as my command of the Italian Yugo Slav and Latvian languages.

I was able to muster approximately 10 pack sprays, a shovel or two, two water bags, some rakes and axes. We set off in single file to carry out what proved to be a good two mile trek. The first burning spar met with required the application of some water at a point 10 ft. above ground. After I had carefully explained in a loud voice, with much gesticulation, and arm waving and pointing, the men got the idea what was needed and all started to squirt water furiously in all directions. Again with much shouting, jumping up and down, arm waving and so forth, I managed to stop them. It seemed that under the circumstances the only thing to do was to use the men as pack horses, and do all the squirting myself.

I tried to lessen each carrier's supply of water in turn, favouring the older members. One of the men seemed to be

giving me a lot of cheek and abuse, so I saw that his packspray was the last to be emptied. The emphasis, of course, was on speed on the outward journey so only the urgent tasks were done. Those men who were not carrying packsprays attended to such mopping up operations as were necessary, and that I was able to explain to them how to do. Gradually we reached the end of the patrol, and at the finish had about two gallons of water left.

Before commencing the journey back along the two miles face it was necessary to re-fill the packsprays from a small creek which I knew was located about 20 chains from the finishing point. When I led the men off on this hike, through very dense undergrowth, there was a great deal of argument and shouting and apparent disapproval, but they all tagged along and when we reached the creek and they understood what we had come for my stocks rose to a much higher level.

After everyone had had a drink and washed up and cooled off, I personally filled each packspray. I felt I could not leave this job to my assistants as they would have probably poured in leaves and other rubbish with the water.

During the return journey a more thorough job of mopping up was made and by this time the chaps had gathered the idea of what was wanted, and were doing a much better job with much less shouting and arm waving from me. Finally we were back at our starting point with this section of the fire tucked in and safe. After we had lunch we patrolled it once more and finally managed to get home in time for Christmas tea.

HATS, YELLOW, FIBREGLASS, PROTECTIVE - ONE OF 42

by P. N. Hewett.

The recent issue of yellow fibreglass safety helmets to those employees who wanted to wear them, was indeed a welcome innovation in a division which has up to 18 power circular saw operators falling firewood trees, with an alarming number of minor accidents.

Despite complaints about the noise suffered during rain or hail storms the helmets are widely used by fellers.

Recently I visited one falling team at morning smokeo, arriving in time to hear one member promising to polish his "yellow-bird" that night. It appears that, having finished falling his cutting coupe he was waltzing his power saw merrily across the other coupes on his way to a new one, when he walked under a tree being dropped by his neighbour. The crown of the Marri fell on him and his power circular, burying them both in the foliage.

Thanks to the helmet he received only a couple of cuts on his left shoulder. What appeared to amuse him most was the way his Dennis twin kept chugging away while completely hidden under the Marri crown.

After such an interesting experience he felt the least he could do was clean and polish his Yellow Kady.

(Editor's Note: While we are sorry about the damaged shoulder the value of a safety helmet in this case can be deprecated. If the tree had hit him anywhere else than on the head (helmet or no helmet) he might have been seriously hurt.)

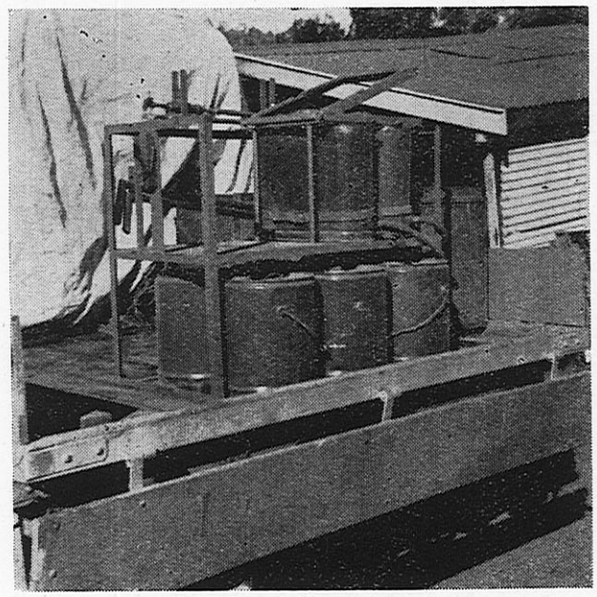

FIGURE 1. KNAPSACK SPRAY HOLDER IN PLACE ON TRUCK. THE SIX FOUR GALLON DRUMS AND TWO OF THE KNAPSACK SPRAYS ARE SHOWN IN PLACE. THE HOLDING DOWN BRACKET FOR THE EMPTY COMPARTMENT IS FOLDED BACK.

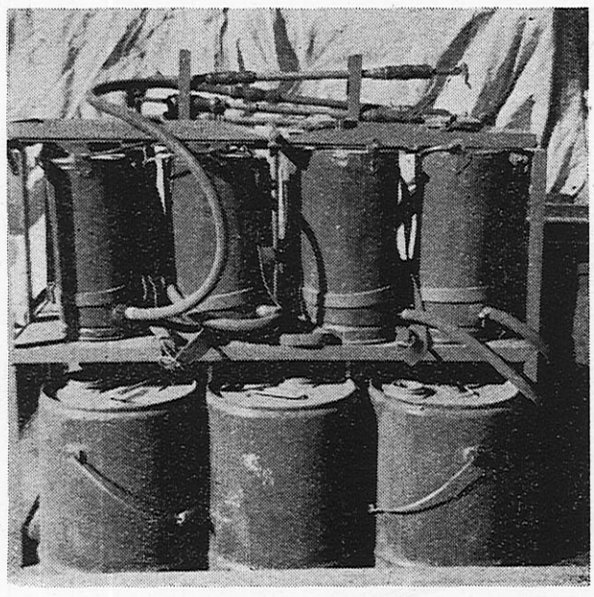

FIGURE 2. SHOWS THE FULLY LOADED DEVICE IN PLACE ON THE TRUCK.

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"TIE ME KNAPSACKS DOWN SPORT"

by A.B. Selkirk.

Whether or not it was inspired by Rolf Harris' song hit or was just the child of combined thought and discussion within the Mundaring H.Q. fire gang, will never be known, but a method of packing knapsack sprays derived from ideas put forward has proved an interesting success over the 1960-61 season.

It is a well known fault of spray tanks that, in transport over average forest tracks, they develop frequent leaks from the bashing and friction they are subject to.

The main object aimed at in constructing the spray rack was to prevent damage to tanks and save valuable vehicle floor space.

As shown in the accompanying photographs the two-deck construction saves space and yet is not too high to cause a deterioration of the metal frame work by undue sway and stress.

If bolted down to the floor at a desirable distance from the body edge, the edge will serve as a stop for any undue movement of the 4 gallon drums which occupy the bottom floor.

The completed frame fitted to a gang truck carries four knapsack sprays and six four-gallon drums. It is set on the truck in such a position that the drums are removed by sliding slightly to the rear then tilted and lifted out.

Some small amount of improvement is suggested on the existing model, such as a rack on the back for four drip torches. This rack could be set slightly off the horizontal to retain the torches even over a rough shake up.

It comes to mind that this rack constructed in the form of a self-contained unit would be a handy piece of equipment to drop on to any small vehicle and be speedily despatched.

If constructed of reasonably light angle iron and either pressed metal decks or hardwood flooring the completed article could be heavily galvanised against weathering. Packed with drums and sprays it would contain approximately 35 gallons of water and perhaps weigh slightly more than 4 cwt. As such a unit it could be handled onto most vehicles with a mobile crane, fork lift or mounted on small wheels and rolled from ramps constructed at vehicle height.

"Altogether Now".

ROCK CROSSINGS

by D. Phillips-Jones

These crossings have been tried in one of the Southern Divisions, and have been found to have certain advantages over the conventional pile or bed-log type bridge, viz:

1. Cost - To survive flooding a bridge has to be built big enough to cope with the maximum expected flow. Therefore to bridge rivers of the size of the Frankland, Deep, Shannon etc., structures costing thousands of pounds have to be contemplated. A low level crossing costs far less.

2. Simplicity of Construction - Nothing really technical is involved. All material except spikes can be found in the bush close to the job.

3. Maintenance - Maintenance is easy, usually consisting of clearing debris, refilling minor washouts with rock etc.

This type of crossing of course applies to fire lines and forest tracks that are not used extensively all the year round; where one has need of easy access into country over rivers or large streams to carry out fire prevention or suppression.

THE SITE:

It is best to pick a site where there is a natural rock foundation or shallow crossing. These are generally picked out anyway from the aerial photos, when doing the preparatory selection. If a site of this nature is not available, then the banks can be cut down to conform with the width of the track, care being taken to sweep the banks well away and out on the immediate approach to the stream, otherwise in flooding the water will rise up the cutting like a drain and wash out the walls of the track. (See Fig. 1).

METHOD:

Select 18" to 24" diameter logs long enough to cross stream from bank to bank + 6' overlap each end. If one log cannot be found long enough then two logs joggled together are adequate. Tie logs in line with outside of cutting and down stream from track, care being taken to sink logs in stream bed until fairly level, otherwise the water concentrates at the lowest spot and has a greater tendency to cause gouging.

If on rock, logs to be bored every 6 ft. and a hole jackhammered in the rock. The log is then spiked down with heavy bed log spikes, or spikes of longer length made up in the workshop.

In the case of there being no rock foundation the logs are held in position by a balustrade of sleepers or jarrah posts sunk in the stream bottom every 4 ft. to 6 ft. depending on the width of the stream. If difficulty is encountered here through flowing water while digging the holes, then the stream could be temporarily dammed by earth wall up stream until posts are in position. (See Fig. 2).

The posts are sunk 4 ft. deep and then strutted with either sleepers or jarrah struts.

When retaining logs are secured into position, rock - either laterite or granite - is dumped in the crossing and formed to half way up side of logs, the rock being sloped into stream on the up-side to ease the passage of water over the crossing (see Fig. 3) and carried across stream for at least 6 ft. up track on each side gradually tapering off. Further rock is then dumped on this foundation and knapped into bottom layer to finish up about three-quarter way up side of retaining logs. Some rock dumped on the down stream side of the logs tends to reduce erosion and under cutting of the logs by the water fall thus formed

This finishing top layer must be well knapped in and levelled, and can with care be made if not quite as smooth as the Freeway, at least trafficable. Gravel and quartzite screening has been tried, but it has been found to wash too readily and entails more maintenance.

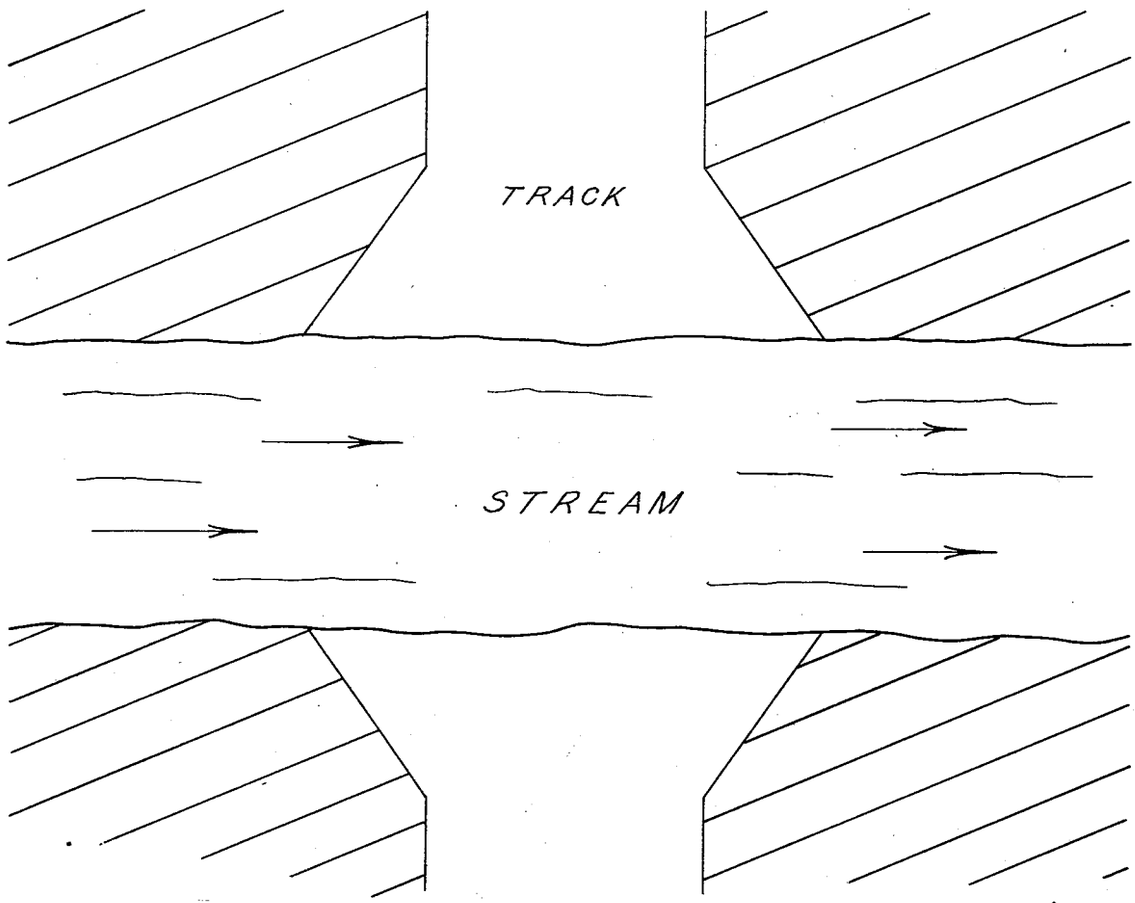

Fig. 1

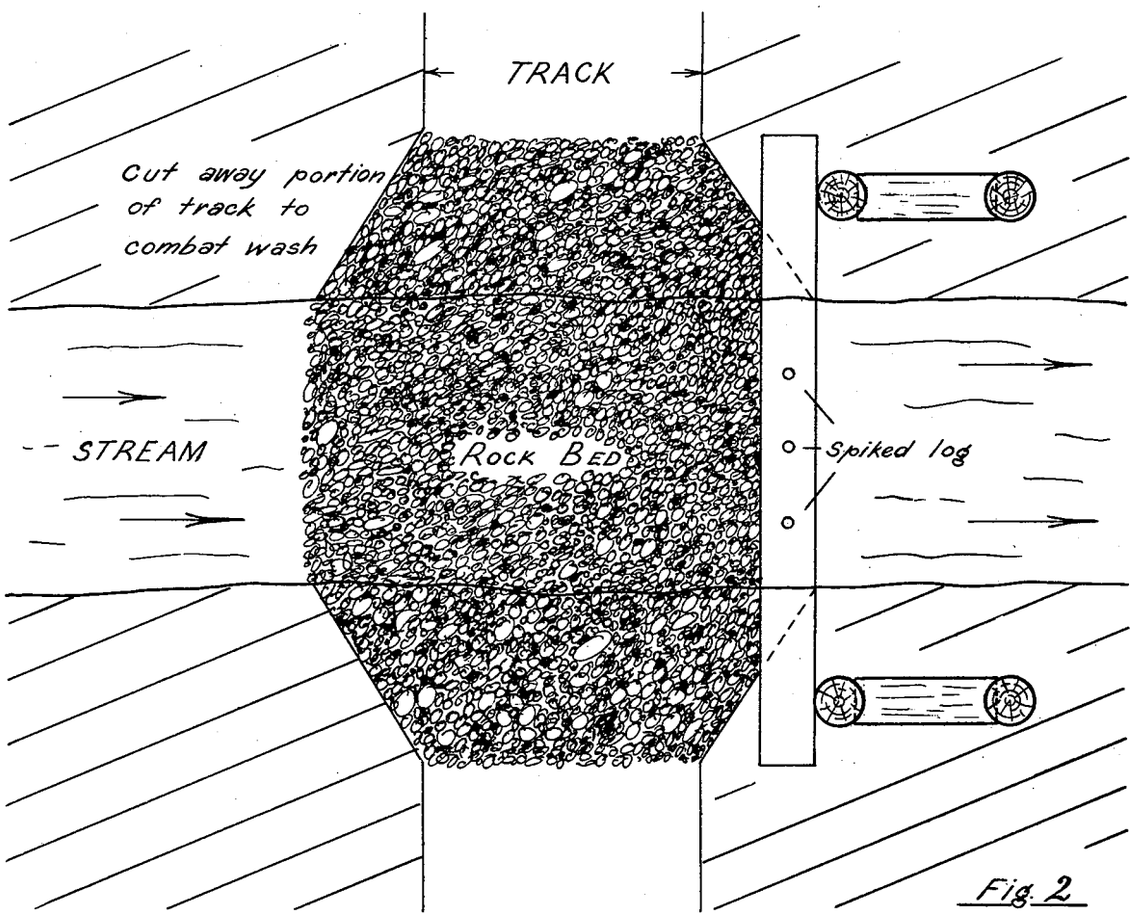

Fig. 2

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SINGLE LOG CROSSING

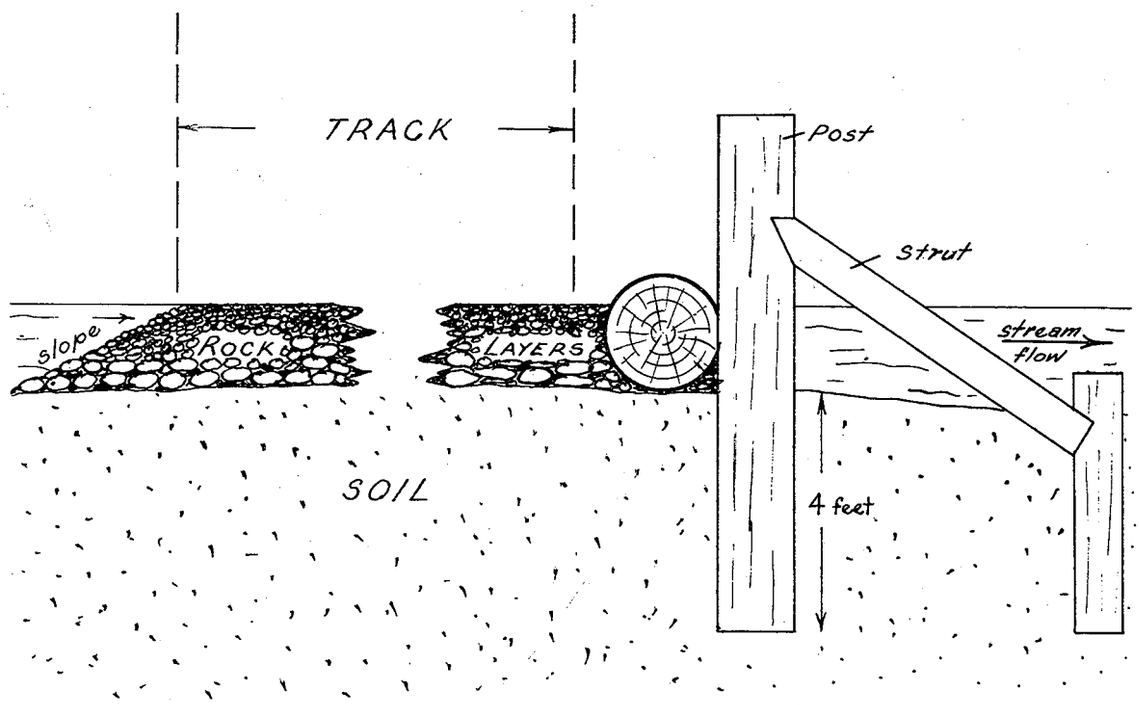

Fig 3

DOUBLE LOG CROSSING

(used where stream channel is deep and has to be brought up to relative road level.)

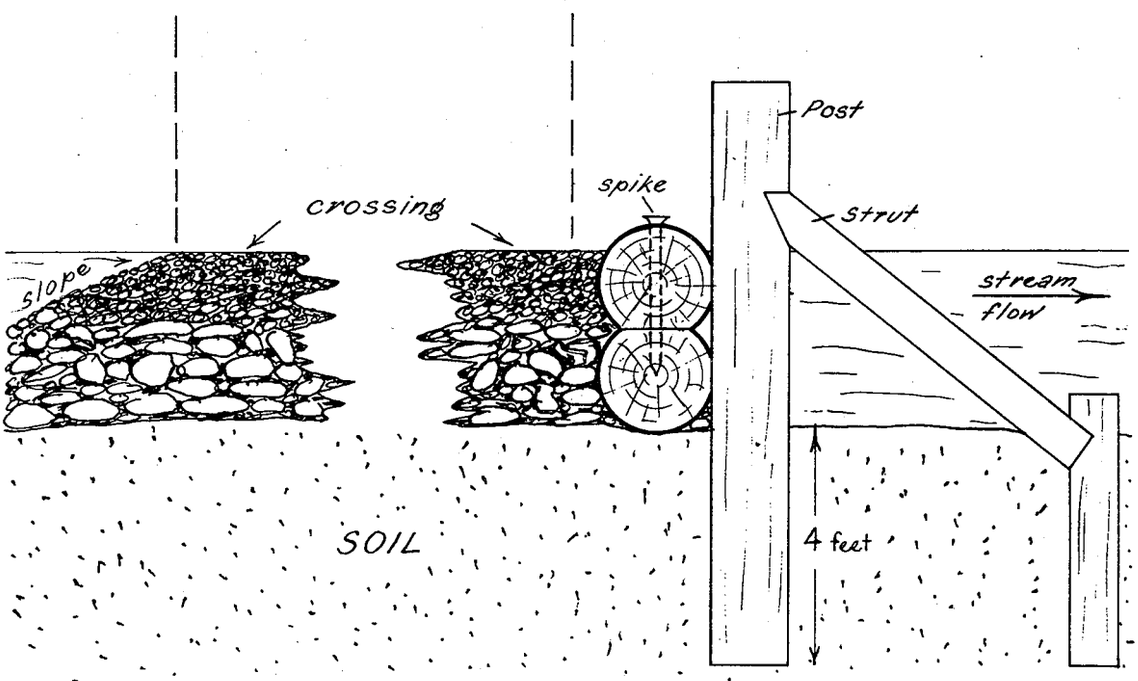

Fig. 4

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Quite often a good water point is created by these crossings through the slight damming effect with the lift reduced to a minimum.

Approximate Comparison of Costs

CROSSINGS.

1. Over Frankland River on Roe Road.
   Completed on the 21.5.59.
   80' long - 18" deep 1 log high balustrade
   O/S & 3 men 197 hours.
   Wages £77.10.0.

2. Over Deep Stream on old Thompson H/Way.
   Completed 11.2.60.
   30 ft. long, 2 log high balustrade.
   O/S + 5 men 96 hours.
   Wages £38.

BRIDGES.

1. Bed log type Bridge over Shannon River, Chesapeake Road.
   90' long - 6 men 3 weeks
   4½ loads decking.
   Wages £315. Decking £72
   Cost £387.

2. 4 Stringer Bridge Pingarup
   18 ft. long.
   4 men - 2 days.
   Wages and decking £44.

It can easily been seen that the cost and easy construction and readily available material to hand is well worth further investigation. But it must be borne in mind, as stated earlier, that these type crossings are only applicable to tracks and fire lines that are not all weather roads and are only seldom used, where the cost of conventional type bridges is prohibitive.

CONTROLLED BURNING IN THE KARRI FORESTS AND THE USE OF BULLDOZERS IN PREPARATIONS

by Frank G. Quicke.

Controlled burning in spring and autumn seasons is an important means of preparing the forest to combat severe summer fires which regularly ravage portions of our State Forests.

An appreciable amount of difficulty is encountered in attempting to carry out burning during the seasons considered suitable for this operation.

Because of the dense nature of the undergrowth scrub and its lush nature we find it extremely difficult to burn any appreciable area in the spring or autumn.

The chief reason for this is that the scrub, being lush green and shaded from the sun by heavy forest, will burn at the desired rate for only a short period in the day and on a limited number of days during the controlled burning season.

This means that an effective burn may travel only two chains from the point of lighting before conditions prevent it from burning any further.

In Jarrah forests further north due to the more zerophytic nature of the scrub, measures must be taken to prevent burns becoming too hot, and in achieving this a gang

of men strip out the area by spotting fires as they walk through the forest. In this manner large areas can be burnt at a moderate temperature.

In the Karri forests it is almost impossible for a man to walk anywhere in the forest except along roads and tracks. If by some means we could open up the undergrowth in the Karri so that men could walk easily, it would then be easier to light up greater areas at any one time.

Figures show that controlled burning as carried out at the present time in this type of forest, is limited to 30 to 40 acres in any one day and this area is nearly always bounded by a road or track on one side and a "five chain break" on the other so that the area burnt is only 5 chains wide after lighting from the road and the "five chain break".

Very often the burning is completely successful in these "five chain break" areas if carried out during the time of good burning conditions, but lighting along both sides of the area, the fires link up on their own accord.

This is achieved no doubt because from one side the fire travels 3 chains with the wind and on the other side, 2 chains against the wind. Burning is also helped because of the opening made in the forest by the road and the "five chainer" and having been open enough to allow sunlight to penetrate and dry out ground litter to allow it to burn.

This brings me to my main point of these notes.

The use of Bulldozers in Controlled Burning in the Karri Forests

The idea would be to open up lanes in the scrub several weeks before burning was due, to let in sunlight to dry out adjoining undergrowth and ground litter along the lanes.

To do this a bulldozer could be used in the following manner:

1. Decide in which direction the lanes should be made.

2. A heavy bulldozer TD18 or D7 should be used, because a machine of this size could work at a good speed and make a sufficiently wide lane.

3. Travel the machine with the blade just clear of the ground to knock down scrub, without digging up any earth which would mix with the scrub.

4. Lanes should be made at 5 chains intervals and parallel to one another.

5. A man using a prismatic compass follows behind the bulldozer to maintain direction of travel and pace off the 5.00 chain wide strips.

The battered scrub on these lanes will quickly dry in the sun and standing scrub on either side of the lane will in turn benefit from the extra sunlight, in drying out floor litter exposed.

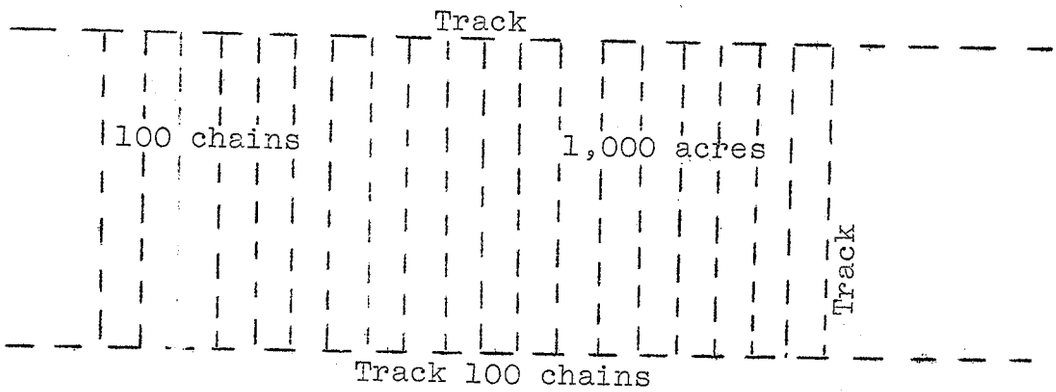
Burning:

Gangs burning the area now have prepared lanes along which to walk in reasonable comfort when lighting up. Each man would take one lane to proceed along and set fires in the dry scrub in the middle of the lanes, that is the scrub that has been knocked down.

From experience in burning five chain breaks, the added heat from the dry lane, and with the help of the drying out effect in the standing scrub, the fire from one lane should link up with the fire from the lane parallel to it.

In this way it should be possible for a six man gang to burn 1,000 acres of prepared country in one day.

Figures and Costs:



In an area of 1,000 acres, say 100 chains by 100 chains, would require 20 lanes 100 chains long. That is 25 miles of lanes plus 200 chains travelling between lanes.

Say a total of 28 miles.

T18 or D7 should be able to work at 4 miles per hour for this type of job. Therefore, time to strip the area would be roughly 8 hours.

Cost at £4 per hour £32.

With a six man gang to strip burn the area, each man would have to walk 3 lanes, i.e. approx. 4 miles.

Therefore the gang could strip the area in one day.

Costs:

Preparing lanes with Dozer

TD18 or D7 8 hours @ £4	32. 0. 0.
Transport or Travel the machine	3. 0. 0.
Pilot for Dozer	3. 0. 0.

Burning:

6 man gang 8 hours approx.	18. 0. 0.
Transport for gang, say 30 miles @ 1/6d.	2. 5. 0.
Heavy Duty 30 miles @ 3/3	4.17. 6.
Wages H.D. crew	6. 0. 0.
Total	£68. 2. 6

Say £70.

If the total cost did not exceed £70 then the cost per acre would be roughly 1/6d.

From records of costs of control burning in Karri forests it is interesting to note the following:

These costs include all classes of burning and all forest types - also expenditure in assisting settlers to burn dangerous areas - also patrols and mopping up:

1958/59	7,805	acres	£3,090
1957/58	14,948	"	2,767
1956/57	19,557	"	1,904
1955/56	26,900	"	3,087
1954/55	36,750	"	1,938
	105,960	"	£12,786

Wages only.

= 2/4d. per acre.

add mileage

say 3/-d. " "

This compares with 1/6d. per acre with the possibility of a more thorough burn.

COMMENT BY SENIOR D.F.O., J.C. MEACHEM

Mr. Quicke's approach to the question of controlled burning of Karri forest has merit and may be tried with advantage. A mean rate of 4 m.p.h. for dozer preparation could be optimistic. Current thinking on Karri forest burning involves protection roading for the separation of forest types so that burning can be concentrated on the more readily burnable (and controllable) flats and Jarrah-Marri forest. Burning will be carried out in pure Karri forest only to secure continuity of burning and, of course, for regeneration. Advance burning is not favoured in Karri as it fails to improve access (unless unduly hot), merely steaming over the dense undergrowth and, at the same time, is prejudicial to effective regeneration by causing loss of buds and flowers and the premature release of seed.

Karri cutting sections are protected prior to the regeneration burn by the burning of surrounds at some depth in Jarrah-Marri forest.

Early burning of flats in facilitated by the prior travelling of a bulldozer down the centre to provide access and ignition edges.

It should be noted that an area approaching 0.75 million acres, virtually unroaded and unprotected prior to 1950, is now broken into units of from 6,000 to 10,000 acres. Further sub-division into protection units not exceeding 2,000 acres is currently planned.

TRACKS CAN BE A WASTING ASSET

by D.R. Lejeune.

This Department is responsible for approximately 17,000 miles of roads and tracks. About 10% of these are "arterial" or "sub arterial" roads. These were quite well constructed and are maintained to carry our heaviest traffic. The remaining 90% or 15,000 miles are commonly called "forest tracks" although few of them come near the now specified 12 ft. width. Unfortunately, it happens only too frequently that insufficient thought for their future life is given in their construction and subsequent maintenance.

An old foreman once told a forestry student, "Lad, there are three things to remember about roads, the first is drainage, the second is drainage and the third is drainage". On a steep grade one only has to observe a track which is not drained correctly to realize the wisdom of this statement. The track as such can disappear in a season.

Faulty drainage is something which tends to escape the active attention of many officers who see the tracks most frequently. Suddenly some one suggests re-construction.

To reconstruct our tracks as they are washed out beyond repair costs about £50 per mile. Thus if only 1% of these tracks require replacement each year, it would cost us £7,500 annually. Does this figure seem unreasonable?

We should bear in mind that all these tracks have been constructed in the last 40 years or so, and it would be nice to think of them as permanent. What percentage will require re-construction in 1970 or 1980?

Repair rather than reconstruction is economically out of the question for all but short sections. Construction costs 12/6d. per chain. For this amount you could only cart and spread 2 - 3 yards of gravel which would not have much effect and would be predisposed to washing away unless well mixed with soil.

It does not seem possible to prevent entirely the wasting of these assets, but there is a great deal we can do to arrest it simply by the use of well informed gradermen. The training of these men is not as easy as it may seem. You find that all officers instructing them will not give the same instructions in the same situation, and there are, even in the 20th century, men who believe that water will run up hill.

To me, the fundamental of grading from drainage is "Take the water off before it takes the soil off". Consider some of the damage done to our forest tracks, and I am sure you will agree that most of it is caused by failure to comply with this simple requirement.

Once we all agree on this and realize its importance we can progress to the details, viz. methods of grading in the various situations met in the field.

I shall not preach any further by inflicting you with my prescriptions for grading, but would be very interested to read yours in "Forest Notes".

PLANTATION ESTABLISHMENT

Effect of Early and Late Ploughing under Grassy Conditions at Pinjar.

by H.G. Clover

Grass competition is an important factor in pine survival in parts of the Wanneroo Division.

During 1958 an experiment was carried out to test the effect of time of ploughing over an area where a considerable growth of grass was present.

Lengthways across an area of 75 acres two strips, totalling 7½ acres, were ploughed during early April. The remainder was not ploughed until the middle of June.

Planting was carried out between 11th and 21st July.

The effect of the two treatments on survival of the pine is shown in the following table:

Time of Ploughing	Percentage of Deaths	
	December Count	April Count
April	7½%	75%
June	2⅓%	27%

It is evident that grass has a detrimental effect on survival of pines. Late ploughing, though it does not remove the menace reduces it considerably.

It is not practicable to leave all ploughing on grassy areas to the period just prior to planting. The practice now in the Wanneroo Division is to drag a heavy scraper over ploughed areas just prior to planting. This operation reduces the weed problem and also has a levelling effect which makes for more efficient and comfortable machine planting.

ARE WE DOZER HAPPY?

by D.R. Lejeune.

Since the advent of the dozer, this remarkable machine has solved many a man's problems. One sees occasional cases where it has done his thinking for him.

There must be a limit to its usefulness. I am confident that in controlling forest fires, the dozer can add to the difficulties and expense rather than reduce them. If this is true, the points raised here are worth consideration by foresters.

There are only two methods of attacking a major fire:-

a. Fall back to roads and back burn at a time when the new edge will be as cool as possible.

b. Doze a track around the perimeter, right against the fire or near it.

There are many shortcomings of the latter method. They include:

1. The track is at best very rough causing heavy strain on vehicles and men.

2. There will often be places where it is not trafficable to even 4 x 4 vehicles.

3. Travel is in bottom or crawler gear.

4. The distance between points A. and B. on the plan can often be doubled on this track.

5. Administration difficulties are increased because of all the above and the fact that fire fighters do not know exactly where they are.

6. If the track is on the edge of the fire, the edge may be "hot", requiring considerable mopping up.

Method (a) has none of the above shortcomings and, above all, the saving in time enables men to prepare well for the "back burn" and still be sure of getting the job complete before the next day.

The only arguments heard against method (a) are:

1. It increases the perimeter.

To those who argue this way I can only suggest "Travel some of the dozed edges and check for yourselves".

2. It increases the area burned. This is certainly the case for the first night, but by the second night this will often not apply. Why? Because the dozed edge was not safe, the fire jumped and the track was not fast enough to enable suppression. If conditions are such that it is possible to fight the fire at night, and this is almost invariably so, there is no reason why back burns to the head and flanks of the fire should cause extensive damage. Any damage done can be written down as insurance against the risk incurred if a dozed edge had been used.

The main difficulty in falling back to roads is to ascertain precisely the boundaries of the fire in plenty of time to plan those all important operations for the first night. This calls for good co-ordination between the field and H.Q. and a spotter plane with air to ground communication should save a considerable amount of time. It is at this stage that there may be a tendency to weaken and let the dozer find the fire for us.

Of course the method of attack must vary with the intensity of the road network, and it is not suggested that we can always use our roads alone to stop fires, but it is emphasised that they should be given first consideration.

THE LONG OF IT, IN SHORT

by P.N. Hewett

On February 2nd, 1961, a semi-trailer load of peeler logs left Greystones Compartment 3, of the Mundaring Plantations, bound for Westralian Plywood factory at Carlisle. There may be nothing unusual about the delivery of peeler logs to this factory, but these were in lengths varying from 24 feet to 34 feet and were, so far as I can determine, the first Pinus peeler logs to be delivered in long lengths in this State.

The logs were cut from P. radiata planted in 1922, and the Site Quality IV. The whole tree from butt to the 9" D.U.B. crown was cut into convenient lengths as near to 30 feet as possible.

The first trip consisted of twelve logs whose lengths varied from 24 feet to 34 feet and their mid-girths overbark from 3'1" to 5'3". The total overbark volume of these logs was 525 cubic feet.

By the end of May, three parcels of these log peelers had been delivered to Westralian Plywoods, and it may be of interest to summarise the log measurements and total overbark volumes.

First Parcel	76 logs	Lengths 23 to 34 feet Mid girth 2'1" to 5'7" O.B. volume 57 loads.
Second Parcel	89 logs	Lengths 20 to 40 feet Mid girth 2'8" to 5'3" O.B. volume 62 loads.
Third Parcel	88 logs	Length 25 to 40 feet Mid girth 2'11" to 5'7" O.B. volume 63 loads.
Average volume per log		35.9 cubic feet.

(Editor's Note: It would be interesting to have some idea of the recovery from these logs).

TEMPERATURE OF DWELLINGUP FIRE

by J. Williamson

On the increment plot mentioned below*, many of the trees were labelled with the common type of Aluminium tags about 1/16" thick and placed 5'3" above ground level.

When the plot was re-measured after the fire some of these tags were found to be intact and some were found to have been partially melted. The fire at this plot must therefore have reached at least 657°C (the melting point of aluminium) (i.e. 1214°F) wherever the Aluminium tags were melted.

TEMPERATURE OF THE DWELLINGUP FIRE

by W.R. Wallace

Mr. Williamson has given the temperature of the Dwellingup fire as at least 1214°F at 5'3" above ground level.

In the January, 1961 issue of "Fire Control Notes" there is a rather interesting article by Davis and Martin of the South Eastern Forest Experimental Station, U.S. Forest Service, which inter alia quotes some temperatures associated with head fires.

> "At the 1' level the head fire temperatures rose abruptly to a maximum of about 1600°F. At the 4' level head fire temperature peaks barely exceeded 500°F."

This would seem to indicate that under the conditions associated with these experimental fires, the temperature at 1' from the ground was roughly three times that at 4' and if this same comparison could be made between our temperature at 5'3" it could be assumed that the temperature at 1' from the ground was of the order of 3,500°F to 4,000°F. While there is no valid reason for this assumption, it will be apparent to all foresters that the temperature close to the ground must be higher than that reached at 5'.

GIRTH REDUCTION DUE TO FIRE

by J. Williamson

A demonstration increment plot was set up in January this year as part of the current Working Plans programme. It is situated about 4 miles north of Dwellingup alongside the Banksiadale road. The first 3 chains of the 5 chain plot were severely damaged by fire on the 24th January, and the last 2 chains were moderately severely damaged by this fire.

The mean decrease in girth over bark was 2¼ inches. This figure was obtained from 48 Jarrah trees from girth classes

ranging from 1' to 11' girth. The smallest decrease in g.o.b. was 1¼" and the greatest 3½".

Bark thickness readings on 36 of these trees, covering the same 1' to 11' range of girth classes, showed that 83% of the decrease in girth over bark was due to a decrease in bark thickness. The remaining 17% is presumably the result of tangential shrinkage of the stem caused by rapid evaporation from the live bark beneath the periderm.

The decrease in girth over bark due to severe and moderately severe fire damage was compared.

47 of the trees in the plot were divided into two types of fire damage thus:

Type A fire damage - crowns completely defoliated 17 trees
Type B fire damage - crowns with leaves scorched brown - 30 trees

The results were:

Mean decrease in g.o.b.	Type A	2.35 inches
" " " "	Type B	2.17 inches
	Difference	0.18 inches

From these results it cannot confidently be stated that Type A fire damage results in a greater decrease in g.o.b. than Type B fire damage. To allow this to be stated, the difference between the two means, 2.3" and 2.17" would have to be much greater than 0.18".

GIRTH REDUCTION DUE TO FIRE

by W.R. Wallace

Mr. Williamson's suggestion that some decrease in girth in the Dwellingup fire area is due to causes other than the actual loss of bark through burning is interesting. Following the Plavins fire in 1950, it was found that in the head fire area a number of second growth trees showed that more than half the thickness of the green bark had been killed, either by heat or desiccation. The division between the living and the freshly killed bark was readily discernible. Following the Ferguson fire in 1949 it seems that the same thing may have happened there. An examination of the bark in this area at the present time shows on a number of trees a peculiar smoothness, which could possibly be associated with some damage to the cambium 12 years ago.

The question of loss of girth through shrinkage was considered at Dwellingup while investigating results of the Plavin fire, but nothing definite could be obtained at that time.

In the present instance, it is stated that there is an unaccountable loss of 17% of the total girth decrease, and it is suggested that this may be due to a stem shrinkage through desiccation of the outer portion of the live bark. While this positive decrement suggests it is both real and significant, it must be remembered that it is based on radial bark thickness measurements. Average loss of girth is stated to be 2¼", of which 17% is suggested as due to shrinkage. This represents a radial decrease of:

$$\frac{17}{100} \times \frac{9}{4} \times \frac{7}{44} = 0.06"$$

This raises a few interesting questions.

1. What is the normal error in measuring bark thickness?

2. Is there any difference in this error when measuring a tree with unburnt bark, compared with a tree which has been heavily burnt?

3. Why were only 36 of the 47 trees measured included in this calculation?

4. Was it because the remaining 11 trees did not support the theory of stem shrinkage?

The figures produced by Mr. Williamson should be of great interest to all foresters, and particularly those who are concerned with measurement of forest increment.

POWDERBARK vs. COPTOTERMES

by P.N. Hewett

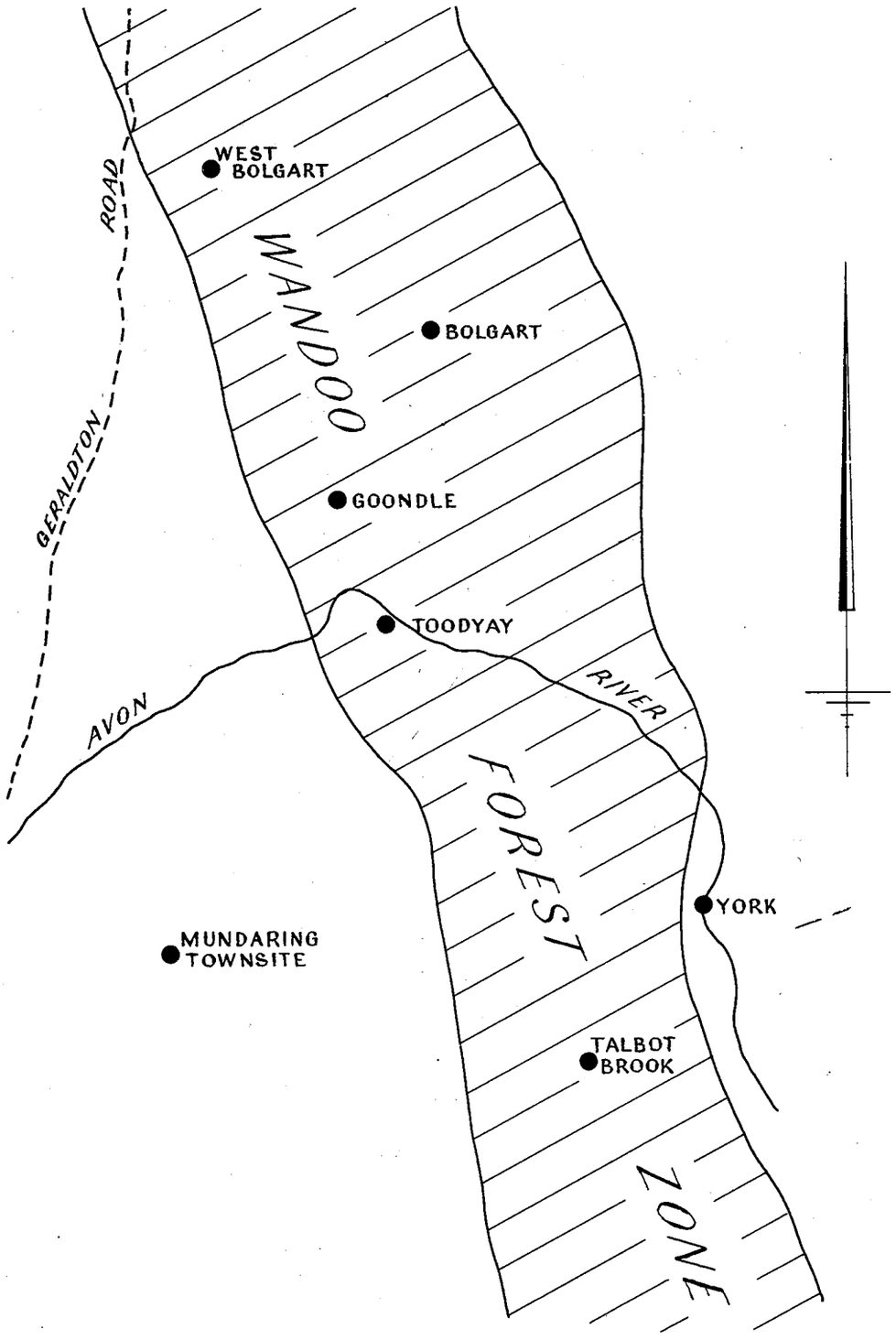
A few months ago I inadvertently passed the remark to a Senior Officer that "Of course Powderbark isn't durable in the ground!" As might be expected, said Senior Officer asked how I knew this, and where did I get my information. Only a few reasons could be recalled, among them being "THEY say that Powderbark lasts only a few weeks in the ground", or "THEY say that white ants LOVE Powderbark". My main reason was the refusal by the P.M.G. Department to accept Powderbark telephone poles. Of course the P.M.G. use a lot of Powderbark poles, because pole cutters remove the bark but, in theory at least, the P.M.G. does not trust Powderbark in the ground.

The evidence seemed more than somewhat inconclusive and in response to suggestions that a search be made for more evidence, I made some enquiries in the farming areas adjoining Wandoo-Powderbark forest near Mundaring and near the Julimar State Forest.

In particular the areas investigated were Talbot Brook, Coondle and West Bolgart, situated as shown on the accompanying plan.

TALBOT BROOK:

Three farmers were interviewed in this area and all three wholeheartedly supported the use of Powderbark as sawn fence posts, split fence posts, strainers and poles. One was able to show me a fence still in service, in which split Powderbark posts were used 45 years ago, also some 13 years old posts split from over 50" GBH trees and 10 years old posts unsapped. All were in fair condition and certainly as good as Wandoo posts. Another farmer quoted the use of Powderbark poles used in the supper room of the Talbot Brook Hall in 1931, and claimed that even the sapwood of these poles is still not damaged, whereas Wandoo poles used at the same time have seriously deteriorated. (This is too good a story to refute, so I have not checked the Hall personally). This same neighbour and adjoining farmer both have boundless faith in Powderbark whether split or sawn, particularly when mature trees are used. The third witness has 12 years old unsapped Powderbark strainers which have still not lost their sapwood.



Scale : abt. 12 miles to an inch

54256/12/61-450-0.

COONDLE:

Five settlers in this area use Wandoo as posts but have not tried Powderbark, since there is none on their own land. However, all five are also beekeepers and unusally observant. They claim that fallen Powderbark trees in State Forest decay no faster than Wandoo, and one farmer has since built a section of fence with Powderbark to test the product.

BOLGART:

Two settlers were interviewed here, and both threw up their hands in horror at the mention of Powderbark fence posts. "Completely useless"; "Won't last 6 weeks"; "May last 3 months if put in upside down!". These were some of the comments from the two men concerned, and on questioning them, I discovered:-

a) Neither had ever tried Powderbark posts,

b) Neither had ever seen Powderbark used,

c) Neither knew anyone who had tried it.

Just how the prejudice in this area arose, I have no idea, but on psychological grounds, Coptotermes is well in front in the Bolgart district. However, the evidence in the other areas has convinced me that Powderbark (Euc. accedens) is every bit as durable as Wandoo, and may be even better as a fence post.

PERTH TECHNICAL COLLEGE COURSE IN FORESTRY.

There is now a course of instruction in Forestry given at the Perth Technical College.

At the request of the Engineering Department of this college, lectures on Forestry are being delivered to 4th year Diploma of Engineering - Surveying students. So long as a lecturer is available, completion of this course will become a permanent part of the Diploma requirements.

Engineering - surveyors on graduation are likely to be employed by the Main Roads Department, P.W.D. or local government authorities, and will be required from time to time to work within the forest belt. The lectures are aimed at informing students of the economic, protective and social value of forests, and to give them an appreciation of the foresters' work in the management and protection of the forests.

The course consists of 36 one-hour lectures covering -

Vegetation of W.A.,
Forest types and their distribution,
Forest botany,
Vital processes of a tree,
The properties and uses of West. Australian timbers,
The economic value of trees and forests,
Land classification,
Forest policy,
Forest fire control,
Silviculture,
Management,
Principles of afforestation,

Forest mapping,
Forest engineering,
Forest surveying,
Forest law.

When the course is completed copies of the lectures will be bound and held in the Forests Department library for reference and use by future lecturers, and by officers who may be required to talk on any of the lecture topics.

Editors Note

This course of lectures was prepared and delivered by Mr. Ian Morison in 1961, and by Mr. Peter Hewett in 1962.

A STUDY IN FORESTRY AND LAND USE ECONOMICS

by I. G. Morison

Just four years ago in July 1957, Dr. H. P. Schapper, Reader in Agricultural Economics at the University of W.A., sought permission from the Conservator to show a party of his senior students the work being carried out by the Forests Department in the Blackwood Valley.

For many years economists had been aware of the economically unsound condition of farming over large areas within the forest belt and for many years they had put forward proposals for the correction of this condition, but these were largely ignored by governments and scoffed at by farmers, and the unhappy state of affairs continued.

Dr. Schapper saw in the Forests Department's action of re-purchasing farm land for pine growing most of his economic proposals being applied in practice, e.g. the change over from dairy farming to a type of farming more suited to the environment - in this case tree farming - the "assisting" out of the farming industry of people who were receiving below average returns for their labours - the Department's cash purchases "rescued" many such people. Who else would want to change places with them? - the Department's policy of buying (where possible) only the higher rockier areas, less attractive for agriculture, provided some farmers with much needed capital to further develop their more fertile lands. In some cases this capital was sufficient to allow farmers to purchase other small areas of fertile country and so amalgamate farms into larger and more economic units.

This example of theoretical agricultural economics in action and successful action at that, to everyone's mutual gain, set Dr. Schapper and some of his senior research students thinking seriously on the importance of forestry and the timber industry to the South-west as a whole. Here was an alternate primary industry utilising more fully the resources of soil and climate, more suited to the environment in that it was a natural forest habitat, and with marketing conditions that required no special subsidy or protection to make it operate profitably. This in fact was what agricultural economists had been seeking for years within their own various agricultural pursuits.

These thoughts led to further discussion between the Agricultural Economics section and the Conservator and it was decided to carry out a detailed investigation into the

economics of forestry in the south west and compare it with the economics of agriculture as practised in the same areas.

The agricultural side of the investitation was well covered by a Senior Research Student and an Economic Statistician under the direction of Dr. Schapper.

For the purposes of supplying the forestry and timber industry data necessary a departmental forestry officer was seconded to the University staff for a period of twelve months. It was intended that the forester, in addition to supplying the technical and economic data on forests and forest products, would become familiar with comparative budgeting, programming techniques and economic decision making, all of which could be applied to forestry thinking and planning.

This study has recently been completed and a full detailed report is being prepared by the research team and will be published shortly. This report will be a major contribution to land use economics in the south west of Western Australia.

A paper on the subject was read at the Annual Conference of the Australian Agricultural Economics Society in Canberra in February, and will be published in the December issue of that Society's Journal. This paper by Treloar and Morison entitled "Economic Comparisons of Forestry and Agriculture" deals in detail with economic implications of the study rather than with the results.

An article will be published in the next issue of the Institute of Forester's Newsletter setting out a description of the study method and a simple statement of the findings.

In all cases the results favour forestry and this must continue to be so while Forestry, or the timber industry, continue to make a profit, however small, because in every case Agricultural pursuits returned a net loss per acre after farmers wages and interest on invested capital were deducted.

Apart from any value the results of the study might have, there is no doubt that the close contact between the Forests Department and the Institute of Agriculture over the twelve month period has taught each a great deal about the other.

It was of course impossible for the agricultural economists and the foresters to work together without first having some elementary knowledge of the other's profession, and it was probably the efforts of each over a long period to understand the other's problems that the greatest long term benefits will result.

On numerous occasions the agriculturalists were taken into the forest and, with the assistance of senior officers of the Department, were taught the principles of sylviculture and management.

Chartered aeroplane flights were made over the forest to indicate the scattered nature of agricultural development and the severe forest fire damage resulting from this development.

Apart from the seconded officer a number of other forest officers assisted in the study from time to time in their special fields of hardwood management and sylviculture and pine management and these officers no doubt learnt something of the economic approach in the process.

The ideas of the economists are by no means unconditionally accepted by practicing farmers - in fact there is some strong feeling between the two. Even governments are loath to heed their advice. It looks for instance as if proposals put to the Dairy Industry Committee of Enquiry by the economists and recommended to the Commonwealth Government by that committee will be ignored.

The University Agricultural Economics Section has given assistance and training to the Farm Management Club Advisers and, in every case, these advisers while at the University have shown great interest in forestry, particularly in their own club area. Forestry officers are urged to make contact with these men if a club has to be formed within their divisions. At present Clubs have been formed in Manjimup, Margaret River, Pinjarra, Brunswick and Busselton.

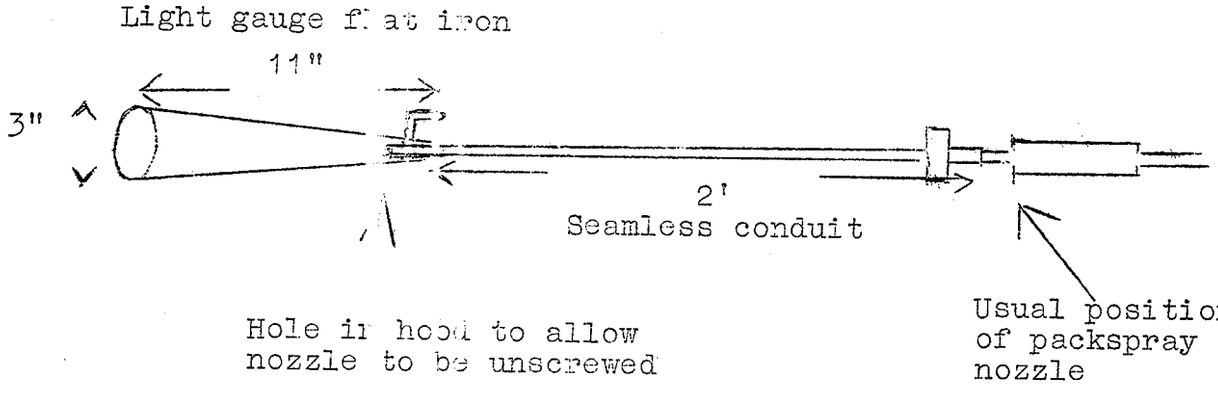
The influence of the agricultural economist is increasing daily in our community. More farmers, politicians and laymen are listening to his ideas and teachings. Forestry in W.A. is fortunate that this study has brought out interests and claims into close and favourable consideration by these men.

We stand to gain a great deal in the future from this alliance so long as we can continue to show that tree growing and the wood using industries can operate profitably without any special assistance or protection.

SIMPLE FLAME THROWER FOR CONTROL BURNING.

by F. H. McKinnell

This flame thrower is adapted from the normal type of packspray by removing the spray nozzle and screwing on the extension sketched below:



The nozzle has an extra large lever to facilitate movement when hot. The normal packspray nozzle aperture tends to be too large and the unit is more efficient if the jet is slightly burred around the edges.

Early units had the extension welded onto the end of the pump, but having it screwed on enables the unit to be used for fire fighting in the usual way simply by removing the extension and screwing on a standard nozzle.

It is essential that the rubber hose be replaced by a plastic one, as rubber is quickly perished by the fuels used, i.e.power kerosene and dieseline. The buckets in the spray pumps are affected in the same way and have to be replaced frequently.

Further trials are to be carried out to see how far cheap fuel, e.g. sump oil, can be mixed with the other fuels to reduce costs.

The unit is set alight by holding the hood over, e.g. burning litter, with the tap on, for about a minute. With a hood that is well carbonised inside it will then remain alight without continuous pumping. Once it is warm, only a small squirt is needed each time to light up and from four to six gallons an hour of fuel is consumed. Trying to throw the flame too far is to be avoided as it wastes fuel.

It is usually used on a jeep and can cover about 8 miles in an hour or more under warm conditions. The flame thrower is particularly useful for lighting up firelines along railways and main roads and between boundary tracks and 5-chain fire lines around State Forest boundaries.

In large blocks of forest to be burnt in spring the flame thrower enables a clean edge to be obtained with consequent less risk of breakaway fires later in the fire season. The reason for this is that the flame thrower can light up under more adverse conditions and more rapidly than a drip torch.

More complicated (and more expensive) power driven pump flame throwers are being developed, but there must still be a place for this type of unit which can be used for fire fighting as well as lighting and is readily adapted from existing equipment.

Probable improvements to this unit include:

1. Replace tap by a straight jet (1/16 inch is suggested).

Enquiries are being made to see if firms can supply these. If not, they may be made in our workshops or the conduit blanked off at the end with a piece of metal with a hole drilled in it.

2. The fuel squirted out must not strike the hood, as this reduces distance of squirt. Hence the jet in the nozzle should be true and the hood fixed firmly.

3. At the end of the pump where tap fits on the packspray unit the male thread is short (only $\frac{1}{2}$ inch long). When flame throwing attachment is fitted, the joint must either be welded or the thread lengthened to give extra strength. Both hands hold the pump behind this point and hence the attachment can easily be knocked against passing objects.

TALL MARRI.

By J. Williamson.

About 1 mile south east of Wellington Mill, alongside the Upper Ferguson Road (map square EW 55/56) a very fine Marri is growing. Its measurements, taken on 20.12.61, are :

Total height		185'
G.B.H.		18'3"
Log height		104'
Log volume	=	B.A. x log. ht. x form factor
	=	26.5 x 104 x 0.6
	=	1650 cu. ft.
	=	33 loads.

This is an open - grown tree and may go close to being the tallest Marri in existence.

LARGE JARRAH - COLLIE DIVISION.

by J. Williamson.

This tree is situated about 1½ miles east of Wellington mill settlement along King Tree road. (Map square EV 56). It stands on the north side of the road and about two chains from it.

Its measurements are :-

Date		24. 1.62.
Total height		151'
Girth at 6'		22'
Log height		87'
Log volume	=	B.A. x log ht. x form factor.
	=	38.7 x 87' x 0.6
	=	2010 cu. ft.
	=	40 loads.

This tree has a hollow butt to about 12' on the side facing away from the road. This would reduce the volume by about 5 loads (estimated), giving an actual log volume of 35 loads.

Although the crown does contain dead limbs, it is quite well preserved for such a large tree.

KING JARRAH.

by J. Williamson.

In map square DD66, on the Harvey 80 about 3 miles south of Nanga Brook, is marked "King Jarrah". This is a magnificent tree with the following measurements: (These were taken on 11.4.60).

Girth at 4'3"		22'3"
Mean crown ratio		11
Total height		160'
Log height		90'
Log volume	=	B.A. x log height x form factor.
	=	39.41 x 90' x 0.6
	=	2128 cu. ft.
	=	42.6 loads.

This tree was burnt on 25th January, 1961, and lost about 1/3 of its crown. By the look of the fallen limbs this was due to the wind accompanying the fire, rather than to the fire itself.

KING JARRAH - NANGA BROOK.

by Frank G. Quicke.

King Jarrah can be found marked as a reserve tree on the Harvey 80.

Measurements taken in July, 1958:

G.B.H.		22'1"
Basal area		38.8 square ft.
Bole length to first limb		95'
Form factor		.6
Volume	=	$\frac{\text{B.A. x log x F. factor.}}{50.}$
	=	$\frac{38.5 \times 95 \times .6}{50}$
	=	43.8 loads.

Tree alongside King Jarrah :-

G.B.H.		23'
Basal area		42.4 square ft.
Bole length		55'
Form factor		.6
Volume	=	$\frac{42.4 \times 55 \times .6}{50}$
	=	27.7 loads.

HOW ACCURATE ARE ANY OF OUR MEASUREMENTS?

by W.R. Wallace.

Interesting figures on the measurements of the King Jarrah at Nanga Brook are given above by Frank Quicke and Jim Williamson. A close study of these sets of figures shows some marked variations which ultimately give a volume figure suggesting a loss of 1.2 loads (approximately 2.8%)over 3 years.

Now this large tree apparently suffered heavily in the January 1961 Dwellingup fire which according to Mr. Williamson's article "Girth reduction due to fire" could have caused some shrinkage apart from actual girth loss by bark removal. This draws attention to the amazing shrinkage in bole length of 5 feet over the period. Whether this was due to the severity of the recent fire is not stated, but whatever the cause it is without doubt the reason for the 2½% reduction in volume.

In both calculations a form factor of 0.6 has been used and, in view of Mr. Quain's comment on the use of this factor for Karri, it would be of interest to know if the same margin of error obtains with Jarrah. Which all means - " could some one please measure this tree correctly".

SIC TRANSIT GLORIA MUNDI

by S.J. Quain.

It is a well known fact that men, trees, deeds and many other things can never compare in size and might with those of the past. That this should apply to Karri trees is not surprising but that even old time giants left for the modern person to admire should also suffer this reduced stature is unfair, but true none the less.

Explanation:-

Past giant G.B.H.	20'0"	Present measurement G.B.H. 20'0"
Log length	131'	" " log length 131'
Past volume = B.A. x log length, x form factor		" " Volume per Volume table.
= 31.8181 x 131 x 0.6		
= 2,504. cubic ft.	=	1910 cubic feet.
= 50.1 loads	=	38.2 loads.

Even assuming that the G.B.H. in the first case was under bark, and in the second case over bark, the difference of nearly 12 loads is too great to be explained by this factor. Unfortunately, it appears as though our original form factor of 0.6 for standing karri is too high.

Some comments on how the original form factor was obtained may prove interesting.

VOLUME ESTIMATES OF STANDING KARRI.

by S.J. Quain.

In the previous issue of forest notes was an article on the volume of a large karri. In the volume calculation a form factor of 0.6 was used.

When the karri volume first came into general use an extensive assessment programme was being carried out in the karri country. It soon became evident to officers engaged on this work that it was worth quite a few loads to "get off the volume table". This was not difficult as the largest girth on the table was only 21-6". This obviously caused some discussion in the field and the form factors in the table were checked and although they vary considerably they are generally well below 0.6.

If my arithmetic is correct below are some of the form factors in the karri volume table as usual.

Using a constant length 81' and different G.B.H.O.B.

G.B.H.O.B.	Form Factor
8-0	0.46
11'0	0.51
14'0	0.51
17'0	0.48
20'0	0.45

Using a constant girth 20'0" and varying length:

Log Length	Form Factor
41	0.56
51	0.51
61	0.48
71	0.46
81	0.45
91	0.45
101	0.45
111	0.45
121	0.45

Although I realise that very large trees do not conform to the average tree, I feel that a form factor of 0.45 rather than 0.6 should be used for large standing karri.

MEASUREMENTS OF SOME LARGE TREES.

by D.W.R. Stewart.

1. It is noted some tall karri are recorded, but none of exceptional girth.

2. A karri tree felled for Deanmill bush line construction about 1 mile west of Donnelly River, in 1942 or 1943. Stump was more than 6' high and girth at top of stump o.b. was approximately 38 ft. Took navvy gang three days to fell it with two large side scarfs in addition to the front scarf. No mercht. log was recovered. The stump and butt of the tree were recovered by an earth tramline embarkment about 8 to 10 feet high.

3. 'Big Tree' lookout is a karri tree approximately 35 feet G.B.H. but with a bole length of only about 80 to the first limb and a total height less than 200 ft. The cabin floor is only 145 feet above ground. It is very sound.

4. There is a file in the Manjimup Office recording measurements of 'special trees'. These include -

(a) 'King Jarrah' - about 2 miles N.E. of Manjimup. G.B.H. about 26 feet.

(b) Jarrah on Perup Road - about 5 miles E.N.E. of Manjimup. G.B.H. about 22'10" - Bole length 70'

(c) A jarrah in National Park midway between Manjimup and Pemberton - Bole length 105'6".

(d) A group of 5 karri trees about 2½ m. S.S.W. of Glenoran Tower, the tallest of which was 286' when measured in 1937 or 1938.

DIMENSIONS OF SOME LARGE PINUS RADIATA TREES AT MUNDARING WEIR.

by P. N. Hewett.

Herewith are the summaries of large specimens of P. radiata which have been measured at Mundaring. More detailed measurements of number (1) and number (2) are available if required :-

1.	P. radiata, Greystone 3. 1961 by climbing.	Planted 1922, Measured in Jan.
	Total height	149 feet
	G.B.H.O.B.	7' 9"
	Vol. O.B.	260 cub. feet.
2.	P. radiata, Greystone 3.	Planted 1922, Measured in 1961.
	Total height	135 feet.
	G.B.H.O.B.	8' 0"
	Vol. O.B.	270 cub. feet.
3.	Weir Hotel P. radiata	Planted 1906, Measured 1935.
	Total height	104 feet.
	G.B.H.O.B.	9' 6"
	Vol. O.B.	290 cub. feet.
4.	Weir Hotel., P. radiata	Planted 1906, Measured 1941?
	Total height	113½ feet.
	G.B.H.O.B.	10' 6½"
	Vol. O.B.	381.4 cub. feet.
5.	Weir Hotel, P. radiata	Planted 1906, Measured 1949.
	Total height	117 feet.
	G.B.H.O.B.	12' 3½"
	Vol. O.B.	186 cub. feet.
6.	Poor form tree, Greystone 3.	P. radiata. Planted 1922, Felled 1956.
	Total height	140 feet.
	G.B.H.O.B.	6' 6"
	Vol. O.B.	186 cub. feet.

7. Two trees at rear of Weir Office, P. radiata, Age 38 years.

(a) Total height 120 feet
G.B.O.B. 7' 4"
Vol. O.B. 210 cub. feet

(b) Total height 110 feet
G.B.H.O.B. 5' 9"
Vol. O.B. 120 cub. feet

WANDOO AT ITS BEST.

by N.K. James

LOCATION: The Eastern portion of the Mundaring Division, Compartment 1, Flynn Block, in Charcoal Iron Steel Industry, Wundowie sawmilling permit. All logs were measured, also standing green (marketable and non marketable). Area measured, 1 acre. The surrounding country is excellent Wandoo forest with some good Jarrah within three-quarters of a mile. The soil is a sandy clay, with good drainage and an Easterly aspect.

REMOVED			STANDING 36" MARKETABLE		
Centre girth	Length	Vol. C. Ft.	G.B.H.	Length	Vol. C.Ft.
5'7"	15'	37.2	3'0	25'	8.3
4'11"	21'	40.4	4'7"	25'	23.5
4'6"	19'	30.6	4'7"	22'	20.0
5'1"	11'	22.6	4'6"	12'	17.0
5'2"	22'	46.7	3'6"	25'	12.1
5'6"	23'	55.4	3'7"	20'	11.0
4'10"	16'	29.7	4'11"	28'	29.0
5'10"	17'	46.0	3'11"	12'	11.5
6'3"	10'	31.1	3'11"	26'	17.2
4'10"	23'	42.8	3'7"	20'	11.0
6'1"	24'	70.7	4'10"	12'	19.0
5'1"	9'	18.5			
		471.7 c.ft.			179.6 c.ft.

NON MARKETABLE		
G.B.H.	Length	Vol. C.ft.
5'1"	28'	32.0
7'3"	18'	53.0
4'11"	18'	29.0
6'8"	20'	49.0
5'10"	18'	36.0
5'0"	30'	31.0
6'11"	20'	57.0
		287.0

Volume Removed 9½ lds. per acre approx.
" 36" Marketable 3¼ lds. per acre "
" Standing green 5¾ lds. per acre "

Total lds. per acre 18½ lds.

DOES ANYONE KNOW OF ANY BETTER ????
