

FOREST NOTES

Forests Department Perth Western Australia

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FOREST NOTES

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Editor: I.G.Lennon

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We apologise most sincerely for the lateness of this issue of Forest Notes - the reasons are many and varied. It has become increasingly difficult of late for us to justify the time spent in preparation of this publication at the expense of research publications. Roger Underwood and Paul Jones have very kindly offered to 'take Forest Notes back to the field', and we have accepted gratefully. The balance of articles not appearing in this issue will be sent to Roger and Paul for inclusion in the next issue which will be prepared by them. All future communication concerning Forest Notes should therefore be sent to Manjimup.

Editor.

CREDITS

The photographs on pages 26, 31, and 37 were taken by L. Harman

P. Jones drew our attention to the Wizard of Id cartoon on page 52.

J. Sclater drew our attention to the article from the Journal of Forestry, 'The Forester's Wife as seen by a Forester's Wife'.

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Officer in Charge
Forests Department
WALPOLE W.A. 6398.

10th January, 1975.

The Editor
Forest Notes
Forests Department
COMO. W.A. 6152.

Dear Sir

Over the last three months field inspections have resulted in reports of a new disease apparently creeping over the forest areas of the Southern Region. The disease appears to have been transported from Northern areas, the initial infection probably resulting from large fires when supplementary forces were brought from the North. The disease appears very contagious, and, in order to ensure that no confusion between this disease and dieback takes place, a thorough investigation is being instigated. The agency of transportation is unknown: however, initial findings report a close similarity to the well-known UNION FEVER. In order to warn staff of the danger of this outbreak, a directive has been issued:

TO ALL STAFF

It has been brought to the notice of this office that many employees have been dying, whilst on duty, for no apparent reason.

Furthermore, the same employees are refusing to fall over after they are dead.

This practice must stop!

Any employee found dead on the job, and in an upright position, will be immediately stood down.

Where it can be proved that employees are being held up by a chainsaw, typewriter, forked karri wattle or any other support which is the property of the Department, a 90 day period of grace will be granted.

In future, if any Supervisory Officer notices that an employee has not moved for two (2) hours, it will be his duty to ascertain whether the employee is dead or not.

Because of the close resemblance between death and their normal working attitude, the investigation should be made quietly so as to prevent waking the employee if he or she should be asleep. It is considered that a good test is to hold a pay packet in front of the corpse. But again, care must be taken, as it has been reported that in some cases the natural instincts are so deeply ingrained that the hand still reaches for money long after rigor mortis has set in. All suspected cases should be reported immediately to FIRE CONTROL, giving full details in the form of a P.A.F.T.A.C.S.

Signed - Officer in Charge (apologies to unknown author)

P.A.F.T.A.C.S. - Position of death
Area of infection
Family size
Time of death
Age
Cause of death
Sex

-3-

26 Egham Road
Victoria Park
W.A. 6100.

2nd March, 1975.

The Editor
Forest Notes.

Dear Mr Editor

The following verses bring back memories of my impressions and feelings when I first walked into a magnificent stand of virgin karri on the Donnelly, many years ago. There are stands in the Warren National Park today that still induce the same feelings nearly sixty years later, when I could no longer be referred to as an impressionable youth.

You may like to reproduce them in Forest Notes as I am sure they will touch a chord with many of your readers.

Sincerely,

SIGNED: D.H. PERRY.

OUR KARRI FOREST

Here, sown by the Creator's hand,
In serried ranks, the karris stand;
No other clime is honored so,
No other lands their glories know.

Among the greatest of Earth's living forms,
Tall conquerors that laugh at storms;
Their challenge still unanswered rings,
Through many centuries of kings.

The nations that with them were young,
Rich empires with their forts far flung;
Lie buried now - their splendour gone;
But these proud monarchs still live on.

So shall they live, when ends our day,
When our crude citadels decay;
For brief are the years allotted man,
Compared with these tree's mighty span.

This is their temple, vaulted high.
And here we pause with reverent eye,
With silent tongue and awe struck soul;
For here we sense life's proper goal.

To be like these, straight, true and fine,
To make our world, like theirs, a shrine;
Sink down, Oh traveller, on your knees,
For God stands before you in these trees.

With apologies to Joseph B. Strauss.

CONSERVATION COMPETITION

Our conservation competition fell very flat indeed. From the one verbal and one written entry received it is obvious that members of this Department believe first and foremost in conserving their talents.

The only written entry came from Head Office, with the comment, "Don't say H.O. never makes a contribution again". We promise not to, and that will have to suffice as your prize for winning the competition unchallenged.

This is what Head Office proposed:

1. Keep glass containers and tins in separate bags for the garbage man to collect.
2. Typists to keep all old tape reels and send back to manufacturer or send to Ms. Leah at H.O.
3. Use only scrap paper for duplicates of letters etc.
4. Re-use paper that is wrapped around parcels.
5. Maruzen pens last only the third of the time that biros do - ink pens last even longer.
6. Anyone interested in scrap paper scribble pads to contact the Library at Head Office.

If everybody did one or more of these and similar things, it would have a considerable beneficial impact on both resources conservation and industrial running costs.

A. Leah, J. O'Neill, P. Shedley, D. Watkins, A. Mason.
Head Office.

Postscript

We have just noticed David Ward's article, 'Let's Save Money'. Was this meant as an entry for the competition? If so, what are you really trying to conserve - money or the English Language?

THE THIRD NATIONAL CONFERENCE ON FIRE AND FOREST METEOROLOGY
OF THE AMERICAN METEOROLOGICAL SOCIETY AND THE SOCIETY OF
AMERICAN FORESTERS, APRIL 2-4, 1974. AT LAKE TAHOE, NEVADA.

SUMMARY DESCRIPTION OF CONFERENCE PROCEEDINGS

R.J. Sneeuwjagt

The fire-weather conference proved to be a fruitful meeting for most who attended. The papers delivered were broken up into the following six sessions, each of which I will now summarize.

1. Fire-Weather Forecasting Services. Papers in this session mainly dealt with the forecasting of various meso-meteorological and micro-meteorological winds influencing fire behaviour. One such paper delivered by Dansy T. Williams, who is a meteorologist stationed at the Experiment Station at Macon, Georgia, may prove of some relevance to the situation along the south western coast of Western Australia. The paper described easy and accurate forecast procedures for predicting passage of sea breeze fronts along the Atlantic Coast of the south eastern United States.

The first session also contained an extremely interesting panel discussion on the possible effects of the proposed policy of 'cross utilization' of fire-weather services of the National Weather Service. This aspect will be discussed later.

2. Automation of National Fire Danger Rating Systems. In this session, several papers described the many uses and benefits provided by the interactive computing system that has been implemented to provide mass storage of fire danger rating observations and indices. Presently operating throughout California and Arizona, this system can handle all fire danger rating observations for the entire nation. Provisions for creating and routing text files permit users to exchange and broadcast messages throughout the network, a powerful tool for officers and zone dispatchers. The automatic information and retrieval system may have some definite advantages in our State.

3. Smoke Management and Air Quality. Papers delivered in this session dealt with several of the research programs currently in progress on the effects of smoke from wild fires and prescribed fires on air quality. A large comprehensive program at the Southern Fire Laboratory at Macon, Georgia was outlined. Co-operators in the program include Research, State and Private Forestry, and National Forests of the U.S.

Forests Service. Researchers are looking into the following areas: mechanisms of smoke generation, smoke quality and quantity, smoke modifications, smoke transport and dispersion and systems design for smoke management. No doubt many useful findings and papers dealing with smoke problems pertinent to our situation will shortly be produced from this program. Several early findings were presented at this session.

Dr. David Sandberg, a colleague at University of Washington, in his work on the relationship between slash fire intensity and smoke emissions, found that the quality of emissions was inversely proportional to fire intensity. He produced evidence to show that mass ignition or piling reduced emissions by 60% or more. Emissions increased dramatically with increased needle foliage content of slash piles.

4. Use and Application of Fire Danger Rating Systems.

Several problems encountered, and improvements developed, in certain aspects of the N.F.D.R. system were presented. These were mainly of interest to the fire managers in the U.S.

5. Forest Management Applications. One paper presented in this session described a burn or no-burn decision method for prescribed burning, for forest management. The method is based on a prescribed fire's air pollution potential. Solutions of mathematical expressions representing concentration of background airborne material, amount of smoke expected from a prescribed fire and the atmosphere dilution potential for their combination are presented in a single figure. The method assumes that all prescribed burning is postponed or terminated whenever combination of background and fire-generated particulate matter can reduce the horizontal visual range at ground level below 0.5 mile.

6. Fire - Forest - Atmosphere Interaction. This session produced a mixture of topics. The more interesting included: a conceptual model for lightning fire prediction; wind and temperatures generated in chaparral fires; and a meteorological telemetry network technique for monitoring and forecasting surface temperature, relative humidity and wind velocity in forested mountain areas.

7. Wind Flow. Eight papers dealt with airflow velocities and behavior in several aspects; including forest clearings, large mountain valleys, and mountainous terrain. The paper on wind-flow behavior at forest clearings and forest boundaries was of particular interest with respect to fire behavior in plantation compartments.

The Forest Service and the Forest Organization. The conference afforded an opportunity to learn more about the relationship between the National Weather Service and the Forest Service and other land resource agencies, regarding the forecasting of fire weather.

The N.W.S. has been providing fire-weather forecasting services since the 1950s. Until recently, the meteorologist assigned to the duties of a fire-weather forecast held this position throughout the year. During the fire season, he would keep in close contact with the forest fire-control management, and endeavour to satisfy all their needs. In the off season, the forecaster conducted research relating to various aspects of fire-weather forecasting, such as some of those presented at the conference.

In order to familiarize himself with the fire-control manager's requirements, the forecaster would normally spend some time with the foresters of the region within his area of forecasting responsibility.

Furthermore, many of the major forest experiment stations employ meteorologists seconded from the N.W.S. to conduct full-time research for the benefit of fire-management organizations. It was stated at the meeting that up to 40% of fire-weather research is conducted by the N.W.S., and the remainder by the U.S. Forest Service. These figures demonstrate the strong interest displayed by N.W.S. in fire weather forecasting.

I learned at the meeting that the arrangement as described above was about to change as a result of the introduction of a 'cross utilization' policy, which provides that the weather forecasters rotate duties periodically through the year. This policy, which developed as a result of a shortage in manpower within the N.W.S., was seen by most forest managers present to threaten the very useful relationships existing between the two concerns. It was agreed that the quality of forecast and other services would deteriorate because the experience and expertise derived in the present arrangement would be lost. Off-season research would become limited, and the familiarization program would be terminated.

The capability to predict fire weather conditions accurately is of extreme necessity in the management and control of fire. So that we may improve on this capability in Western Australia, several suggestions regarding possible improvement in fire-weather forecasting are made, with the realiza-

tion that some of these may have already been recommended and acted upon since my departure for study leave in late 1972.

The suggestions are:

1. That some arrangements be made with the Weather Bureau, whereby one of their meteorologists is assigned the full-time duty of fire-weather forecaster and researcher throughout the entire year. This arrangement may need to entail secondment of the Weather Bureau officer to the Forests Department.
2. Failing the above, arrangements could be made for one or two of the forecasters to be exposed to a field familiarization program.
3. That the Forests Department provide a scholarship for post-graduate research in fire-weather forecasting in Western Australia. This scholarship could be offered to meteorology, science or forest graduates with the proviso that, on completion of his course, the applicant work for a minimum number of years with the Forests Department.

"THE GAMES THAT PEOPLE PLAY"

F.E. Batini

Management games have, for some time, been an accepted part of the management/teaching professions. In forestry, we have been rather slower to adopt this management technique, though it was probably first used to simulate fire suppression activities as far back as the mid 1960's (when this form of activity was not called by such a fancy name).

Various types of games are now available and some have been "played" by officers of the Department. For convenience, they may be classified into three broad types (Computer Games, Board Games and Role Play Games).

A. Computer Games

CSIRO (Floreat Park) has access to a number of these, and some were played by members of the Institute of Foresters at an evening seminar. Access to a computer is essential, and the number of players is determined by the number of terminals that are available. Basically these are individualistic games (you versus the computer's programmer). Examples include Simple Salmon, a Catchment Management Game and a Moon Landing Game.

B. Board Games

Examples include the ABC Farming Game, The Pastoralist Game and Stocks and Shares. The games are usually played by 2 to 6 persons, though syndicates could be formed and group decisions taken if the numbers warranted it.

C. Role Play Games

The usual setting for these is a meeting, where the problem under consideration is discussed. Each of the different "interest" groups has the opportunity to put its case and each tries to achieve its goals with the least possible compromise. The games require upwards of 6 players; often 12 to 18 is a more suitable number. Available examples include the Star River Game, the Salinity Game and the Dieback Quarantine Game. These games appear most suitable to conflict-type situations (e.g. multiple land use, salinity, catchment management and town planning).

The Salinity Role Play Game

This particular game was originally conceived by Mr. J. Malcolm (Economist, Department of Agriculture). It was developed slightly and then used in place of a formal lecture on Land Use during staff schools held last year. It was played on 2 occasions, once with senior Field Officers (S.F.O.) and once with A.D.F.Os. At the end of each session the participants completed two questionnaires.

Perhaps the "newness" of the game elicited the generally pleasing response from the participants. However, such key words as "involvement", "facts", "think", "other points of view" do highlight some of the benefits that are possible.

Games can be used to highlight principles, as well as the uncertainties and difficulties, of certain management decisions. In role playing, characteristics such as personal involvement, self-confidence and ability to speak publicly can be developed. The game is, however, not independent of the "bias" of the designer or of the players. Some games can be played too often.

Are these techniques of any real value or are they designed merely for the amusement and the enjoyment of the originator and of the players? After all, these are only games.... and aren't most of us too busy to waste our time "playing games"?

QUESTIONNAIRE - ROLE PLAY

(no names no packdrill!)

- Q1. I BELIEVE THAT I (DID/DID NOT) BENEFIT FROM THIS EXERCISE BECAUSE
- A1. Did benefit 15
Did not benefit 0
- a. it presented facts of which I was unaware 6
b. it made me think 2
c. it was a palatable way of delivering a lecture 2
d. it forced me to defend a point of view 2
e. other reasons 4
- Q2. I FEEL THAT ROLE PLAY (IS/IS NOT) A VALUABLE TEACHING AID BECAUSE
- A2. Is 14
Is not 1
- a. I was directly involved 7
b. we saw other persons points of view 6
c. it made us think 4
d. it brought to light new facts 2
e. other reasons 2
- Q3. I BELIEVE THE GAME CAN BE IMPROVED BY ...
- A3. a. more notice so as to collect more facts 6
b. more details on how to play the game 5
c. more players 2
d. other reasons 4
- Q4 I BELIEVE THE PROBLEM CAN BE SOLVED BY...
- A4. a. further research 6
b. a ban on clearing 3
c. stricter legislation 3
d. replanting trees in selected areas 3
e. other answers 3
- Q5 OTHER COMMENTS ...
- A5. a. greater use of games is warranted 4
b. enjoyable and informative 4
c. other comments 3

ATTITUDES

At the end of the sessions, participants were asked to vote on the following questions, with these results.

Question	Nos. in Favour		
	S.F.O.	ADFO.	Total
1. That an acceptable quality of water should be maintained.	14	6	20
2. That financial encouragement be provided for graziers to re-establish some trees on their farms.	14	6	20
3. That the Forests Department accelerate the replanting of dieback sites in salt prone zones.	14	6	20
4. That the price of water be increased, if necessary, to maintain the quality.	14	5	19
5. That a moratorium on clearing of private property should be declared.	11	5	16
6. That a great deal more research is needed.	13	3	16
7. That <u>selected</u> areas of P.P. be repurchased and the farmers compensated.	11	3	14
8. That all current bauxite leases on the catchment be cancelled.	8	3	11
9. That bauxite companies be allowed to mine only within dieback areas.	8	0	8
10. That <u>all</u> areas of P.P. be repurchased and the farmers compensated.	5	0	5

11. That all further open cut mining for coal should cease.	0	3	3
12. That the affected dairy farms be repurchased and the industry relocated elsewhere.	0	2	2
13. That a desalination plant be built to treat Wellington Dam water.	2	0	2
14. That all sawmilling operations on the catchment should cease.	1	0	1
15. That a dam be built on the lower Collie river.	0	0	0

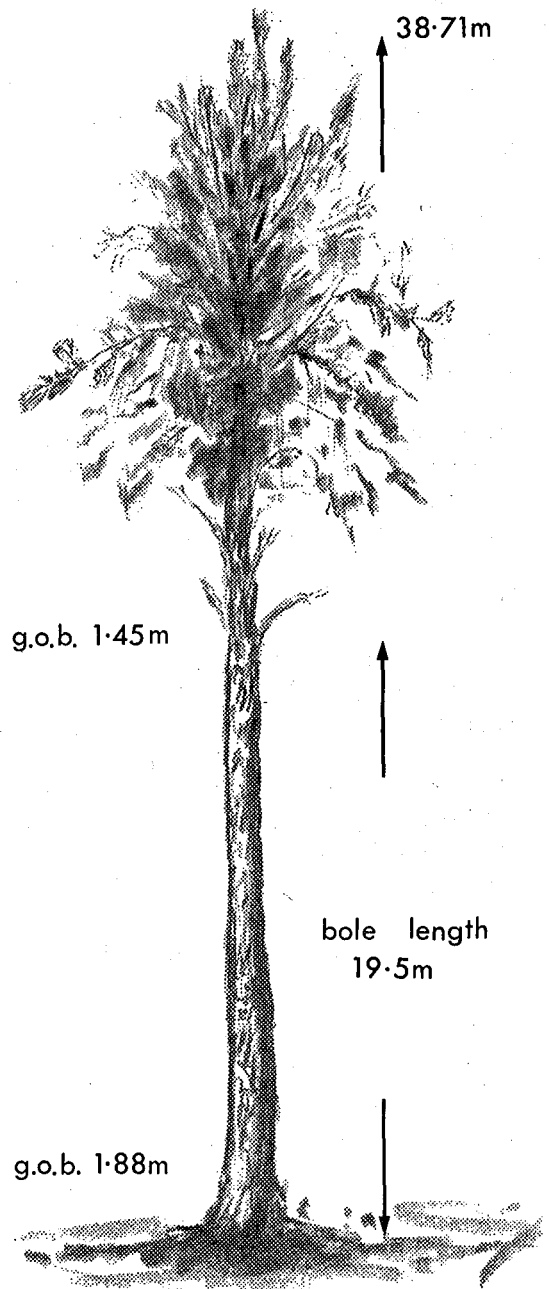
THE ELITE STOCK (PINASTER)

A.B. Selkirk

A tree which was planted in August 1933, as 2-year-old *Lieria* stock at Mundaring's Darkan Plantation, and grew into one of the finest specimens of *Pinus pinaster*, has become a casualty of the 1974 winter floods and gales.

Recently I took some approximate measurements amongst the debris of several other companions, and present the data on the right of the page. Some interesting aspects of a tree which was still growing in height as well as girth increment are shown. The total volume of the tree was 5.6 m^3 and the volume of the bole to 19.5 m was 3.75 m^3 .

The soil on this site is a fertile, deep alluvial that carried an original forest of *Eucalyptus patens* and *Eucalyptus calophylla*. Another elite specimen still remains. Though a little shorter, it is of better form and has greater stability.



THE EFFECT OF REGENERATION METHOD AND SITE
PREPARATION ON SUBSEQUENT FUEL ACCUMULATION

P.M. Jones

Introduction

The problem of the initial burning of karri regeneration areas will no doubt grow in importance as cut-over areas expand, with the movement of cutting into mixed marri karri.

The problem is accentuated by the relative intolerance of the young trees to fire and by the fuel build-up resulting from fifteen years of being locked up. Consequently, any means by which fuel accumulation may be avoided is going to be a distinct advantage when the time for the first burn arrives.

The following study arose from a request from S.D.F.O. Underwood to make quantitative measurements on what appeared to be a variation in fuel build-up resulting from different regeneration methods.

Method

The site of the study was the "Collins Plots" in Pemberton Division, off Moon's Crossing Road. They were initially set up as a trial of various regeneration methods.

There were 3 types of regeneration (natural, planted, group selection), two types of site preparation (ploughed, not touched) and two treatments (fertilizer, no fertilizer). Details are given in Table 1.

Fuel sampling involved:

- (a) Leaf litter - measured by depthing.
- (b) Trash fuel - measured by heighting.
- (c) Scrub fuel - measured by point sampling to give:

$$\text{Scrub Cover Density} = \frac{\text{Total No. contacts recorded on vegetation}}{\text{No. of rods with at least one contact}}$$

$$\text{Area Cover Density} = \frac{\text{Total No. contacts on vegetation}}{\text{No. of rods with zero contacts}}$$

The two expressions were needed because the Scrub Cover Density only gave the average value for the rods that recorded contacts, that is a measure of profile density. The Area Cover Density, however, indicated the spatial distribution of the scrub over the sample area.

Results (See Table 1)

(a) Leaf litter

Litter build-up was only moderate on all sites, with differences between treatments not significant.

(b) Trash Weight

Trash proved to be the bulk of the fuel build-up, and it was quite apparent that those areas with the least site preparation had the greatest trash build-up.

Sites N, B₃ and B₁ with 49, 47 and 42 tonnes/ha respectively had the highest values. These three sites were characterized by a complete lack of ground preparation prior to the sowing for the natural regeneration (N) and the planting for B₃ and B₁. A₁ and A₃, which had been felled, bulldozed and then ploughed, had significantly lower trash weights (17 and 12 tonnes/ha respectively). A direct comparison can be made between A₁ and B₁. In A₁, which had been ploughed prior to planting, a trash fuel weight of 17 tonnes/ha was recorded, whereas B₁, where no ploughing had taken place, gave a value of 42 tonnes/ha.

It is important when considering these results to realize that the trash layer was the remains of the original scrub germination following clearing. This scrub, which dies naturally or is eventually suppressed by canopy formation, forms the bulk of the fuel, and, because of its deep and well-aerated nature, it is very difficult to burn. It is apparent then that regeneration methods such as N, B₁ and B₃, which involve minimum site preparation, encourage profuse scrub germination compared to regeneration methods such as A₁ and A₃, which involve intensive site preparation.

(c) Scrub Cover

The results show that C₁ had the greatest Scrub Cover Density and Area Cover Density, followed by B₃. The other treatments varied in their order of Scrub Cover Density and Area Cover Density. However, allowing for equal influence from both, the progression from densest to sparsest would continue C₂, B₁, N, A₁ and A₃.

Once again, the trend is for a decreasing amount of scrub with an increasing degree of ground preparation, with one exception - the natural regeneration. This anomaly may be explained by looking at scrub top height. It appears that the original scrub consisted of a low variety (in this case, Acacia pulchella) and a tall variety (Trymalium spathulatum). The Trymalium survived to form a tall overstorey of medium density, whilst the Acacia died off to form the heavy trash layer. This appears to be the case with B₁ as well. B₃, however, which was on a par with natural regeneration as far as ground preparation goes, maintained a heavy scrub layer following the trash layer formation.

Conclusion

These results clearly indicate that ground preparation, and to a lesser extent planting, markedly reduce the subsequent fuel build up. Ploughing in particular appears to kill off the bulk of the germinated scrub, drastically reducing trash build-up and hence markedly decreasing total fuel weight. Planting with fertilizer would no doubt also lead to the formation of quick canopy closure, again inhibiting scrub formation.

From these results it would appear to be a major fire control advantage to conduct intensive site preparation and planting.

TABLE 1

Regeneration Method	Site Preparation	Litter Weight (t/ha)	Trash Weight (t/ha)	Total Ground Fuel Weight (t/ha)	Scrub Cover Density	Area Cover Density	Scrub Top Height (m)
Natural (N)	Cut Burnt 1966	11.0	49.0	60	3.0	12	4.2
Planted 3 x 3 m A1	Burnt, Bulldozed Ploughed 1966	8.0	17.0	25	2.4	13	2.6
Planted 3 x 3 m A3	Burnt, Bulldozed Ploughed 1966	8.0	12.0	20	1.9	4	1.6
Planted 3 x 3 m B1	Burnt, Bulldozed Not ploughed	8.0	42.0	50	3.6	9	3.6
Planted 3 x 3 m B3	Cut, Burnt No bulldozing Not ploughed 1966	10.0	47.0	57	3.9	36	3.2
Planted 3 x 3 m C2	Cut, Unburnt, Cleared 1966	11.0	23.0	34	3.0	27	2.7
Standards With Advance Growth + gaps planted C1	Patches Burnt, Cleared 1966	7.5	23.0	30.5	4.7	42	2.7

FORESTRY - PERHAPS A SAD PLOY

J. McCormick

"The birches changed to maples and then to lime trees which opened out into a space, not exactly a clearing but a little glade surrounded by a rectangle of limes and criss-crossed by paths". Solzhenitsyn, August 1914.

The above quotation brought to mind a rendezvous I kept many years ago in a different world - or so it seems. Having had a surfeit of Scotland's vast acreage of sitka spruce trees, all so alike and dripping wet, I decided that mono-culture was not for me and headed southward into mixed hardwoods.

It had been arranged that I meet the Head Forester on a hilltop at a place where two ridges crossed and which afforded a panoramic view of England's green and pleasant land. The purport of our meeting was that we examine a newly acquired private forest. As we set off together on foot, the sun was up and the lark ascended; the air alive with the sound of bees and permeated with the scent of wild honeysuckle. We strode down into a morass of maple and sycamore, birch and shimmering aspen, here a hazel copse, now a lime and tall black poplars with their toes in water; slopes and dips and 'breaks obscure and rough' - on we went until at the end of the day we parted and went our different ways. His final words were, "a beautiful forest, a beautiful forest".

Then we, the State, took over:

Down with the birchwood it's non-economic
Down with the dogwood it's pink and bucolic
And you shimmering aspen who make so much noise
We'll soon put an end to your trembling ploys
Though you Norway sycamore make us feel sick
A raging fire will soon do the trick
Cut and burn, cut and burn
Maple and willow to ashes we'll turn
Then when we've finished the ground clean and flat
The whole population will see what we're at
For we'll plant trees in lines with narry a bend
To old mother nature we'll soon put an end
For row upon row of conifers green
Will soon be the only thing to be seen.

So it came to pass and I went over into a different land.

Now, it has long been my contention that if a thing looks good it generally is good. The jarrah forest has never really looked good to me and thanks to the ubiquitous Phytophthora cinnamomi it looks even worse than when I first saw it sixteen years ago. It is not that the oft-maligned jarrah tree is in itself unattractive; nature is never so unkind. But man's attack on the jarrah forest has been nothing if not ferocious, and has resulted in the almost complete destruction of one of nature's grand empires. True, many offsprings of those early forest giants remain; they survive, plagued by fungus, distorted by fire, a prey to insect attack.

How long will they endure, or do they silently await their armageddon?

RATIONALISING LAND TENURE IN FRANCE

N. G. Ashcroft

Introduction

Prior to the French Revolution in 1789, land ownership was passed on to the eldest son in each family, and although much inequality resulted, land units remained reasonably large. Following the Revolution, however, it was laid down that land was to be shared amongst all sons in the family. Thus from that time the size of holdings gradually decreased with the continual division of properties with each succeeding generation.

The result today is a conglomeration of small holdings, with a high degree of dispersal of the blocks owned by any one individual. For instance, it is common for a farmer to own 4 or 5 fields ranging in size from 0.2 - 3.0 hectares spread over an area of 6 - 7 square kilometres. Some of these blocks may not be provided with access.

In addition, the customary method of fencing was the creation of hedgerows, and although this is common in much of Western Europe, in some French districts hedgerows can be as much as 10 - 15 metres wide and might take up some 15% of the land surface.

It is difficult to appreciate then that great inefficiencies occur in both agricultural production and land use in many areas. With the modern methods of food production that developed after the war, it was clear to the French Government that much of the structure of the industry was out of date. This was highlighted with the setting up of the European Economic Community under the Treaty of Rome in 1957. This meant that there was the prospect of a larger market but also of increased competition, and this forced the Government, as part of its agricultural policy, to undertake a system of reorganisation of rural areas to improve the profitability of farm units. To achieve this, it was obvious that the basic step for the Government was to sponsor and finance a large-scale "land exchange" scheme to consolidate dispersed family units.

Following the passing of the relevant legislation, a Commission was set up within the Department of Agriculture to carry out land reallocation using the commune (district) as the basic unit.

Rather than the Government taking a totalitarian attitude, the Commission comprised 50% private owners and 50% Public Servants.

The objectives of this Commission were to:

- a) improve agricultural efficiency.
- b) improve rural living conditions.
- c) at the same time take the opportunity to improve stream flow and drainage.

The Reallocation Process.

1. Identify or alter commune boundaries and notify the public for any comment.
2. Identify ownership of all land and check with these owners to ensure both agree.
3. Assign a measure of quality to each property. A fertility class point system has been devised to define land capabilities for certain uses.
4. Suggest a reallocation plan such that farmers get new land within 1% of the fertility classification of what they had previously. The suggested reallocation is shown to the public for objection.
5. The Commission considers objections and redraws an amended plan and marks it out on the ground. The public is then able to inspect and lodge further objections if need be.
6. Following any further alteration deemed necessary, the Commission publishes the final result and sets up a Commission of Appeal.
7. Any request by land-holders to subdivide their property further must be approved by the Department of Agriculture, and this is strongly discouraged.

It is understandable that it may take 5 to 6 years in some cases for this sequence of events to take place. People's livelihood and freedom are being tampered with, and it is only natural that many objections will be lodged even though

education programmes have been largely successful (eg one small commune of 200 hectares comprising 700 land-holders took 4 years to reallocate successfully). Since the early 1950s, however, 100,000 hectares have been reallocated, and the annual rate is increasing.

The Result.

1. Production, and hence profitability, of the family farm unit has increased, but the farmers attitude varied with age. Hitherto, peasant farmers were accustomed to raising a variety of crops and livestock, not specializing on any one aspect of farming, and hence not able to take advantage of economics of scale. Even after consolidation of their farm units, the older generation could not break this habit, and inefficiency still remained. However, the younger and more educated generation is now forming a large proportion of the farming community, and supports the reallocation scheme, as it allows them to make a worthwhile living. The loss of younger people from the rural areas to the cities has been greatly reduced, and with their backing the scheme is allowing greater specialization and use of modern farming methods; as a result, production is markedly increasing.

2. Increased land has been made available with the reduction of hedgerows and the rationalization of access. Hedgerows are not entirely eliminated, because they form a major part of the natural character of the landscape, in addition to providing crop, soil and fauna protection.

3. Increased profitability has resulted in an increased standard of living in the rural areas.

Is there anything we in Australia can gain from a look at the French system? Our farming system is distinctly different, and is based on large consolidated holdings; there is no need to consider any form of land rationalization as done in France.

However, the first thing that springs to mind is the number of boundary irregularities between State Forest and private property in Western Australia. There are numerous small salients of private property protruding into State Forest, and vice versa; these can result in difficult and costly management to both parties (eg fire control, track maintenance, increased fencing and potential for damage). We are a young country and land development is still in its infancy - should we not be looking to rationalize our boundaries now? The longer we leave it, the more expensive and difficult it will be to instigate.

TWO ITEMS DEVELOPED AT GNANGARA WORKSHOP

D.R. Lejeune

1. A TRACTOR-MOUNTED SLASHER SAW

Introduction

'Silviculture 70' involved a thinning to waste in Pinus pinaster in Wanneroo Division at about 8 years. A need was seen to find a method better than the use of a chain saw. As a result, a circular saw was mounted in front of a Ferguson 35 tractor, and this machine has proved to be very satisfactory.

Background

Pruning of selected stems has normally been performed in advance of thinning to waste. The thinning has been a continuous chainsaw operation, tedious and fairly hazardous. With the advantage of easy terrain, it was felt that there must be a more highly mechanised way of doing this. Many possibilities were considered, and two different brands of brushcutter were tested. These were far from satisfactory as they lacked sufficient power, and the operation was more tedious than using a chainsaw.

Eventually it was decided that a light-wheel tractor with a front-mounted circular saw or shear offered the best possibilities. The saw was favoured because it was agreed that the tractor need not, in all cases, stop in its forward motion in order to cut down the trees.

Developing the Prototype

The basic features and method of operating the machine were resolved by field staff in consultation with P/I Reynolds. The latter attended to detailed design, and it was constructed under his supervision in Gnangara Workshop.

The attachments to the tractor consist of :

(1) The attachments carrying the saw and hydraulic motor. The circular saw is a standard 45 cm diameter, 13 gauge, peg-tooth type driven at 3000 r.p.m. Drive is by v-belts from a hydraulic motor. The motor is driven by a hydraulic pump direct-coupled via a shaft to the front of the engine crankshaft.



Tractor Saw in Operation

The saw is mounted on a two-part boom in front of the tractor. There are two hydraulic rams, one to raise and lower the outer boom, and the other to swing the inner boom sideways. These are operated by the tractor's own internal hydraulic system.

(2) A spring-loaded, fork-type pusher bar mounted on the front of the tractor. This engages the stem of the tree before saw contact and directs its fall away from the tractor's path. It is also necessary to prevent jamming of the saw blade because the cut is complete before the tree has time to fall.

Cost of Development

Direct cost of labour and materials was \$860 in 1974.

The Thinning Operation

The tractor is operated in the lowest gear at a speed of 2.37 km/hr. It moves along between the rows removing all unpruned trees. The boom carrying the saw is swung to the right so that the saw is just outside the line of the wheels. This lateral position is not altered during the operation, and the saw is steered into the tree by steering the tractor. The tractor rarely stops as it proceeds in a somewhat wave-like horizontal motion. It steers to the right to cut a tree, and to the left to avoid a pruned one. The saw is raised after each cut to avoid striking debris on the ground.

Cuts are made as low as possible, and the wide swathe of the saw actually cuts most branches arising below it. This is something the chainsaw does not achieve. It is not necessary to run over thinning slash which lies in alternate rows.

Production

Greatest production is achieved by keeping the tractor moving. The fact that a normal operator can do this is, without a doubt, the main reason for the success of this machine. Average production is 400 trees per hour. It is possible to cut trees up to 15 cm diameter, but it has been found preferable to move into stands earlier so that 10 cm is the largest encountered. By May 1975, 90 hectares had been thinned. A piecework rate has been fixed, and this results in a direct cost (labour and plant) of \$15.20/ha. The piecework rate for chainsaw thinning is \$31.60/ha.

Further Development

In May 1975 the hydraulic motor failed due to the constant strain of the offset drive with v-belts to the saw shaft. A more powerful, high-speed hydraulic motor was then fitted directly onto the saw shaft, and a further 25 hectares have been thinned.

The additional power has allowed a heavier-gauge, more durable saw to be used.

Construction of a second machine is almost complete. The only modification is the elimination of the ram operating the inner boom. In operation, it has been found that once fixed in the best lateral position the inner boom is not moved.

Result

Because the saw operated so much more efficiently on smaller trees, the whole pruning and cleaning operation was brought forward by about a year, and pruning was reduced to 1 m. The overall result of less slash, plus the coincidental felling of all thinnings into alternate rows, results in a fire hazard which is of little concern.

A high fire hazard in these stands will be delayed four years, by which time the canopy will be closed.

2. A MECHANICAL FERTILISING DEVICE FOR PLANTING MACHINES.

Introduction

A description is given of the changes which have occurred in the operational technique and equipment used for pine planting and fertilising at Wanneroo. Illustrated are the savings in manpower and costs which are possible with mechanical operations.

In 1949, the first planting machine was purchased for use at Gnangara. This carried two men; one sorted pine seedlings from a bin, and handed them to the other, who planted them. After planting was completed, fertiliser was added to each plant as a separate operation.

During the succeeding 20 years, many planting machines were fabricated at Gnangara workshop, and experience led to many modifications from the original. However, the manning of the machine by two men remained unchanged.

In 1969, the operational procedure of planting and fertilising consisted of :

- (1) The planting of 1233 hectares, using four rubber-tired tractors each trailing two planting machines.
- (2) The application of fertilizer by both of two methods :
 - 2.1 A tractor with a wide, rear-mounted tray carried four men evenly spaced across it. In front of each man was a bin of fertiliser. As the tractor moved along, each man threw a handful (hopefully 57 g) of fertiliser on the pines. Four rows were fertilised in each pass of the tractor.
 - 2.2 The purely manual operation whereby men carried bins of fertiliser in front of them, slung around their necks.

The Challenges

In 1969, fertilising involved 320 man days. Was it possible in some way to combine the planting and fertilising operations? Advantages envisaged were:

- (1) Reduction of all operational costs and supervision.
- (2) Elimination of the unpleasant fertilising methods.
- (3) More accurate placement of fertiliser.
- (4) Immediate benefit to the plant from fertiliser.

The Manually-Operated Fertiliser Dispenser

Trials in 1969 showed that an experienced planter could sort and plant by himself. He selected pines from an open bundle on his lap without any significant reduction in production.

It was decided to design and construct a device which, from a hopper on the planting machine, would drop on each pine a predetermined quantity of fertiliser by the manual action of pulling a lever. The man who was formerly the pine sorter would become the 'superman' or puller of the lever.

Although the eventual elimination of this man was envisaged from the outset, it was deemed wise to achieve this in stages. The physical and psychological effect of much greater concentration and responsibility on the planter required consideration.

The design and development of this machine was completed by P/I Reynolds with the staff and facilities of Gngara Workshop.

Proving the Dispensing Device

Following successful trials of a prototype, each planting machine was fitted with a hopper (capacity 150 kg of super) mounted slightly to the rear of the planting wheels. The 'superman' occupied the seat previously used by the sorter. A sliding tray to carry plants was fitted in front of the planter. There was still space for several bags of plants on the machine.

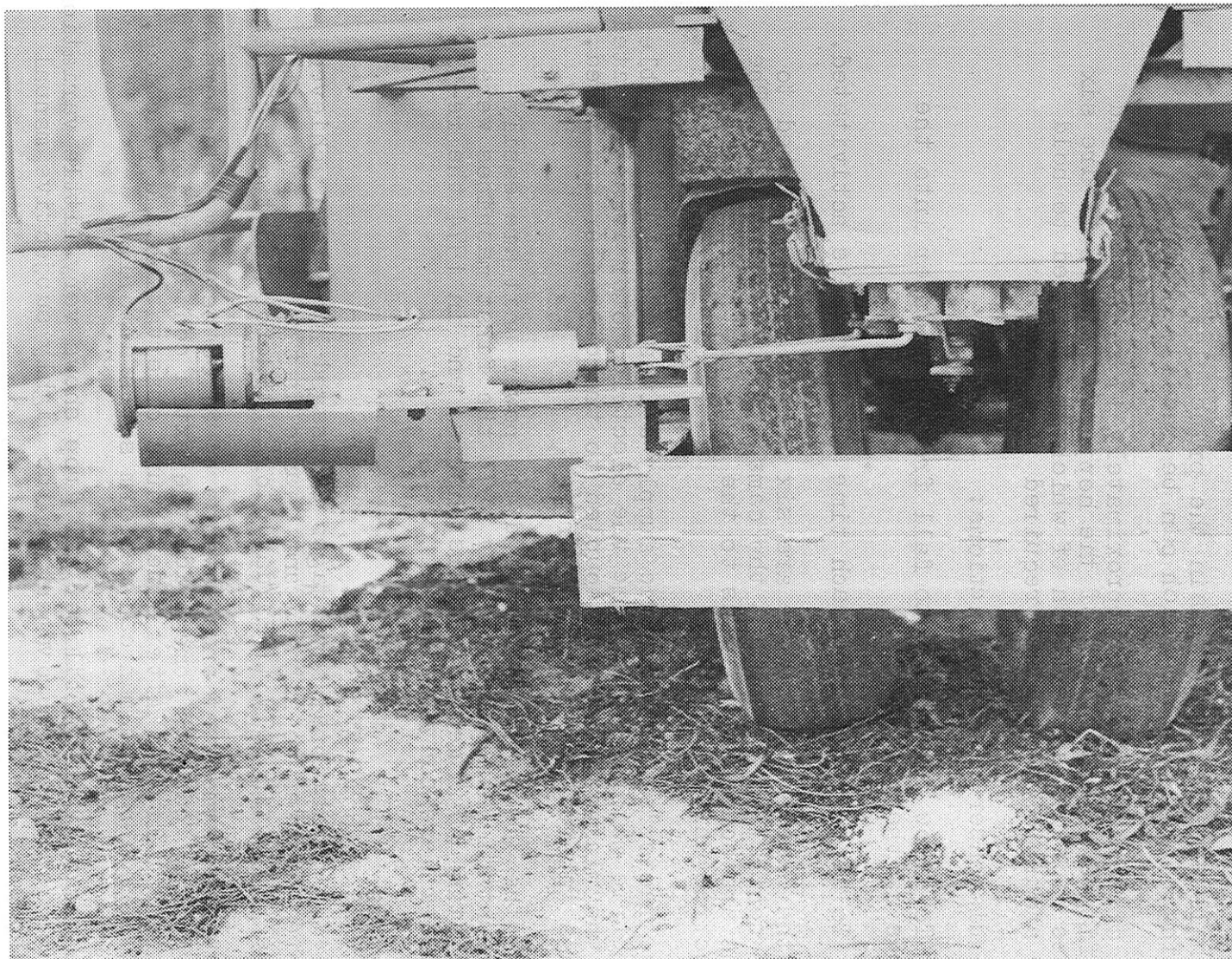
In 1970 all planting and fertilising (1051 hectares) were carried out with these machines. No serious problems arose, but a number of lessons were learned:

- (1) Fertiliser must be kept dry at all stages to prevent blockages in the hopper or dispenser. Because of this, it was decided to revert from bulk super to bags, and absorb the slightly higher cost. Other, smaller advantages of bag super subsequently appeared.
- (2) The planters were able to carry on all day, although most changed places with the 'superman' periodically.
- (3) Although it was possible to drop the fertiliser very accurately, some 'supermen' had concentration lapses due to the monotony of the job.

The Mechanical Dispensing Device

Owing to other work pressures, it took much longer than desired to take the ultimate step in manpower reduction.

Considering the constant activity and concentration of the planter, it was decided that the dispenser would be operated by a coincidental action by him, rather than an additional deliberate action. The result was that a lever was fitted in such a position that the planter's arm would push it in its normal movement. This occurs just after he releases the planted seedling, when he triggers an electric power unit.



Dispenser and Power Unit shown below the Hopper

Description of the Dispensing Device and Power Unit

I shall endeavour to explain the principles without providing boring details which can be readily obtained.

The dispenser measures approximately 17 x 17 x 6 cm, and is fitted to the bottom of the hopper. Within it are six tubes of equal sizes, each of which is designed to hold the amount of fertiliser required in a drop.

The dispenser has two functions:

- (1) To allow fertiliser to fall from the hopper into the tubes as they rotate.
- (2) To drop one tubeful each time the device is activated.

On the base of the device are six cams. Arms attached to the central shaft contact the cams and turn the tubes. The arms are connected by rods to the tube protruding from the electric unit.

The tractor's 12 v electric supply drives a small reversible electric motor. Each time the electric motor is activated by the planter, the rods coupled to the dispenser are moved, and a tubeful of fertiliser drops.

Both the dispensing device and the power unit are easily demountable for service. By 1973 the first machines were operating with mechanical dispensers, and in 1974 the remainder were converted.

Results

All the operational advantages envisaged have been achieved. There has been no significant change in the daily production rate (approximately 11 ha/day) for a tractor and two machines.

With the payment of an allowance of \$1.00 per day, planters have accepted with some pride the extra concentration and responsibility. After a few hours observation and practice, any conscientious man can perform satisfactorily.

The quantity of fertiliser per drop shows very little variation, which is a vast improvement on the highly subjective manual methods.

Dispensing units with 57 g and 171 g tubes have been used for P. pinaster and P. radiata respectively.

Approximate direct cost savings on the basis of the 1975 planting (1260 ha) are:

	<u>SAVINGS</u>	
	<u>PER ha</u>	<u>TOTAL</u>
Reduced labour cost	\$4.20	\$5292
Elimination of separate fertilising	\$8.43	\$10622
	<hr/>	<hr/>
	\$12.63	\$15 914
	<hr/>	<hr/>

It is of note that Greg Elston, one of the workmen who operated the repair truck during the 1975 planting, has invented another dispenser. This is much simpler than the present one, and a prototype has performed satisfactorily on the workshop floor. Its potential is awaiting a full evaluation.

ADDENDUM

For both these items, J. Reynolds won a Productivity Improvement Award (1974) from the Productivity Promotion Council of Australia.

THE FORESTER'S WIFE AS SEEN BY A FORESTER'S WIFE

(Reprinted from 'Journal of Forestry', February 1975, with the kind permission of the Editor).

As the twentieth century rushes towards its final quarter, who is this person who claims to manage the manager of the forested third of America? Who is it who claims to possess the knowledge and skills of the sciences, arts and practices for managing and using for human benefit the American forester? Who is this person called a forester's wife?"

A forester's wife is a woman who may be of any race, color or creed. A woman having unusually broad grounding in patience and understanding, pledged to love and honor a man pledged not only to her but to a strict code of professional conduct. She is a person who accepts that her forester will be active in one or more of the SAF Working Groups in Inventory, Remote Sensing, Biometrics, Fire, Entomology, Pathology, Forest Ecology, Soils, Hydrology, Range Ecology, Wildlife and Fish Ecology, Physiology, Tree Genetics, Silviculture, Economics, Land Use Planning, etc. etc., as well as with her.

Who is a forester's wife? She is a person who graciously smiles when her friends ask her how she can love a man who plunders our forests. She is a missionary for the causes of the forestry profession: Fire Suppression, Land Use Planning, Genetics, etc. etc. She enjoys having her coffee table and book shelves piled high with forestry literature and spends many a spare hour perusing the same.

Forester's wives clean grubby field clothes. They mend cruisers vests and darn bootsocks. They remove devilsclub splinters. They pack elaborate box lunches at ungodly hours of the morning. They remove from pockets and save small bits of paper with hieroglyphics scribbled upon them. They are experts at keeping meals warm far into the night. They are good at explaining to children ad nauseum why it is that Daddy is late in the woods and or office. They take their love-making at any odd hour the forester can spare.

Who is a forester's wife? She is someone who is genuinely interested in forest policy. She enjoys discussing what foresters stand for on conservation and the environment, ownership, and land use, forest inventories, forest protection, soil management, timber management, etc. etc. She

grooves on learning and re-learning her tree species and on riding in the forester's rig on weekends while he goes about his woodsy duties. She understands when her professional forester must spend unpaid overtime locked in his study with his papers and maps and books. She reads her forester's professional writing with care and attention and rarely mentions that he has not written a personal letter in years.

Who is a forester's wife? Above all, foresters wives are people dedicated to their husbands and their husbands' profession. The profession dominates their lives. They are sensitive women who in recent years have spent a large amount of time in self-examination, often inviting their severest critics - and who they are is obvious - to take them apart and profiting thereby. There is no energy crisis among foresters' wives. They are women who continue to read, listen, learn, write, speak and improve their performance, who cooperate and expand their services to the profession and who continue to work for the kind of forester society wants and needs.

That is who a forester's wife is.

A TYPE OF HIGH-WATER GAUGE

M.L. Mason

Introduction

The need for a robust, high-water gauge, necessitated by the hydrological studies being conducted in the jarrah forest, led to the development of the gauge described here.

Unlike most instruments for gauging high water levels (for example, glass vials individually placed on a large, cumbersome board or the more intricate float system), this instrument is sturdy enough and compact enough for very few, if any, site restrictions to have to be imposed. Also, data cannot be lost through breakage.

Since most of the creeks to be monitored remained within the 1 m maximum-minimum flow, 1 m was accepted as a suitable range of measurement.

Materials required.

- 1 sheet of perspex 7.5 cm x 10 cm, and 5 mm thick.
- 94 pieces of clear plastic tubing (NYLEX CLEAR VINYL CAT. 15440041 size $\frac{1}{8}$ x $\frac{3}{64}$), each 8 cm long.
- 1.2 m of downpipe.
- 40 cm of 20 gauge wire.

Method of construction:

1. Two parallel lines of holes are bored in the perspex. The holes are 1 cm apart and at an angle of 60° to the perspex (See Fig. 1). There are 94 holes per line, and each line is 15 mm from the outer edge.

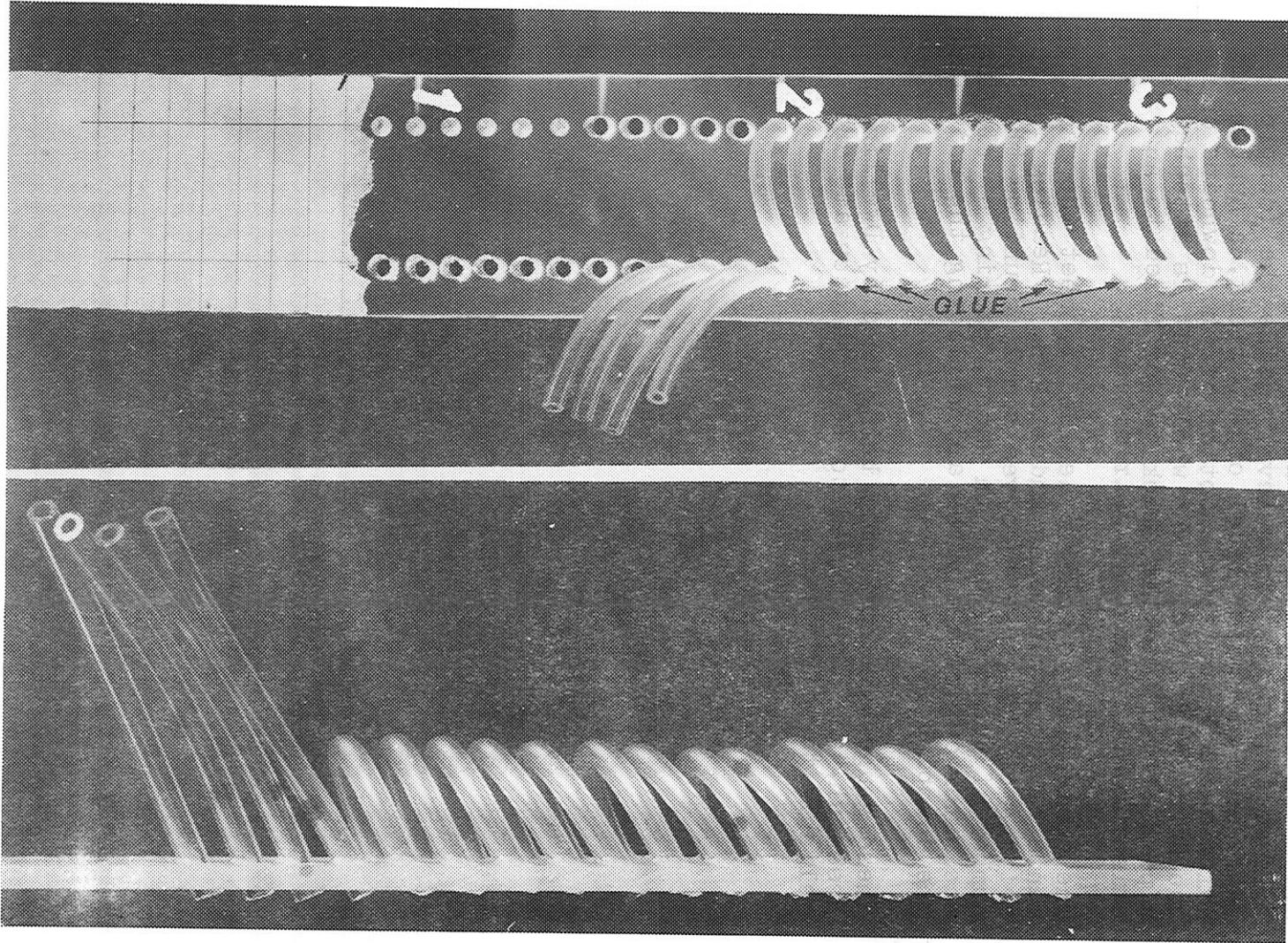
To bore the holes, clamp the perspex between two pieces of wood; one serves as a backing and the other as a guide (See Fig. 2).

2. To fit tubing, place one end in hole 1, line A, and the other in hole 1, line B, and so on until all 94 have been fitted. This operation is followed by gluing and subsequent trimming of the tubes (See Fig. 3). Care must be taken when trimming the end of the tubing protruding to ensure that a small lip is left on the upper side so that any moisture (caused by rain, condensation etc.) running down the gauge is deflected, and does not enter the tube.

MARKING OUT

PILOT HOLES HOLES

TUBES FITTED

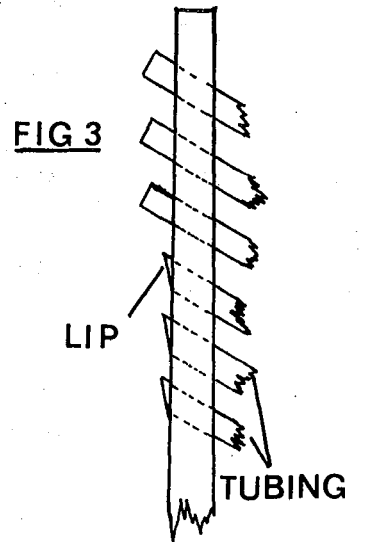
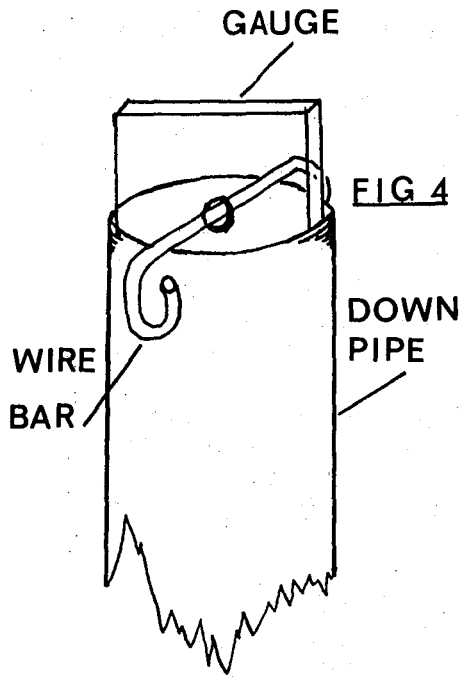
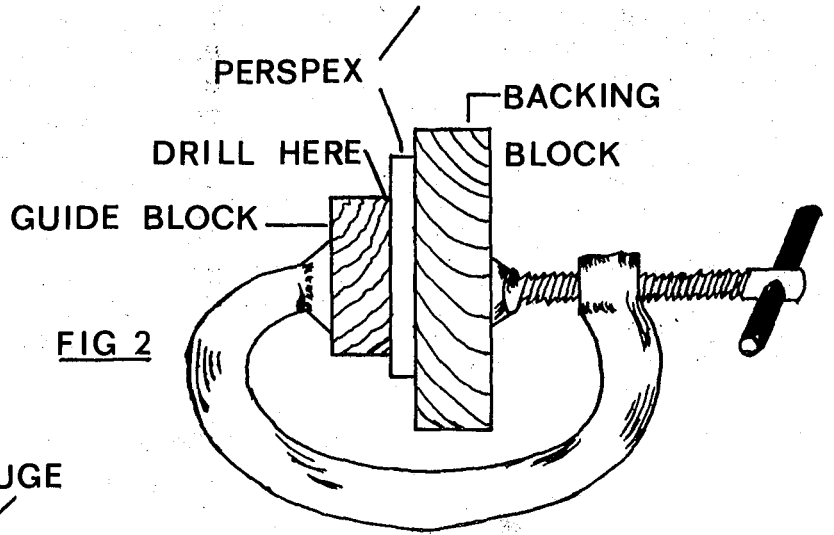
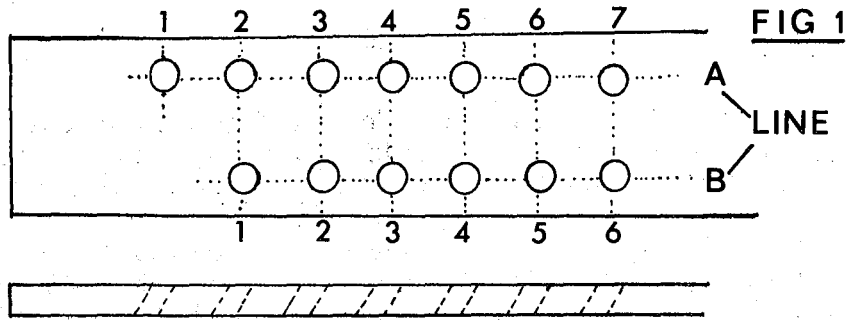


A TYPE OF HIGH - WATER GAUGE

3. The gauge is suspended in the downpipe by a wire bar placed through the perspex at the top (See Fig. 4). To ensure that the water level inside the downpipe represents the water level of the creek, a number of holes are drilled at the bottom of the downpipe on the down creek side. The whole unit is attached to a post driven into the creek bed or fixed to an existing staff gauge at weir sites.

The scale employed can be decided to meet the requirements of the study being undertaken. Reading and re-setting of the gauge involves simply counting the number of tubes filled with water, pouring or blowing the water out of the tubes and replacing the unit in the downpipe .

These gauges are currently being used by Dwellingup Research, and have proved to be both accurate and reliable to within 1 cm.



LET'S SAVE MONEY

David Ward

I am told that there is need for government departments to economise. Possibly an effective way to reduce the amount of money spent on stationery and telephone calls would be to reduce the volume of words. This can be done by using short words instead of long ones. An example in the forestry context is the common term "forest utilisation". This could be changed to "forest use" without any loss of meaning, although perhaps a slight loss of pomp. The Oxford Dictionary gives the meaning of "use" as "utilisation or employment for or with some aim or purpose; application or conversion to some (esp. good or useful) end". I trust that describes our intent towards the forests of Western Australia. The change may seem piffling to the hasty but I suggest that a little thought and research would show the saving in typists' time, ink and paper would be distinctly non-piffling. There are, of course, many other words in common use with the Department which could be replaced by shorter ones. To save time, ink and paper, a poem may be succinct.

OAFISH

(Oafish is the language of oafishials)

Oh how I bloody well despise,
Those who utilise "utilise".
Let's keep our language crystal clear,
Simple and sweet to eye and ear.

Such pompous verbs are for the birds,
Use "use" my friend, a simple word.
For when you do, I dare to claim,
You'll find the meaning is the same.

And while we're talking common sense,
How about "purchase" and "commence"?
Why not try to "buy" or "start"?
Stop trying to be so bloody smart!

Let politicians "indicate",
And clerks should all "endeavour".
They need to talk like gramophones,
To "try" to "show" they're clever.

In the likely event that my credentials as an English teacher are challenged, I quote from Sir Ernest Gowers....

"UTILISE AND UTILISATION

These words are rarely needed, for the simple word use will almost always serve. The official who wrote 'This document is forwarded herewith for the favour of your utilisation' might have written 'please use this form'. That says what needed to be said in four syllables instead of twenty-one."

Anyone who has not heard of Sir Ernest Gowers had better keep out of the argument.

P.S. I am not sure what should become of a "Utilisation Officer". Perhaps we should coin the title "Usician", or for those with tertiary qualifications a "Usologist".

BALLAN BLOCK WILDFIRES

P. Jones

On 20 December 1974, an escape from N20 resulted in two wild-fires which ran freely for at least thirty-six hours before suppression action could be taken.

This gave a rare opportunity to examine the progress of a free-running fire, and compare it with the predicted position as calculated from the jarrah fire danger tables.

HOPOVER 1

This fire was detected at 1410 hours on 20/12/74. Its position was given as G029 34; however, due to commitments it could not be attacked until the morning of 22/12/74. During this time it travelled approximately 3000 metres, causing total scorch and occasional defoliation to jarrah marri forest of approximately 25-30m height.

There is no doubt that the bulk of the fire's run occurred during the afternoon and night, probably until 0600 hours on 21/12/74, when a cool change brought S-SW winds and light rain with a correspondingly low hazard. Consequently, for the purpose of comparison, only this period will be used to calculate the predicted rate of spread.

Comparison with Jarrah Fire Danger Tables

An examination of the area led to the use of the following variables:

Rainfall correction factor	=	1
Wind ratio	=	5:1 (60% canopy, ridge tower 30m above canopy)
Fuel correction factor	=	1

Results (see figure)

HOPOVER 1 BALLAN BLOCK NF3 START 1400 hours 20/12/74

Time	Temp °C	RH%	BFH	Wind V km/hr	ROSI FCF	Actual ROS m/hr	Distance Travelled m
1400-1500	39	22	9.4	30	1	211	211
1500-1600	38	18	9.7	40		388	388
1600-1700	38	17	9.7	40		388	388
1700-1800	37	19	9.3	35		233	233
1800-1900	37	23	9.1	30		173	173
1900-2000	35	28	8.6	19		87	87
2000-2200	35	28	8.6	19		87	175
2200-2400	35	36	8.2	12*		62	124
2400-0200	32	42	7.4	12*		47	94
0200-0600	26	63	5.2	12*		17	68
							<u>1941</u>

* No figures, estimate only

Discussion

As can be seen, the tables have underpredicted quite considerably, for out of the 3000 metres the fire travelled, the tables only predict 2000 metres.

The basic reason for this, I feel, could be the intense spotting that was reported, and which in fact was responsible for the second fire, a throw of 4000 metres. The tables do not take this effect into account when in fact it must have been quite substantial, although there is no way of assessing just how much it did increase the rate of spread.

HOPOVER 2

This fire started at approximately 1530 hours from a spot thrown from Hopover 1. It burnt a narrow strip through low-quality jarrah and scrub for approximately 2500 metres before stopping, basically due to the cool change.

As with Hopover 1, the period of calculation used was up to 0600 hours on 21/12/74.

Comparison with Jarrah Fire Danger Tables

Table variables used were:

Rainfall correction factor = 1
Wind ratio = 4:1
Fuel correction factor = 0.88

Results (see figure)

HOPOVER 2 BALLAN BLOCK NF3 START 1530 hours 20/12/74

Time	Temp °C	RH%	BFH	Wind V km/hr	ROSI	FCF	Actual ROS m/hr	Distance Travelled m
1530-1600	38	18	9.7	40	905	0.88	895	895
1600-1700	38	17	9.7	40	905	0.88	895	895
1700-1800	37	19	9.3	35	384		338	338
1800-1900	37	23	9.1	30	261		230	230
1900-2000	35	28	8.6	19	97		85	85
2000-2200	35	28	8.6	19	97		85	170
2200-2400	35	36	8.2	12*	62		54	108
2400-0200	32	42	7.4	12*	47		41	82
0200-0600	26	63	5.2	12*	19		16	64
								<u>2867</u>

* No figures, estimate only

Discussion

The actual and predicted progress of the fire agree very well. The reason may lie in the lower quality forest type, hence the use of the 4:1 wind ratio for calculations. The more open nature and lower height of the forest would also have lessened

spotting somewhat, again keeping the actual rate of spread down.

It can be seen, however, that, allowing for the extra hour and a half that Hopover 1 ran, both fires travelled approximately the same distance. This suggests that their rates of spread must have been very similar; consequently the variables affecting rate of spread, namely wind velocity, fuel quantity and moisture content, must have been similar. The problem arising now is whether the use of different wind ratios and fuel correction factors is justified, or should these variables have been the same for each fire? Moisture content would have been similar for both sites. However, an inspection of the areas involved showed the area of Hopover 1 had a distinctly better quality in terms of basal area, crown cover and height than that of Hopover 2.

If the 5:1 wind ratio had been used, both fires would have underpredicted, whereas if the 4:1 ratio was used both fires would have overpredicted but been considerably closer to the actualities.

	Actual distance travelled by fire (metres)	Distance travelled 4:1 W/R (metres)	Distance travelled 5:1 W/R (metres)
Hopover 1	3000	3491	1941
Hopover 2	2500	2867	1350

All that can be done is to accept the variables as they appear in the field, and thus conclude that the Fire Danger Tables underpredicted in the denser fuel (probably due to intense spotting), but showed up well in the more open situation with lighter fuels.

A YEAR OF FORESTRY STUDY AT OXFORD

N.G. Ashcroft

Each year the Oxford University offers a three-term M.Sc. course titled "Forestry and its Relation to Land Management". Although a prior degree is essential, the course is not limited to forestry degree holders. The Department of Forestry also actively encourages course membership from overseas students. In recent years, this policy has produced classes with representatives from Australia, New Zealand, South East Asia, West Indies, South America, Africa, Middle East and Canada, in addition to its own U.K. students. Although the great majority are foresters, degrees in Horticulture, Geography and Botany have also been represented. The result of this policy is a greater appreciation of forestry and related professions on an international scale. This is something the Australian courses are not geared to do.

Setting

Oxford, with its population of 100,000, is set amongst the Cotswold Hills in the central south of England. Central Oxford is a mass of colleges and churches, the bells in the towers having their own characteristic chimes. A ten-minute walk through the narrow city streets will show the visitor why Oxford is known as the city of spires.

Oxford is steeped in history, most of it attributable to the colleges. The visitor can see where Boyle discovered the pressure - volume relationship known as Boyles Law, or where the author known as Lewis Carrol sat at his Christchurch College window and watched the Dean's daughter, Alice, playing in the garden below, giving him the inspiration to write 'Alice in Wonderland'.

The first college commenced in 1249 (University College), the system being for each college to house and teach all subjects to its students. Today, remnants of the college system still exist, and although teaching is centralised with the formation of Departments, admission to the University is via prior admission to a college. There is no campus as such, and the University (Colleges and Departments) is spread amongst central Oxford. Dress is informal, except for formal College and University functions, visits to the Dean, and examinations.

The amount of formal dress on the streets of Oxford reaches its peak during the examinations in June and July. Tourists flock to see hoards of students with their gowns and mortar boards making their way towards the examination buildings. Today, there are 28 colleges covering a student population of some 10,000. These colleges handle the needs of students other than teaching (accommodation, meals, sport and social activities) together with the necessary administration between the student, the College and the University administration.

This atmosphere and the surroundings, which include a large amount of park and open space for such a densely populated area, quaint surrounding villages set into hedged fields in typically English landscape, and attractive old English pubs with beer prices well below the norm, all lead the newly arrived student to think, "How the hell am I going to get any work done?". However, this thought lasts only until the first day of term, when the course requirements are outlined in detail, and the result can only be described as a form of "future shock".

Course Content

The majority of Australian foresters in recent years who have been fortunate enough to go to Oxford have elected to take the "taught" course, "Forestry and its Relation to Land Management", rather than M.Sc. by research. The course is split into five subjects (below), a pass by the examination being required in all bar the Dissertation, which is marked by the examiners.

The course covers the following subjects.

1. Policy, Planning and Organisation of Land for Forestry and Dependent Purposes.

Includes world, national and social objectives; land planning and allocation; history of forest destruction and conservation; modern conservation and long-term social benefit; economics of renewable resource; government administration, law and taxation relating to forest land; organisation of forest enterprises.

2. Management of Forest Land

Principle of forest management and sciences of decision; inventory and diagnosis of forest communities; silviculture; productivity; labour and mechanical resources; protection from deterioration and damage.

3. Utilization of Forest Land and Products

Use of the environment, multiple, cultural and amenity usage; harvesting and transport; economics of supply and distribution; processing, industry and marketing; employment and population in rural areas.

4. Applied Science

One of the following to be selected by the candidates:

- a) Forest soils, ecology and physiology.
- b) Forest pathology and entomology.
- c) Forest botany and taxonomy.
- d) Anatomy and properties of wood.
- e) Genetics and breeding of trees.
- f) Design and analysis of forest surveys and experiments.

5. A Dissertation or Working Plan

A qualified forest officer is not required to do the Working Plan. This section must be complete prior to examinations.

Formal lectures and tutorials are delivered on the above, and average about 15 hours/week. Field trips of 8 hours per week to surrounding private and crown forests are additional. An introductory tour of one week on British Forestry, together with a two-week European forestry tour, are obligatory. In the 1973/74 year, the introductory tour covered aspects of private and state forestry in the counties of Somerset and Devon. The emphasis was placed on multiple use, conservation, landscaping and the national park concept in Britain. This concept differs significantly from the internationally-accepted definition. In Britain, national parks include actively-worked farmland, as well as forests and scrublands. Few areas can be described as natural, because of the presence of a human component since the ice-age. The character of the countryside is therefore seen as the current appearance (and has been for centuries), together with the preservation of the way of life in certain

areas. Although human activity is still permitted on many national park areas, it is tightly controlled, so that the modern farming methods do not alter the landscape.

The trip to the European Common Market countries touched on forestry, agriculture, viticulture, horticulture, conservation and recreation in France, Germany, Holland and Belgium. Specific items, other than classical forestry, included farming and forestry on land reclaimed from the sea in Holland, vineyards and winemaking in France and Germany (including champagne and wine tasting), and a visit and overnight stay at the well-known French Forestry School at Nancy, together with many interesting discussions at the Forest Research Institutes of the various countries.

With the exception of Belgium, a feature of the trip was the overwhelming hospitality afforded our group by the forest and other authorities of the various countries. A notable instance here was the final day in Germany where, after having lunch at a hill-top restaurant on the Moselle, we were taken to a communal forest where they spoke on spruce regeneration for some fifteen minutes. Following this, they apologised for the fact that the local village mayor could not be with us, but that he had sent up two crates of Moselle wine. Two hours later, when the last drop was drained, we set sail for Belgium.

Value of the Course for a Practising Forester

It is very difficult to assess the value of a period in foreign countries. The college system, and the course and its field trips, together with the opportunity of making a number of unscheduled visits to many forest areas, all allow close contact with people from many countries and walks of life. The mixing of differing attitudes and differing cultures and the breaking down of language barriers cannot help but contribute to a better understanding of problems on a global scale.

The Russell Grimwade Prize is awarded each year or two, for one year at Oxford. Many foresters no doubt contemplate applying, but for various reasons do not. Apart from the value of travelling in broadening one's outlook, the set Course has a number of valuable features for the practising forester.

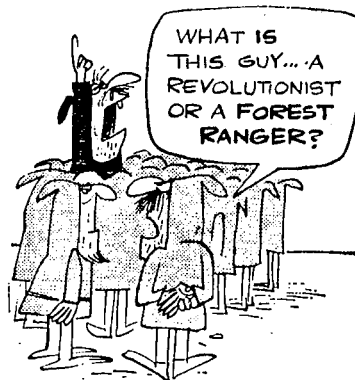
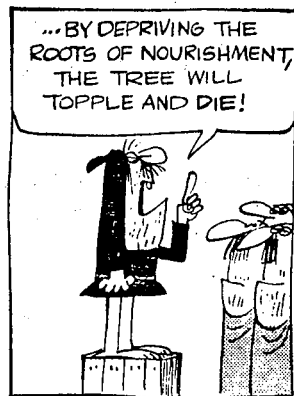
1. Much of the Course serves as a refresher to those who have been away from the classroom for some time. In addition, it gives a concentrated opportunity to bring oneself up to date in a wide variety of fields.

2. The Library in the Department of Forestry must rate as one of the finest in the world.

3. The course is taught by many who have had considerable experience in many countries. Forestry is therefore given a global emphasis, and, together with the strong bias towards forest economics, gives the student more insight into an area not well covered by Australian undergraduate courses in the past (although the position is now believed to have been remedied).

4. Land-utilizing disciplines other than forestry are given considerable significance, and thus more appreciation and balance is given to the consideration of efficient land use.

To anyone contemplating this Course, I can only recommend that you go ahead with the application - I'm sure you won't regret it.



ANCIENT SOUTH-WEST CAMPSITES

L. Talbot

Scattered over the floor of the jarrah forest are implements, tools and debris left there by the first inhabitants of the south-west, the Aborigines.

Every person who has worked in the forest, even if only for a month or two, would almost certainly have come across some of these artefacts. However, very few people recognize them for what they really are.

What a pity! For the ability to recognise artefacts in the field not only makes bush work and bush walking more interesting, it can also lead to the discovery of very ancient Aboriginal campsites, and can open the way to other fields of interest, such as anthropology, archaeology and prehistory.

Many of us are fascinated by accounts of the unearthing of early civilization sites and biblical cities by archaeologists, and we are amazed at the information scientists are able to piece together from the material dug from such places. Yet here in the south-west we unknowingly walk over Aboriginal campsites, some of which were already thousands of years old when Moses received the Commandments, or before the pyramids of Egypt were built.

Because we are ignorant of the existence of these old sites we have unknowingly destroyed many of them, and so disturbed others that much of the information which archaeologists could have won from them has been lost for ever. Future generations will not thank us for this, and neither do today's archaeologists.

An example of this unwitting vandalism is a campsite near Kirup. There is still sufficient material on this site to show that it was a well-used camping place, and judging by some of the material present, it was probably a very old one. Some years ago, when the South-West Highway was being sealed, sand was taken from this spot to cover the wet tar, and of course with the sand went most of the campsite, its artefacts, all chance of learning how long it had been there and most other information this site might have held.

Until about five years ago there had been no archaeological work done in the south-west, but in the last few years, groups from the Museum and the University have made important discoveries in and around the Metropolitan area and at Boranup and Northcliffe. The site at Boranup has been dated at over 24,000 years, and the excavation has not yet been completed. This is one of the oldest dates obtained in Australia for the presence of man.

An amateur, Mr George Gardiner of Northcliffe, has discovered many sites along the south coast, especially around Northcliffe and Windy Harbour. One of these was recently dated at 6,700 years. Geometric microliths found on this site were 1,500 years older than any previously found in Australia.

I have found about a dozen campsites altogether - four between Kirup and Mullalyup and others near Donnybrook, Wilga, Hester, Cudinup and Nannup. All of these have been on disturbed ground - sandpits, road and railway cuttings, damsites and other clearings. Nearly all are on sandy soil near water, or where water is obtainable a metre or so below ground level.

Campsites are not difficult to recognise. On each site are numerous small pieces of stone; usually more than one variety will be present. In the hills, quartz was the stone most commonly used, but nearer the coast, especially if the site is an old one, chert will most often predominate. The fact that some or all types of stone present are alien to the site helps in determining whether or not the material was brought there by man. Usually, if you walk a few metres away you will find no trace of the varieties of stone found on the site, even though the soil type is unchanged.

On the ironstone ridges and gravelly slopes, small scatters of quartz chips and flakes are common. These usually mark a one-night camp, or where a man has paused long enough to fashion a new artefact. The chips and flakes are waste material left in making an implement from a larger piece. Also found on the ridges, though less frequently, are larger pieces of igneous rock shaped into choppers, scrapers or grinding stones. These are easily identified as man-made articles, even though they may be very crudely made, because they so obviously do not belong naturally where they are, and therefore must have been left there by man.

These artefacts are of little or no commercial value, but an undisturbed campsite might be of great scientific value. Destroying a campsite is like burning a valuable historical document, and disturbing one, or removing material from it, is like tearing pages from that document. Those of us who work in the bush, and so have the best chance of discovering sites, have an obligation to protect this part of Australia's heritage. We can best do that by knowing something about it, and by reporting what we discover to the Museum.

All Aboriginal sites in W.A. are protected by law, and it is illegal to remove any article from one, or in any other way to damage the site. It is also illegal to conceal the discovery of a site. A special section has been established at the Museum for the registration of aboriginal sites, and any discoveries should be reported there.

HOLIDAY IN SPAIN AND MOROCCO

W.G. Brennan

Whilst holidaying in Spain and Morocco during late December 1974 and January 1975, it was most interesting to see many species of our Australian eucalypts and acacias throughout the southern portion of Spain (Andalusia) and the northern section of Morocco.

In Andalusia I visited Cordoba, Granada, Seville, Algeciras and Langaron in the Sierra Nevada Mountains; in Arabian Morocco I visited Ceuta, Spanish Morocco, Tangier and Tetuan; and I travelled throughout the rural areas of both countries.

Species seen were:

<u>Eucalyptus camaldulensis</u>	river gum,
<u>E. maideni</u>	maidens gum,
<u>E. globulus</u>	Tasmanian blue gum,
<u>E. brockwayi</u>	Dundas mahogany,
<u>E. marginata</u>	jarrah (small patch in Morocco adjacent to Tetuan),

and many species of acacia with which I was not familiar.

I was impressed by a huge park of planted eucalypts and acacias situated on the outskirts of Tetuan, including all of the above species except E. brockwayi (which I noted in many other areas of North Morocco). I would estimate this area contains between 800 and 1000 ha. The trees generally are flourishing, and the size and appearance are really outstanding. They compare very favourably with similar species I have seen on my travels throughout Australia and Tasmania.

E. camaldulensis is used extensively in Andalusia as street trees, windbreaks and shade trees. It is also grown adjacent to rivers, and covers many miles along the meandering streams. It is grown commercially in plantation form, with spacing of approximately 2 m x 2 m. I noted that the trees had been cut down and used after reaching a diameter of approximately 250 mm. The stems were then allowed to

coppice, and, in the many areas that this practice was seen, young stems of up to 6 m height and about 100 - 150 mm diameter were seen.

As I was using public transport during my travels, I was unable to stop at many of these interesting places to gain first-hand information on the main uses of this species. However, I did note that poles of about 100 mm crown diameter were being used during the construction of high-rise buildings, and it was a common sight to see many thousands of good straight poles supporting several floors of the buildings while under construction.

In Morocco, E. camaldulensis had also been planted extensively in water catchment areas where dams had been constructed in recent years.

From my observation, there is no doubt that our trees are highly valued in these countries, and have been for many years. The average citizen spoken to during my trip regards eucalypts (pronounced "ooc-a-lip-tos" by Spaniards) as being their own trees, and when advised that they came originally from Australia were generally amazed - and I think a little disbelieving!

I would like to mention that, while in the snow-covered Sierra Nevada Mountains, I noted terracing of this rocky and seemingly unproductive area had been extensively carried out, and pines had been planted up to altitudes of 2,500 metres. This work generally appears to be in its early stages, but it certainly does enhance the beauty of the mountainous region where little other natural vegetation grows, and to see snow and glistening icicles hanging from these trees was certainly a strange and most attractive sight to me.

WORLD FORESTRY DAY

F.E. Batini

Western Australia celebrated World Forestry Day for the first time on 21 March 1975. It was decided to direct the effort to the media and to the residents of the Metropolitan area. The theme emphasised the global and the ecosystem view of forests. This approach was quite different to that normally used for Arbor Day ceremonies, which will continue to receive Departmental support.

Successes?

Financial restrictions reduced the promotional opportunities available, and the following were used:

- * The preparation of Information Sheet Number 29 and its distribution to Divisions, the media and schools.
- * Newspaper articles appeared in the West Australian (14.3.75) and the Countryman (13.3.75).
- * A television film, "A day in the life of a forester" was prepared by the ABC for their "Here in the West" program, and it was screened on 19, 20, and 21 March. The film lasted ten minutes, and featured A. Lush (Kelmscott).
- * Two radio interviews were arranged : F. Batini on "Here Now" and Carolyn and Penelope Hewett on "Listening Post" (a school's program).
- * Copies of Forest Focus, Information Sheets and other relevant publications were distributed to 273 Doctors' surgeries in the Metropolitan Area, and should have reached a fair cross-section of the community.
- * Invitations to visit the Research Section at Como were sent to 51 Colleges and 40 High Schools. As a result, thirty-seven senior students and 3 teachers (representing 19 schools) attended a film/discussion session on the afternoon of 21 March.

Failures:

The anticipated news coverage on the day itself did not materialise because:

- * The proposed advertisement by the Department in the West Australian was withdrawn because of financial restrictions.
- * A feature article in the West Australian had been arranged, but failed to appear. Cyclone Vida, the fall of Hue and Snedden's leadership crisis provided formidable competition.
- * The proposed ABC news coverage was cancelled.
- * The photographer assigned by the West Australian to cover the students' visit arrived some 20 minutes too late. The photographs which he did take were not used in the following Saturday's edition. (Incidentally, one of the photographs appeared some 14 days later, in a suburban supplement and with a most unusual caption).

Benefit/Cost = ?

The direct costs associated with World Forestry Day were approximately \$320 (postage and Information Sheet 29). However, if one considers all of the costs involved, a sum of \$2000 would be more appropriate (postage, printed matter, salaries etc.). It is certainly a point for discussion whether items such as salaries or printed matter should be included or not. Obviously publicity material (once it has been produced) is of little value if it becomes obsolete on storage shelves. As always, the benefits of such an exercise are most difficult to assess.

Some Thoughts

- * Though the public is perhaps blase about "Days" as such, these have at least SOME advantage with the media; they do tend to focus attention into the desired areas.

- * The main problem is that an effort by a Government Department to do the right thing is not news. GOOD NEWS IS NO NEWS.
- * As examples of the above, one reporter was disappointed to hear of our involvement in World Forestry Day for he could see a much better "angle" had he been able to criticise our non involvement
- * The media came close to achieving a front-page feature when two students disregarded their map directions, and became temporarily lost in the Collier Pine Plantation.
- * Perhaps World Forestry Day would have more impact on the media if greater creativity, gimmicky promotional stunts and a considerably increased budget were involved. After all, is there such a thing as a free lunch?
- * Should organisations such as the Trade and the I.F.A. be actively involved in the promotion? What about the Divisions? (or are you already overworked?).
- * Should we recommend that the States seek greater promotion of World Forestry Day on a national scale? (The Australian, The Bulletin, Womans Weekly, Four Corners etc.).

REGIONAL NOTES

Our appeal for Regional Notes was not a success either. We received two articles, one from Walpole and one from Nannup. Walpole's news mainly concerned their excellent achievements in the field of Safety, and as Jack Marshall has covered these in his 'Safety Newsletter' we will not repeat them.

Nannup

The town of Nannup has never been renowned for the amount of interesting events that occur here, though I'm sure that everyone must remember the Nannup Tiger Hunt, which brought the town to the eyes of the world.

Firstly, this year Nannup made front page news with its dramatic flooding when it was practically cut off from the outside world, which mainly worried those of us who had not done sufficient shopping. Contrary to what the papers indicated, very few people even got their feet wet.

Following that disaster, another mixed blessing occurred when Noel Ashcroft and family arrived back from England. Noel looked very mod after his time in swinging England, with longer hair and a much more sophisticated outlook on life. There is no truth to the report that he was deported for calling a pack of foxhounds a bunch of dogs. The run back to the safety of Oxford's spires evidently gave him much-needed exercise. The British Brewers Union are considering offering a scholarship to Australian Foresters due to the public (house) relations work carried out by Mr Ashcroft.

The advent of fire detection by aircraft in the Nannup Division has created much interest. This has been variously referred to as our "Spy in the Sky" by some and "Pie in the Sky" by our towerman.

After much persuasion, Bill Tame eventually agreed to get off the ground and went for his first flight. He took a liberal supply of brown paper bags and nearly required all of these when, on becoming airborne, he realised the door was open on his side of the aircraft. Bill overcame all his doubts, however, and is now qualified as our "Flying Protection Officer - commonly called the "Flying Tum".

Despite the aero-spotting and tower plotting, the award for fire detection for the season must go to that little bottler Jenny Tomlinson. Phil Tomlinson and Jenny, who were married last July, were up late one night bottling fruit (at least that's Phil's story) when, on going out of the back door at about 1 a.m., Jenny spotted a fire in the pine plantation on the Bridgetown Road. Phil dashed to the office and sounded the Red Action at this most unusual hour, waking the whole town, not to mention the other Divisions. I'm happy to say that the fire was quickly controlled.

On the same subject, one of Nannup's more unusual 'causes' was logged recently when the brake drum of a tourist vehicle exploded and the hot metal started a bush fire. That brake was obviously not our type of firebreak.

Fire control this year is proving rather expensive and, due to the current financial cut-back, our D.F.O. has had to find extra money in various ways. He Beggs a little and often goes performing with McNamara's band, playing such tunes as "The Campbells are Coming". He is often told if he wants more money "go Eastman", and he has indicated he is prepared to Meachem halfway. Whatever methods he tries, he performs them with considerable Grace and has not really considered going over the Hill.

By being Keene and Smart during our recent fires, D.F.O. Ashcroft with Skillen ingenuity has managed to keep our plantations Underwood and protect our Forrests. His relaxation following his exertions is rather Tame, being mainly a small Bottrill of Beer and a little Love. All in all we consider he Haswell acquitted himself whilst serving Quain and country.

A hazard to housing in this area has been noticed, this being empty beer crates. On a recent house inspection white ant infestation was noticed in the rear wall of a toilet. On investigation it was found that the termites had been introduced in a pine beer crate. This had been placed at the rear of the toilet to accommodate the empties. The officer who does the housing inspection in Nannup is trying to ensure that only full crates are kept in future. These to be inspected and sampled during his visit.

A sad event for Walpole has Nannup feeling quite happy. Love has left Walpole and we now have Love in Nannup. It's not exactly free love, as it has cost the writer a couple of bottles already. Nevertheless we now have all we need.

Further reports from the scintillating sin and sun centre of the south-west will be brought to your attention as events occur. For example, the frequent weekend jaunts of Terry Maher give much cause for speculation.

WANTED - ALIVE

Alec Hart, at Kelmscott, would like to hear of the location, and details if possible, of any large W.A. blackbutts.

SAFETY NEWSLETTER

"SAFETY" IS SOUND - BUT IS IT "FIRST?" ...

The inspiring phrase "Safety First" was first adopted when the safety movement was young. It was helpful in accelerating the idea of safety.

Unfortunately, however, Safety is not always, and perhaps never will be, "first" in any operation or activity.

There is no question about it. Safety is sound. It is a subject in which more people should be actively participating, instead of intending to give some really serious thought to it - "One of these days".

The trouble with safety is that it is good for you; rather like spinach and educational films. It is only logical to check your vehicle before travelling to work. It is only common sense to fasten your seat belt. It is only sane to minimise the risk of a work-caused injury by wearing individual items of protective equipment.

But let's face it. Who gets any thrill out of logic and sanity? Until, of course, someone is injured.

Safety is humanitarian. Safety is wholesome. Safety is good for everybody. It follows naturally that safety is a crushing bore.

Human beings, on the whole, just can't work up much interest in the preservation of life and limb until the very last split second, WHEN OFTEN IT IS TOO LATE.

Indifference to the basic principles of accident prevention - failure to achieve the necessary high level of individual safety awareness and make full use of all the safety aids available, much less join vigorously in accomplishing improved solutions - is one of society's costly, but resolvable, problems.

Although we can derive considerable satisfaction in the knowledge that our efforts have contributed to the success achieved in reducing accident incidence from the extremely high figure of 189 disabling injury accidents in 1967 to 55 in 1975, the fact that this figure is 14 higher than the record

annual figure of 41, which was achieved in 1972, is proof that we still have a long way to go before we can boast of having reached the low level of injury experience of which I am sure we are capable.

Remember, it is up to each one of us to decide whether we shall appear in accident statistics or continue to work safely.

The decision is not hard to make - Safety is good business.

No one wants to become a casualty for, besides the pain and suffering associated with an injury, we must also consider the responsibilities we have to ourselves, our families and our employer.

Let us therefore make certain that we do our job without injury to ourselves or to our workmates.

Let us also be safe at home and while travelling for pleasure, because accidents, whether sustained at work or not, bring the same result - personal suffering, loss of earnings and production loss.

GENERAL

As already mentioned, it was somewhat disappointing to record that during the year ended June 1975 the adverse trend that occurred in 1973 continued. However, it is encouraging to report that during the period July-October 1975 an appreciable improvement in safety performance throughout the Department is evident. During this period, 9 D.I.As. were sustained as compared with 15 during the same period last year. Of particular interest is the news that a Departmental safety record has been achieved by working 30 accident-free days during the period 18/9/75 - 29/10/75. It is hoped that this overall improvement is the long-awaited-for start on the road to the achievement of beating our lowest ever annual frequency rate of 23, which was achieved in 1972-1973.

Whilst all divisions and specialist sections have contributed to the success of the accident prevention programme, and must be congratulated for their efforts, a special mention must be made of those who are at present enjoying accident-free periods in excess of two years. Heading the list is Walpole, who have set a Departmental record by achieving an accident-free period of 53 months. They are followed by Working Plans, with 44, and Dwellingup and Kelmscott, both with 30 months. In addition, a number of gangs, workshop personnel and sawmill groups have also achieved outstanding safety records which have been recognised by the presentation of the Conservator's Award of Merit. Recent awards of this nature were made to Lewana Gang, Nannup Workshop personnel and Yanchep Gang, all having worked over 4 years accident free.

At a safety award presentation at Walpole, Murray Love, who was at the time designated as the divisional safety officer, replied to the presentation made by the Minister for Forests by issuing a challenge to those present to continue the good work, and also to all other divisions to equal Walpole's record and put safety as the prime consideration in all aspects of work. He stressed the importance of teamwork and "Mateship" to build confidence and competence into all field operations.

It is hoped that the success that has been achieved in reducing accidents during the past four months is an indication that the challenge has been accepted, and that by the end of the current year our safety record will be worthy of the recognition that it is receiving throughout industry.

On the question of awards, a proposal for the introduction of an individual award system, whereby each member of a qualifying group receives an appropriate item as a reward for his contribution to the success of the accident-prevention programme, has been submitted for consideration. The proposal is designed as an incentive directed at stimulating individual safety awareness without which success in reducing accidents is nigh impossible. This award system will be in addition to the present system of the I.F.A.P. awards for 50 000, 100 000 and 250 000 accident-free man-hours, and the Conservator's inscribed star and certificate awards. Although no decision has been reached at this stage, the Conservator's decision to recognise the achievements of Walpole, Dwellingup and Kelmscott in a similar fashion would indicate that the proposal is receiving favourable consideration.

It is pleasing to see that most divisions are now publishing local safety newsletters as a means of disseminating safety news and other items of local interest, but the lack of contributions from the field for inclusion in the Departmental newsletter is disappointing. I am sure that there are many matters of local divisional interest that would prove interesting to other divisions, and this newsletter can be used as a disseminator of this information. Any contributions may be forwarded to the editors, Messrs R. Underwood and P. Jones, at Manjimup or safety officer Jack Marshall.

DISABLING INJURY ACCIDENTS

	<u>JULY-OCTOBER 1975</u>	<u>JULY-OCTOBER 1974</u>
WALPOLE	NIL	NIL
DWELLINGUP	NIL	NIL
KELMSCOTT	NIL	NIL
WORKING PLANS	NIL	NIL
BUSSELTON	NIL	4
KIRUP	NIL	2
PEMBERTON	NIL	NIL
NANNUP	NIL	1
RESEARCH	NIL	1
KALGOORLIE	NIL	NIL
HEAD OFFICE	NIL	NIL
CADETS	NIL	NIL
MUNDARING	NIL	NIL
COLLIE	1	3
NARROGIN	1	NIL
HARVEY	1	1
MANJIMUP	2	1
COLLIER-SOMERVILLE	2	1
WANNEROO	2	1
	<hr/>	<hr/>
	9	15

ACCIDENT SUMMARY

YEAR	M.H.W.	D.I.A.	S.I.A.	Total Acci- dents	F.R.			Man Days Lost	Dura- tion rate	Sev- erity rate
					D.I.A.	S.I.A.	D.I.A. + S.I.A.			
1967/68	1 895 600	124	312	436	65	164	230	1701	14	900
1968/69	2 019 568	96	155	251	48	76	124	1738	18	860
1969/70	1 901 020	70	129	199	37	67	104	721	10	379
1970/71	1 808 406	48	158	206	27	87	110	458	9	253
1971/72	1 759 888	40	128	168	23	72	95	275	6	156
1972/73	1 728 577	45	112	157	26	64	90	414	9	239
1973/74	1 651 621	45	119	164	27	72	99	359	8	217
1974/75	1 748 219	55	127	182	31	72	104	634	11	362

- M.H.W. = Manhours worked
- D.I.A. = An accident resulting in loss of at least a full day or shift following that on which the accident occurred.
- S.I.A. = An accident necessitating medical attention only and resulting in no other lost time.
- F.R. = No. of D.I.A. per million manhours worked.
- DURATION RATE = Average days lost per D.I.A.
- SEVERITY RATE = Total days charged per million manhours worked.

KANGAROO TICK

From time to time, employees are called upon to work in areas infested with kangaroo tick with somewhat uncomfortable consequences.

During the past few years, reports of tick bites indicate that not only does it appear that the tick population has increased but they are also becoming more widespread throughout plantations and forest areas.

The increasing number of people seeking medical attention also indicates that ticks are either becoming more virulent or else we are not taking adequate precautions, firstly to guard against attack and secondly to care for body areas affected.

The matter has been taken up with the State and Commonwealth Public Health Departments and also CSIRO, who can offer no other solution than preventive methods such as the use of various repellents on clothes and exposed skin (Dimp, Kerosene, Dibutyl Pthalate and Dimethyl Pthalate) and the treatment of affected areas by dabbing the skin with lightening kerosene or methylated spirits.

They also point out that general skin cleanliness, avoidance of scratching and adequate first aid to scratched and abraded skin to prevent infection are all important.

Following confirmation from the Queensland Forest Service of the effectiveness of the emulsion repellent used by them - this was published in a previous newsletter - I personally tried it when collecting tick specimens for research by the Public Health Department, and found it to be as effective as they claim.

As tick bites are classified as work-caused injuries, it necessarily follows that they be defined as a work hazard, and appropriate action be taken.

To this end I am republishing the emulsion recipe with the hope that organised efforts at proving its effectiveness will be conducted at Divisional level.

RECIPE FOR EMULSION REPELLENT

$\frac{1}{4}$ litre of Dibutyl Pthalate
 $4\frac{1}{2}$ litres of water
28 g soap

METHOD

Cut soap into small pieces and boil in $2\frac{1}{4}$ litres of water until soap is melted.

Add the other $2\frac{1}{4}$ litres of water and the $\frac{1}{4}$ litre of Dibutyl Pthalate.

Clothes which have been washed clean should be dipped in this emulsion, wrung out and dried.

The emulsion can be kept for further use.

One treatment of emulsion establishes repellent effects which survive four boilings, so that the clothes need to be treated in this way only once in five weeks.

Another method of using the repellent Dibutyl Pthalate is as follows:-

Rub Dibutyl Pthalate, with the hands, on to the outside surfaces of trousers and socks. Rub also on exposed skin surfaces.

NOTE: It is said that Dimethyl Pthalate is equally efficacious and is odourless, but nothing is known as to the correctness of this claim.