FOREST NOTES

FORESTS DEPARTMENT
PERTH
WESTERN AUSTRALIA

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CONTENTS

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The flow of material for Forest Notes has dwindled severely over the past few months, and were it not for the strong support by our two Research men, we would be in serious trouble. The Divisional whips will shortly receive a strong request for more support.

With this issue we bring you the chance to win a year's subscription to Forest Notes by correctly identifying the motor car illustrated on page 25. The first neatest correct entry wins, and no correspondence will be entered into.

On page 5 you will find the names of those who were successful in the recent promotional exams, and we offer to them our sincerest congratulations.

P. N. Hewett J. A. W. Robley

JOINT EDITORS

OBITUARY

A. R. KELLY

The sudden death of Arthur Roy Kelly on May 25th, 1965, as a result of a heart attack, came as a shock to his many friends. He was well known throughout the timber industry and at the time of his death was President of the Field Officers Association.

Arthur commenced duty with the Department as an apprentice at the Ludlow Forestry School on the 3rd February, 1925, the day after his fourteenth birthday. He was appointed a Forest Guard in February 1929 and an Assistant Forester in August 1934. He served at numerous centres in the South West, ranging from Mundaring Weir to Manjimup, with two years in the Goldfields on classification of timber country in areas around Cue, Mt. Magnet and Meekatharra.

In December 1940, Arthur was transferred to Kirup and remained at that centre until his death. For a number of years he was Officer-In-Charge of Kirup Division, and in September 1956 was appointed Senior Timber Inspector.

On several occasions over the past few years the sawmilling industry has sought his assistance and, on their behalf, he made trips to Iraq, Pakistan and New Zealand indicating the high regard in which he was held. He will be sadly missed by all who have had the pleasure of his company.

The Editors,

Dear Sirs,

In Reply to A.L. Clifton's Article in Forest Notes June 1965

On my return to Grimwade in 1964 I was very impressed with the growth of several River Banksia Trees that we had planted around the settlement as ornamental trees in 1957.

These trees are 20' high but unfortunately have multiple stems ranging from 4" to 6" diameter. Had they been pruned it is reasonable to assume that they would be 25' high with an 8" to 9" diameter log say 10' long.

In 1964 approximately one acre was planted on the slopes of the Balingup Brook at a 10 ft. spacing. The average height of these seedlings was 20 " and they have increased to 35" in 12 months, equal to Pinus radiata at this stage.

In 1956 I planted 20 River Banksia trees in Section F locally known as the 2 mile gully. These trees have all died;the last one reached a height of 11' and died in the last 3 weeks.

This in my opinion suggests that these trees will grow in deep well drained soil only where it is simple to establish Pines anyway. A possible solution to the fire hazard areas would be Euc. Robusta or our common Flooded gum. With their smooth bark would not be a lighting risk.

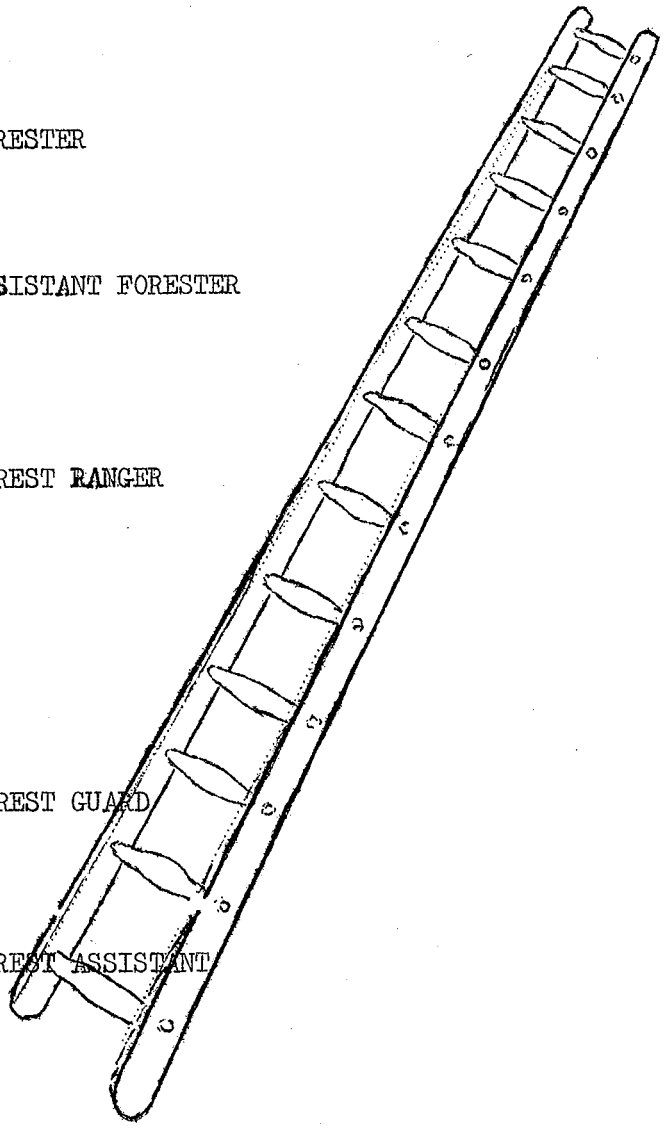
Surely this timber would be more valuable than rushes and grass.

Yours faithfully,

J. Dearle

PROMOTIONAL EXAMS 1965

Congratulations to those who have passed the 1965 promotional exams.



FORESTER

McKay, J.

ASSISTANT FORESTER

Dedman, M.F.
Jones, K.

FOREST RANGER

Annels, T.
Ashcroft, T.J.
Court, L.F.
Dedman, H.
Donnelly, D.
Holland, A.W.R.
Moore, V.
Rutherford, M.
Wood, T.

FOREST GUARD

Belton, N.
Button, R.
Court, T.J.
Van Didden, G.

FOREST ASSISTANT

Fitzgerald, B.A.
Von Hombrach, E.F.

THERE'S NEVER ANYONE IN THE BUSH AS EARLY AS THIS.

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EXOTIC SPECIES FOR THE JARRAH FOREST

by D. Spriggins

The successful growth rates of Eucalyptus microcorys (Tallowwood), and Eucalyptus saligna (Sydney Blue Gum), planted 30 years ago by Bednall and Chandler in the arboretum at Willowdale, lead to speculation on what other eucalypts or general/species would be worthy of trial in the Jarrah Forest.

The successful establishment of Tallowwood on a gravel dieback area near Harvey is promising - particularly as early growth rates (1961 planting) appear to be greatly superior to Jarrah. Tallowwood could be particularly valuable in these areas if it later proves to be more resistant to dieback than Jarrah.

Apart from the dieback areas there also appears scope for establishing these two or other eucalypts on sites at present occupied by Bullich and poorer Blackbutt, i.e. the edges of gullies and swamps. Soils in these gully sites are largely lateritic silt and, whilst they appear to support only a very poor P. radiata or pinaster crop, as many of the old pine plots in these soils testify, they do appear promising for Tallowwood or saligna.

The extent of these soils at present carrying Bullich, etc. is not great, but as one D.F.O. has pointed out, the total area probably exceeds that of suitable soil for P. radiata. This, coupled with the closeness to the Perth market and the high growth rates we might expect (if the Willowdale Plot is a guide), makes these sites quite attractive.

The most desirable eucalypt to plant in these sites would probably be one with a similar growth rate to microcorys, but yielding a lighter timber than Tallowwood or Jarrah, say 30-40 lbs/cubic foot and one that could complete in quality with imported Ramin or Meranti. Apart from Pinus there is a definite shortage of this class of timber.

Several eucalypts or other species are worthy of trial in these sites. It is worth noting that E. microcorys and saligna are natives of summer rainfall areas. Their success in a winter rainfall zone seems to follow an often observed trend that summer rainfall species have more chance of succeeding in a winter rainfall area than vice versa. If this is so then species such as Eucalyptus pilularis, Blackbutt, Hoop Pine, Bunya-Bunya and even Ramin or Meranti which grow in the tropical sawmps of Sarawak, could be worth a trial.

Resistance to fire could be a definite asset in choosing a species but is not an essential, as provision could be made as with pines to protect them from fire. It is likely that our controlled burning experts could, if presented with the problem, draw up a prescription for their safe burning.

Site preparation costs in the gully areas should be cheaper than for hills plantations and much could be achieved by a hot Autumn burn prior to planting, provided the adjoining country was burnt the previous spring.

In some cases drainage may be necessary to improve the site. The Italian market gardeners, who rather successfully farm what was previously ti-tree swamp areas, illustrate what can be achieved by intelligent drainage.

Of course, at the back of any program for introducing any species, is its resistance to dieback, and it would be foolhardy to launch on some extensive program before this is fairly well established.

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THE EFFECT OF A 4 YEAR BURNING CYCLE ON JARRAH REGENERATION

by D.R. Lejeune

Observations have been made in fair and high quality Jarrah forest in the Kirup Division following the 2nd cutting cycle.

For some 6 years I have been making observations and notes on areas burned 4 years after the top disposal burn but it has required Mr. Peet's initiative in Forest Notes (Vol. 3 No. 1 and No. 2) to spur me into print. The detailed observations he has made speak for themselves.

I cannot present such detail but must say the results are what I would have expected. My observations used a growth rate of 2 ft. per year of dynamic regrowth stems likely to be required for restocking.

In the areas studied the following observations were made and these may help to explain my conclusions.

1. In the area where the crown fell and also around the stump there generally appears to be less litter accumulation. The reason for this is assumed to be that the crown or producer of litter has been removed from the area around the stump and the crown of a felled tree in the majority of cases falls into an opening in the canopy. The lean of a marked tree tends to be towards an opening and also the marker tries to direct the crown into an opening. If he fails, as we know, the crown makes an opening as it falls.

2. In the subsequent burn the chances of survival of dynamic regrowth in the ashbed of the crown are greatly increased when the top disposal burn is done at least one year after cutting. It is important that bark and fine woody material are burned.

3. Coppice stems with their faster growth rate (about 3 ft per year) have a higher chance of survival than dynamic saplings at age 4. In these days of low stumps coppice stems should play a much more important part in the future crop. Unfortunately a variable proportion of stumps are still high, due to faults resulting from past uncontrolled fires.

4. Second cut forest is generally overstocked with immature sizes. Observations of the openings made by the 2nd cut and the amount of regeneration obtained, lead one to the conclusion that in a great many cases, a high survival rate of the regeneration will only aggravate this overstocking.

5. Jarrah forest of low stocking always appears to produce a light stocking of regeneration. In this bush therefore coppice could be even more important than in higher quality areas.

CONCLUSIONS:

In the types of forest observed, using conditions which cause minimal scorch, a satisfactory burn can be done 4 years after the top disposal burn. Without normal care and common sense it is possible to set back the regrowth considerably.

Since the Dwellingup fire we have endeavoured to burn the forest in even aged belts. The fact that mills have to cut in the forest and leave tops which we normally do not wish to hold more than one year complicates this planning enough. If it were then shown that tops must be held for much longer periods than 4 years the planning of these even aged litter belts would be rather beyond normal mortals.

Without question regeneration must be given 1st priority and we should not lapse into the habit of burning on any prescribed rotation unless it can be shown that our methods are successful in the particular forest concerned.

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THE CHANGING SIGNIFICANCE OF ADVANCE AND TOP DISPOSAL BURNS IN JARRAH FOREST

by D.R. Lejeune

In the days of complete protection the necessity of advance burns could not have been questioned, since the accumulated hazard and the risk of ignition were too great to tolerate.

When the forest has reached a 4 year burning cycle, the great bulk of burning is done in the spring, as the litter reaches age 4. Thus in the following summer the only litter which is 4 years old is that very small proportion awaiting an autumn burn.

Under ideal conditions (hazard Moderate or Average) for spring burning, age 4 is the youngest at which the forest floor can be burned. Possibly the figure is 5 years in the forest west of the scarp South of Busselton.

As a very junior officer I was instructed to stop all burning when the hazard reached 'High'. Experience has proved the wisdom of this and certainly there are extensive areas which should not be lit on a 'High' hazard day, nor on a night following such a day.

In the Kirup Division for some years an advance burn has not been used as a regular practice unless there are special circumstances to make it desirable.

Where a 4 year controlled burning cycle is established, and without an advance burn, the result is that a top disposal burn 1 year after cutting will be in the litter from 1-4 years old. Under mild spring burning conditions the fire will as a general rule not run in 1 or 2 year old, may run in parts of the 3 year old and will run in the 4 year old then.

We therefore have two alternatives for timing of the top disposal burn:

1. Do it 1 year after cutting irrespective of the fuel age.

or 2. Wait until we can use a running fire.

Which of these would you choose?

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SAVE OUR FAUNA

by P.N. Hewett

We trust that by now you've all done the test,
The currency questionnaire one.
The new note and coins and all the rest
And your scores have created some fun.

And some we are sure have done test number two
And are getting a taste for the game,
So here's a new test for the bright ones to do.
If you pass it, you're headed for fame.

The new notes are simple in half notes for sure
A dollar's a dollar's a dollar.
But the coins are all minted in animals pure-
ly Australian and so this will follow.

If two frills and a possum are all added up,
The answers a spiny echidna.
Two lyres, a roo and a platypus duck
Add up to nine lousy deeners.

So sharpen your decimal point my word,
To add up your natural fauna.
Add a glider, two lizards, five plats and a bird
And divide by an ant in the corner.

If your answer's a dollar and twenty my friend
Your ducks have all billed in the heather,
For the animal total divided by five
Is a plat plus a frill plus a feather.

.....

Decimal Definitions

Possum, Feather, Wing, Glider	1 cent	Frill, Neck, Liz, Lizard	2 cents	Spiny, Ant, Echidna	5 cents
Lyre Bird	10 cents	Plat, Duck, Bill	20 cents	Roo, Emu, Coat (of arms)	50 cents

DIFFERENTIAL STAINING OF JARRAH GROWTH RINGS

by G.L. Airey

Most observers will agree that Jarrah growth rings in freshly cut or dried specimens, often lack clarity. This is due to the general sameness of colour in dense and light wood, and often to the narrowness of growth rings. Some minor features such as the orientation of pores, are of assistance in identifying growth rings, but these are usually examined with a hand lens. This is a time consuming and altogether unsatisfactory process, particularly where large numbers of rings have to be identified and measured in stem snalysis.

Why should one wish to identify individual growth rings? Use of ring analysis as an aid to management has been recognised for many years, but to date, general use has not been made of ring analysis in gaining data on Jarrah growth rates. One good reason for not having done so is the lack of a satisfactory technique.

A suitable technique,will, no doubt, be evolved given time, but meanwhile, some use of ring analysis has recently been made in determination of response to pole stand thinning. The particular method used in this study was to compare the growth rates of 0.1 acre plots on adjacent thinned and unthinned stands. All stems were fallen and rings analysed at breast height. It was during this study the differential staining of growth rings was achieved by complete accident.

As a precaution against drying checks, the cut samples were stored in tanks of water prior to ring analysis. The period of storage varied up to six weeks, the samples being removed from the tank as required for reading at roughly weekly intervals. All samples were dried and sanded to a fine surface, and without exception, it was found that differential staining of light and dense wood had taken place. This meant that each growth ring could be relatively easily recognised. The dense wood was far darker than that on untreated specimens, but the light wood appeared to have remained relatively unaltered by the staining.

It is thought that the staining mechanism derives from dissolved iron in the Dwellingup water, which reacts with tannins in the wood. The colouration resulting is blue black, similar to the dyeing effect seen when an axe is sunk into a Jarrah stem. The reason for staining being darker in the dense wood could be bound up with tannin distribution or could be due to the lack of pores. Pores are more numerous in the light wood and would break up the surface so much that the light wood must appear less affected by the stain. In the meantime, detailed investigations are being made to determine whether dissolved iron is the cause of staining and, if it is, to find less haphazard methods of achieving the effect.

A little speculation before closing this item. The problem which applies to ring analysis in Jarrah also applies to many other Eucalypts. Already it has been observed that Mrri, (E. calophylla) responds to the same treatment, and it may be that this stain can be applied to other Eucalypts and, perhaps, to other species.

Finally, what good will such a staining technique achieve if it can be readily duplicated? It may help in producing a ring analysis technique which Management and Working Plans personnel could use. They could obtain growth rate information in a fraction of the time normally required for our slow growing Hardwood species.

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A LESSON ON PRODUCING KNOT FREE TIMBER USING VARIED PRUNING TECHNIQUES

by J.C. Gilchrist

When visiting a farm recently in the Blackwood River area, I was shown a rather amusing piece of Silviculture which deserves a mention in Forest Notes.

It appears that a private concern interested in the establishment of Softwoods had planted a trial area of Pinus Radiata on the farm. Later however, they decided against the idea and pulled out leaving the pine to the care of the owner.

On enquiring how the trees were growing the farmer invited me to accompany him on a tour of the planted area. This offer I accepted, and on the way over he informed me that the Pine had been planted in 1962 and that he had already done some pruning. I remarked that they certainly must be growing well.

On arrival at the plantation I was shown the first area which had been pruned. This consisted of trees 7'-9' in height over approximately $\frac{1}{2}$ acre from which every branch had been removed leaving nothing but $\frac{1}{2}$ an acre of naked stems. This has to be seen to be believed. Having recovered from the shock, I ventured to ask where he had seen this unique way of pruning. He assured me that this was the way it was done by the Forests Department in Nannup, to obtain knot free wood. I pointed out that although Nannup were capable of conjuring up some weird things I didn't think this was one of them although there was the possibility that our Research branch had jumped in with both feet and established another experiment.

Further on I was shown another method where the branches on the lower 3' had been left and the remainder removed, giving a sort of French Poodle effect. Before leaving I thanked him for a most entertaining tour and gave him a few hints on how to prune the remaining 19 acres.

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A METHOD OF ESTIMATING SALVAGE VOLUME AFTER AN INTENSE FIRE IN THE JARRAH FOREST

by G.B. Peet and J. McCormick

Introduction

The inherent fire resistance of jarrah creates problems when estimating the timber volume requiring salvage, after damage has occurred from an intense wildfire. The species has a higher than average resistance to these fires, and there are difficulties in deciding which trees will recover and which will die or remain badly damaged.

The damage assessment in the Dwellingup fire area could be a useful guide for estimating salvage volume in jarrah forest burnt at a comparable intensity. This assumes that recovery will be similar, and would apply in particular to northern jarrah forest carrying about 23 loads over 36" GBHOB, of which 20 per cent is useless for milling. Volume correlations will be improved if the fire occurred in late summer, after the period of leaf replacement.

The Dwellingup fire assessment has covered two crown damage categories, defoliated and fully browned. The assessment was based on one acre randomly located plots, at an intensity which gave a standard error of 15 per cent of the mean volume per acre. Trees within plots were divided into two size classes, then into crown recovery and merchantability categories.

The merchantable volume of trees over 36" GBHOB which were fire killed, or had bole epicormics only, is the criterion of the amount of volume requiring salvage.

Results

Results of the assessment are given as the percentage of total volume per acre over 36" GBHOB, in three crown damage categories. This percentage volume is divided into merchantable and useless for milling.

The percentage volumes in the fire killed and bole epicormics only merchantable class are used later for predicting salvage volume. The fire killed useless volume could be used in a similar manner for estimating future available firewood.

Distribution of Recovery by Percentage of Total Volume per Acre
(23 loads over 36" GBHOB)

Crown Recovery Class	Defoliated	Fully Browned
(1). Crowns Replaced		
Merchantable	56%	70%
Useless	6%	12%
(2). Bole Epicormics Only		
Merchantable	18%	7%
Useless	8%	4%

(3). Fire Killed

Merchantable	6%	2%
Useless	6%	5%

The volumes per acre requiring salvage are as follows.

Defoliated.

Bole epicormics only, merch., 18% of 23 lds. = 206 cub.ft.
Fire killed, merch., 6% of 23 lds. = 69 cub.ft.

Browned.

Bole epicormics only, merch., 7% of 23 lds. = 80 cub.ft.
Fire killed, merch., 2% of 23 lds. = 23 cub.ft.

Estimation of Salvage Volume

An example has been used to estimate the salvage volume for a fire area.

Example

A fire in the jarrah forest defoliates 2,000 acres and fully browns a further 3,000 acres. This forest has an average stocking of 23 loads per acre over 36" GBHOB, of which 20 per cent was useless for milling before the fire.

Total Volume for Salvage

Defoliated Area.

Volume per acre of bole epic. only merch. and fire killed merch. = 275 cub.ft.

Total Volume = 275 x 2,000 acres = 550,000 cub.ft.
= 11,000 loads.

Browned Area.

Volume per acre of bole epic. only merch. and fire killed merch. = 103 cub.ft.

Total volume = 103 x 3,000 acres = 309,000 cub.ft.
= 6,180 loads.

Volume requiring salvage = 11,000 + 6,180 loads
= 17,180 loads.

Range of Salvage Volume

If the range of volume about the mean is required, the limits could be established at two standard errors.

In the defoliated area the standard error is 15 per cent of 275 cub.ft. acre, which equals 41 cub.ft. The range per acre is therefore the mean $\pm$ 82 cub. ft., or 193 to 357 cub.ft. The range in total volume 7,720 to 14,280 loads.

In the browned area the standard error is 15 per cent of 103 cub.ft./ acre, which equals 15.5. cub.ft. The range per acre is therefore the mean $\pm$ 31

cub.ft., or 72 to 134 cub.ft. The range in total volume is 4,320 to 8,040 loads.

Combining the defoliated and browned area the range in salvage volume is 12,040 to 22,320 loads.

Discussion

The results given here are based on a stocking of 23 loads per acre over 36" GBHOB. The recovery percentages would probably apply to a greater or less stocking, providing the proportion of vigorous trees remains comparable. If the volume of cull trees contributes about 20 per cent to the total volume over 36" GBHOB, then the distribution of recovery should be similar.

There is a query whether recovery from fire damage will follow a consistent enough pattern for prediction methods to be employed. On the other hand there seems little reason why treatment by fire should be any less reliable in this regard than treatment by fertilizer or thinning.

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FIRE

Recently the Deputy Conservator delivered his presidential address to the Royal Society of Western Australia choosing the subject of 'Fire in the jarrah forest environment'.

This address dealt with the history of fire control since the early days of settlement in Western Australia and traced the trials and tribulations of the protection authority over the years.

The address was written up in the West Australian of 6th August, by Jack Edmonds whose article produced a number of comments not the least interesting of which were the following verses from Mrs. L.E. Ward of Wembley.

BUSH FIRE

It leaps like a raging tiger, to the crack of a thousand whips,
It flies as swift as an eagle, a prey in it's cruel grips.
It's voice is that of thunder, It's eye to lightning akind,
The forests it tears asunder, it's ally a rising wind.
It coughs, and spits, and belches. It flings itself about,
Races the hills and valleys alike, onward, upward and out.

Like a madman in gleeful triumph, seeking only just to destroy,
And with hysterical craving of ugly greed, every damnable method employ.
So it roars and screams defiance at all who would stand in its way,
Leaving trails of dead and dying, from a terrible tortuous affray
Of those who stood firm to fight it, and those who couldn't escape
Were trapped in frenzied terror, then engulfed in a sea of hate.

Who is this Fearful Monster? This Demon loosed from Hell?
This dreaded frightful Fiend that Australians know so well,
This stinking, blinding, blackening Thing, This Giant of evilness
At whose bloodred poser of destruction, Man can only guess?
This, my friend, is a BUSH FIRE ! In whose wake lies poverty and pain,
And which brings the "toughest" to their knees, to pray to Heaven for rain.

So watch where you have your camp fire, and where you throw that match,
Watch where you park that hot engine, else tinder dry grasses may catch.
Watch where you toss that "empty", to-night may be cool and dark,
But to-morrow that bottle, and the heat of the sun, may quietly kindle a spark.
Think of yourself, and of others, Would you like to be sharing their woe?
Think of our wild bush creatures, Burnt! and no sheltering places to go.

Well then, should you see a BUSH FIRE! do all that it's human to do,
But may you thank God in your innermost heart,
That FIRE was not started by you !

(We are most grateful to Mrs. Ward for permission to publish this poem).

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THE FULL TURN OF THE WHEEL

R.J. Underwood

The suggestion at a regional staff conference some time ago that the high costs of running vehicles round our plantations may be overcome by equipping each plantation HQ with an "Officer's Bicycle" has been given thoughtful consideration by those officers who fear they may become personally involved. The proposal has, in fact, stimulated a certain amount of hot debate, and a brief review of the opinions voiced may be of value to those contemplating this inovation.

Advantages

Apart from the obvious benefits of low maintenance and negligible fuel costs, the bicycle has many features to recommend it as a means of forest transport. Among the more significant are:

1. The ease with which the rider may negotiate boggy sections of track or washed-out culverts by the simple expedient of hoisting the machine across on his shoulders;
2. The low risk of accidents due to excessive speed (except, perhaps, on a quick dash to a suspected plantation fire); and
3. The excellent degree of all-weather visability.

Disadvantages

The most oft-voiced criticism of the use of the bicycle on forest roads is that work-time would be lost due to frequent punctures. However, this disadvantage may be readily eliminated - it has been suggested - by fitting all Departmental machines with solid rubber tyres.

Other important disadvantages are:

1. The bicycle is an inherently unstable vehicle, and the full-equipped forester carrying marking axe, fire rake, safety helmet, crib, water bag, field books and Manual, could experience some difficulty (and even danger) in negotiating the steeper Hills Plantations tracks.
2. The standard bicycle is not readily adaptable to VHF rig-up; modification, including fitting a 12-volt electrical system, antenna and generator, would be costly.
3. Finally it must be borne in mind that the bicycle traditionally functions inefficiently on cold frosty mornings, or during periods of heavy rainfall or of prolonged heatwave, and it is conceivable that work-time could be lost through this cause.

Conclusion

In conclusion it would appear that the only real advantage in switching to the bicycle would be a drop in fuel and maintenance costs of plantation Jeeps and Utilities. It is doubtful whether the over-all economy of the Department would benefit appreciably.

Before embarking on this move, then, perhaps we should stop and think. "Economy-wise", could we be biking up the wrong tree?

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IF YOU CAN'T BEAT 'EM....

A.E. Rice

Having fire suppression problems? Start counting your blessings with the help of this 83 year old pronouncement from a Government handbook on forestry:

> "STEPS TO BE ADOPTED FOR PREVENTION OF FIRE - There would be practically no great difficulty in stopping bush-fires, but no great advantage would accrue from the attempt - sonner or later fires will come, and the advantages gained by bush fires more than counterbalance the disadvantages. In fact bush conflagrations are frequently advisable. Leave the forests unburnt for a few years, allow the shrubs to flourish, fallen trees to thicken on the ground, with dead leaves, impregnated with turpentine, to accumulate and the destruction of the aged Jarrah, the young plants, and seeds will be completed. Allow the fires as a rule to take their course - if possible every 2 or 3 years. If you wish to preserve timber from an overgrown scrub, burn the country in lanes, or on each side of a water-course; fires help to split the seed pods and make them more susceptible to the early rains."
>
> - From "General Notes on Timber and Forest Products, with Remarks, by Mr. J.S. Harris, Late Resident Magistrate, Vasse," contained in a book on forestry and the timber trade compiled and published by the Governor of W.A. in 1882.

It's interesting to note that in the following year - 1883 - the writer was appointed the State's first ever forestry official, with the title of "Forest Ranger". He didn't get any salary, but was granted £50 per year forage allowance. Despite the confident tone of his opening sentence, it's doubtful whether the incentive of £50 forage allowance encouraged Mr. Harris to take a more aggressive attitude towards bushfires.

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POLE THINNING IN NORTHERN JARRAH FOREST

P.N. Hewett

In 1902 an area of approximately 20,000 acres within the Goldfields Water Supply Catchment was ringbarked and cut to increase water yields.

The system used was to ringbark all trees greater than 9" DBHOB and to fell trees smaller than this. The project had three immediate effects and two long term effects:-

a) Immediate
   i Water run-off increased
   ii Silt accumulation in the reservoir increased
   iii Salinity increased

b) Long term effects
   i Spring and soakage water has not re-appeared
   ii This Department has 20,000 acres of dense sapling and pole forest of relatively poor form.

Over the past 30 years several attempts at improvement felling in those stands, have been made and none of these attempts has had spectacular success. (A detailed study of response to thinning was done by Chandler W.G. - sec. Aust. Forestry Vol. IV Page 69, 1930). However, with the advent of systemic hormones of the 2.4.5.T group, it has been possible to recommence thinning of these stands, with some prospects of a response to treatment.

In mid 1963 A.D.F.O. Underwood marked a series of plots to test

a) Response to thinning

b) Three different spacings.

Two replications of each treatment were made, together with two controls, and dendrometer bands were mounted in August 1963, at the rate of two dendrometers per plot. These dendrometer have been read once monthly since August 1963 and a summary of increment readings is shown below.

Statistical analysis of these figures is not warranted since the response to thinning together with suppression of new coppice with 2.4.5.T. Ester is quite marked.

Note 2.4.5.T was used as a foliar spray in February 1964 since much of this stand consists of several stems on one coppice stool, and application to freshly cut stumps would kill the remaining stem.

Results

Spacing Ratios			Total Increment	Ratio	
Control	5'x 5'	1	0.395" girth	1	(1)
Treatment 1	15'x15'	3	1.080" "	2.74	(3)
Treatment 2	20'x20'	4	1.630" "	4.13	(4)
Treatment 3	25'x25'	5	2.280" "	5.76	(6)

The dendrometer readings will be continued for a further 2 years to assess long term trends in response to the various thinning regimes.

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A BOOM SPRAY FOR FOREST TRACKS

by D. R. Lejeune

OBJECT:

In "Forest Notes", December 1963 - 'How Often Should A Track Be Graded', it was mentioned that trials were planned to use 2,4,5-T on scrub and suckers that grow on forest tracks. This was to avoid the use of graders except where restoring the surface or the drainage.

DESIGN OF BOOM:

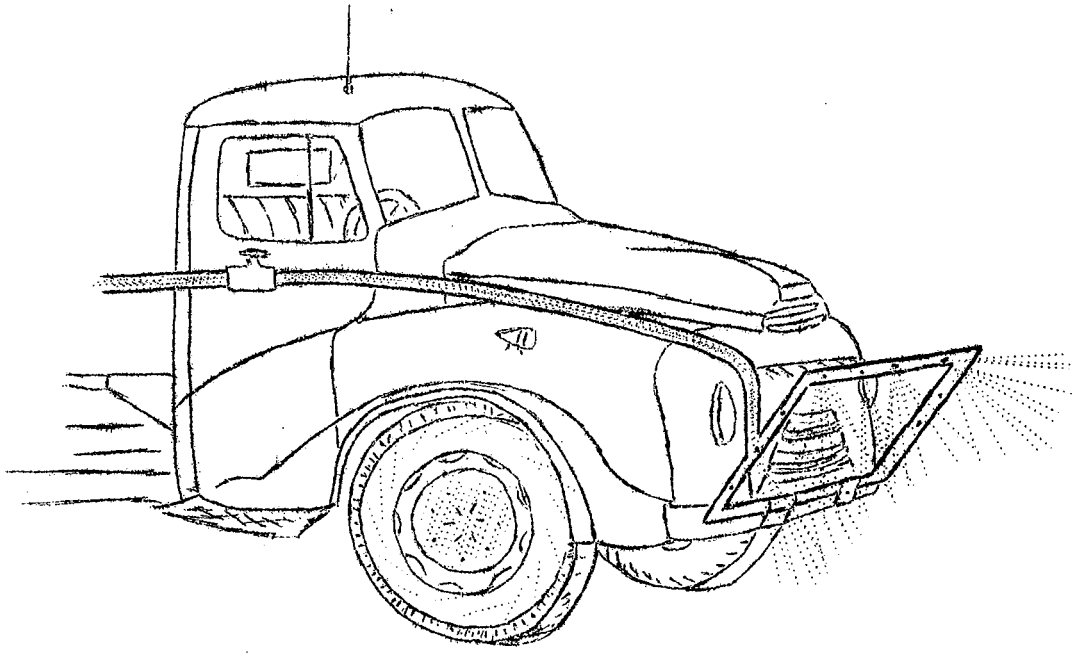
A boom spray for this job has been developed by Jack Dearle at Grimwade with 'jet' assistance from the experts at Nannup.

It is designed for attaching to the front bumper of a 5 ton Austin HD truck and consists of a rectangle of $\frac{3}{4}$ GI pipe with ordinary bends at the corners. This is 6'6" long by 4' wide. The jets are along one of the 6'6" sides and the opposite side is pivotted by fittings on the bumper attachment.

The jets are six Rega Low Pressure $\frac{1}{4}$" gas 110-1 jets spaced 15" apart and turned so the fan is not quite parallel with the boom and the fan spray from each jet just misses but overlaps slightly the fan from its neighbours

OPERATION:

It is essential that the driver can see the boom in order to be able to constantly check the proper functioning of jets and the application generally.



This is why the boom must stand out with 4' arms in front of the bumper. The height must be readily adjustable for height of scrub and wind. This has been achieved simply by means of a length of sash cord tied at one end to the middle of the boom, led back under the slightly opened windscreen and tied to the door pillar, so that the boom is at the desired height. When travelling at speed without spraying the boom is turned right back so it rests on the bonnet which is protected by a packspray pad.

A length of 1" rubber hose is run from the H/D pump past the driver's door to the boom. Beside the driver an ordinary H.P. tap is fitted.

The 600 gal. tank is filled with 2,4,5-T mixture at the desired strength and the motor adjusted to give the desired pressure. If there is a short stretch of the track free of scrub the spray can be conserved by turning off the tap at the driver's side. It has been found that the solution must be well filtered or jets will continually become blocked. H/D tanks are never very clean. In future it is intended to draw the solution through a hose dropped through the top of the tank with a fine gauze filter on the end.

THE TRIAL:

On 28/5/64 a trial was run on 1½ miles of recently opened up formation which was covered with our old friend 'Prickly Moses' (Ac. pulchella) and a few eucalypt suckers. The scrub then averaged 18" in height. The spray used was 0.4% 2,4,5-T without white oil(none in stock) and this was applied at the rate of 100 gals. per mile.

I inspected the result in April 1965 and a count revealed that 74% of the Prickly Moses had been killed and the remainder had made no effective growth due to t the setback it received. Only a 20% kill was achieved on eucalypt suckers, but this cannot be regarded as very significant as there were so few. It was noted that scrub was also setback or killed for several feet on the side of the track preventing it growing and leaning out over same. As one will notice along P.M.G. lines which have been sprayed, other nuisances such as Zamia and Blackboys were also killed or badly set back.

The control for this trial was an unsprayed section of the track which was a first gear job with scrub 3'6" high and it really scraped the dirt off the front of my car.

CONCLUSION:

The apparatus and technique appears to be fully successful , but lack of manpower has prevented any further use as yet. If there are many miles of track requiring treatment the biggest problem is water, used at the rate of 100 gals. per mile. Application can be made at about 5 M.P.H. This is the reason why a H/D was chosen. A tractor would do the job just as well and save the extra motor, but it cannot carry more than 88 gals.

The tying up of a H/D in the fire season is not regarded as a serious drawback as it can be quickly put into action for fire control and lower hazard days can be chosen for this work.

Since this method of track scrub control was conceived, the Page rotary slasher has gained popularity for this work in plantations. It would do a good job on tracks , but the presence of much crown would reduce efficiency as would the need to make several runs to get the width. Also the scrub in general would not be killed.

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DIRECTOR OF THE COMMONWEALTH FORESTRY BUREAU, OXFORD.

Advice has been received that Mr. C. Swabey, C.M.G., B.Sc., Forestry Adviser to the British Ministry of Overseas Development has been appointed Director of the Commonwealth Forestry Bureau at Oxford in succession to Mr. F. Ford-Robertson. Mr. Swabey is expected to take up his new appointment on 1st July, 1965.

Mr. C. Swabey, who is well known personally to many Australian Foresters, and others in Australia through his attendance at the 7th British Commonwealth Forestry Conference in Australia and New Zealand in 1957, and his Chairmanship of the 8th B.C.F.C. in East Africa in 1962, was Chief Conservator of Forests in Uganda before taking up his appointment as Forestry Adviser in 1957. He has previous service in British Guiana, Jamaica and Trinidad.

(Information supplied by Secretary of Commonwealth Agricultural Bureaux through C.A.B. Liaison Officer for Australia).

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"FEET AND INCHES" OR "FEET AND DECIMALS"?

by C. A. Miller

Forest research work often entails making hundreds of measurements of the various dimensions of trees, and the computations of results can take hours of work. When the results are in the magnitude of inches, they are expressed as inches and decimals, but such is not the case when feet are involved. The results then are nearly always expressed in feet and inches and the writer has painfully discovered that any work involved in adding, or worse still, multiplying or dividing feet and inches can be a very tedious business, especially when calculating machines are so few and far between.

Then why not use feet and decimals, which are far more manageable?

For measuring tree heights a height stick graduated in feet and decimals instead of inches has been devised. Simply, it consists of a staff of $1\frac{1}{2}$" x $\frac{3}{4}$" dressed jarrah, five feet long and marked as shown on the sketch.

The figures are stamped into the wood using number punches and the graduation marks are merely saw cuts. The whole staff is painted white and the indentations of the numbers and graduations are painted black, excepting the whole foot marks and numbers which are red.

On the reverse, only the foot and half-foot marks are indicated. This is easier to read when less accurate measurements are required.

This height stick is not restricted to trees of five feet and under. By combining its talents with that of aluminium height rods which are in multiples of five feet, any sized tree can be accurately measured, provided the operator's ability to hold aloft the ever lengthening height rod is not exceeded. The top of the aluminium rods is held level with the top of the tree (A stand-offish recorder is valuable to tell the measurer when the rod reaches the tip) and the "odd" length which is not over five feet long is measured with the wooden height stick.

Could tapes and other measuring instruments be decimalised and so help to reduce the ever rising pile of paper work involved in research?

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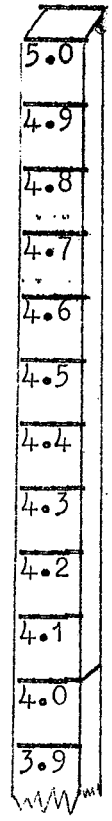
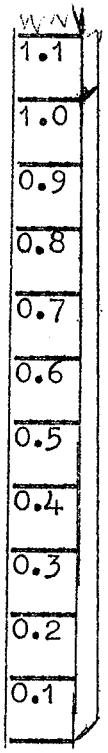
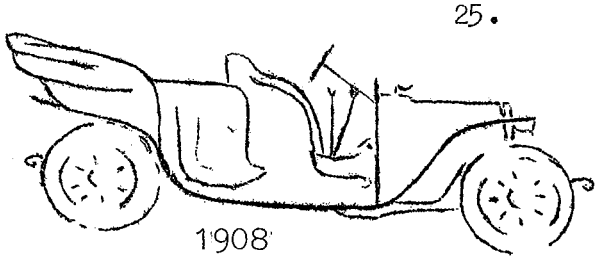




REVIVAL OF AN OLD CRAFT.

by T.J.WELCH.



It was with interest that we noted the mention in a recent issue of 'Forest Notes', of another and more recent use for local timbers in the matter of the bullion boxes.

This may prompt one to cast the eye around with a view towards finding other markets for timber, no matter how small the volume.

The old craft of the wheelwright is one such instance, now being revived in Perth, where the restoration of Veteran and Vintage cars is becoming intensified with every new "find".

Tuart timber is being used for manufacture of spokes, and to date several sets have been completed from material produced at Ludlow, the quality and finish of which has already rated high praise.

The method used in machining the spokes is one which has been devised by a toolmaker (who is also a member of the Veteran Car Club), and which is similar to the copying lather process, except that it is carried out in an engineer's lathe.

A high speed cutting head is mounted on the lathe tool post, with the axis vertical, and the planer cutters traverse the length by means of the saddle feed. The cutters enter the wood at the hub or inner end of the spoke, rotating with the grain, thus eliminating any possibility of chipped corners. The many different cross-sectional shapes, viz. peaked cam, ellyptical, plain round, or with bosses to accomodate brake drum bolts, are achieved by a control device acting on a cam-ring mounted on the lathe chuck.

An order for 48 pieces of 3" x $1\frac{1}{2}$" x 10" long may not appear to be of much importance to the annual balance sheet, but to the enthusistic restorer of Veterans, it can mean that yet another piece of local history has been preserved when the next Veteran car takes it's place in the rally.

The near future will see several cars rolling on Tuart wheels, such as, a 1901 Clement-Bayard, a 1908 Crossley, a 1908 Talbot, and a 1909 Rover.

So let's hope that some energetic scout will start searching the barns and come up with perhaps a rare 1903 Rover, a 1904 Chenard et Walcker, A Sizaire et Naudin, an Argyll, or even a Metallurgique, any of which would probably require new wheels, and so help foster this noble trade.