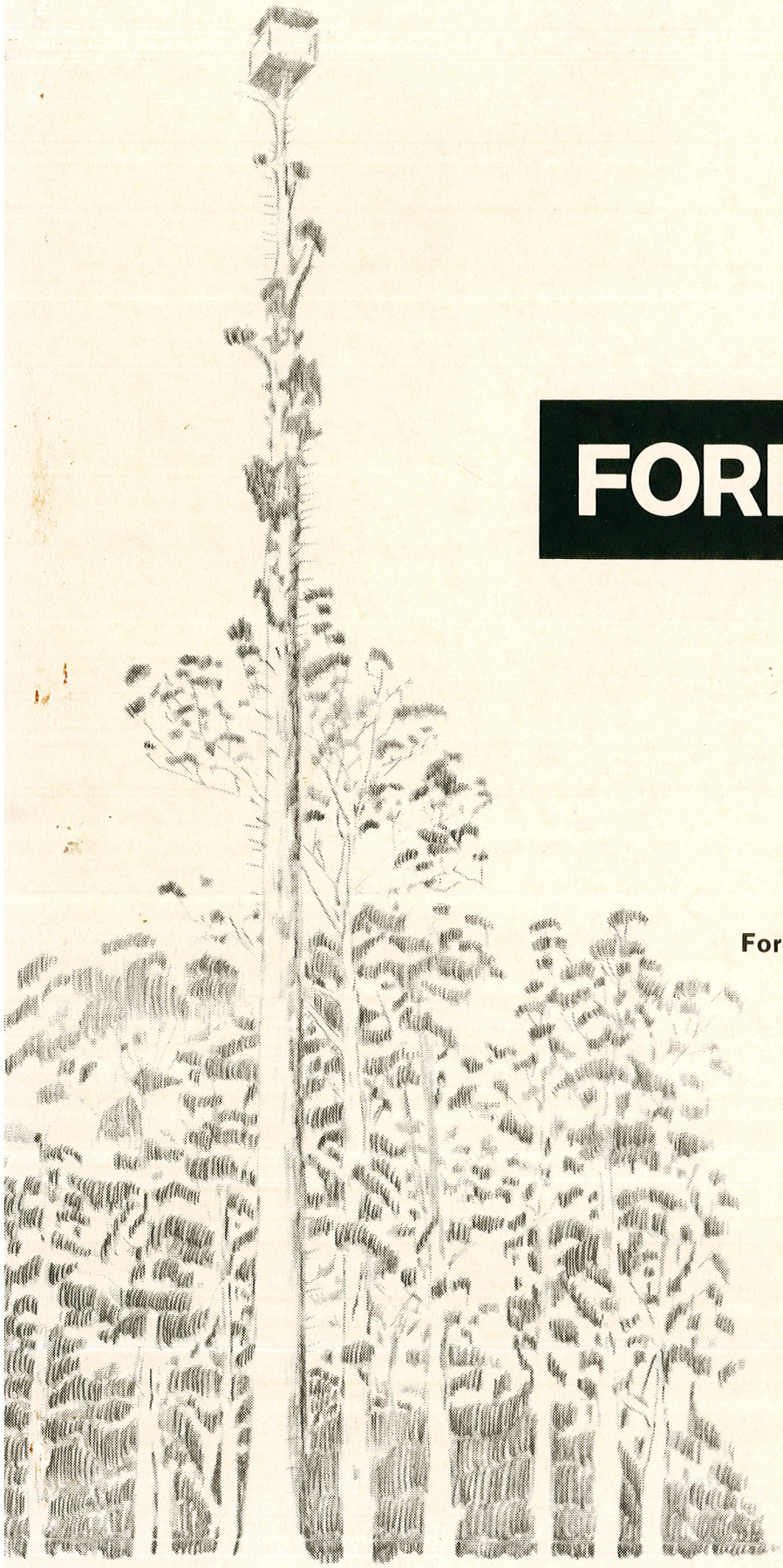

FOREST NOTES

Forests Department Perth Western Australia

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CONTENTS

EDITOR'S NOTE

How often do we overestimate our ability to get things done, or the level at which co-operation in a productive process is going to be available.

It was anticipated that Volume 16 No 1 of Forest Notes would be available in March but such was not to be.

This issue includes several articles by officers who have now retired, and it is appropriate to place on record, our thanks to Dave Watson and Andy Selkirk who have supported Forest Notes since its inception.

AGROFORESTRY TRIALS AT MUNDARING AND YALANBEE

by G. Anderson and F. Batini

INTRODUCTION

A number of co-operative research trials between the Forests Department, the P.W.D. and C.S.I.R.O. (Land Resources Management) have been established; using considerable inputs from Divisional operations staff and the Inventory and Planning branch.

This article summarises preliminary results from this interdisciplinary research.

1. CLOVER AND CROP PRODUCTION UNDER 13-15 YEAR OLD PINUS RADIATA

13 year old P. radiata at Wellbucket were thinned to 143 and 261 $spha^{-1}$ and pruned to 6 m in May 1975. Three cultivars of subterranean clover, Daliak, Seaton Park and Woogenellup, were sown in strips between the tree rows and on a control area without trees. For two years the cultivars were reasonably pure and their individual productions of herbage and seed were measured. Chemical analyses of both green and dry herbage were performed. The strips were heavily grazed by sheep in early summer each year and this helped transfer seed to the unsown areas in the tree rows. By the third year the cultivars were fairly well mixed and all the ground surface carried pasture.

Oats and Lupins were sown on part of the experiment in 1976 and in 1977.

Trees were sampled for ring analysis, needle lengths and foliar nutrient levels, and estimates of crown cover were made.

Soil moisture measurements were made during the spring and early summer of the first two years.

The clovers established without any problems and remained healthy. They were gradually invaded by volunteer pasture species at similar rates to those which occur in agriculture. Daliak was somewhat inferior to the other cultivars and appeared to be unpalatable to the sheep when dry. This may have been related to its earlier maturity and the combination of higher fibre content, lower digestibility, lower concentrations of K, S, Mg and carbohydrates revealed by the analyses. The concentrations of P, K and S were low in the dry herbage of all cultivars but no ill effects were observed in the sheep.

By the third growing season herbage yields had fallen under the trees to 84% of the control pasture at 143 $spha^{-1}$ and to 68% at 261 $spha^{-1}$. Seed yields were higher under the trees in the first year and similar to those of the control pastures in the second year. The seeds were heavier under the trees.

Although the clovers, oats and lupins were all etiolated under the trees, this only affected the yields of clover and oats, the latter showing reduced tiller development which is often correlated with reduced yield.

The effects of pastures on tree growth rates and nutrient uptakes cannot yet be separated from those of thinning treatments but these measurements will be continued. Basal areas of individual tree crowns increased from 9 m^2 to 14 m^2 in two years.

During late spring, there was more moisture in the topsoil under the trees. This is important in seed development, pasture growth and in keeping the pastures growing longer. This may partly compensate for the reduced yields which result from shading.

2. COMBINING SHEEP GRAZING AND SOFTWOOD PRODUCTION, AT VARIOUS TREE STOCK RATES

The encouraging results of experiment 1 led to a larger experiment being established in the same locality. This had Seaton Park clover sown under 15 years old P. radiata at 70, 135 and 200 $spha^{-1}$, P. pinaster at 135 $spha^{-1}$, and on control areas from which these pines were clear felled and removed. The trees have been pruned to 6 m. Fences have been erected so that treatments can be individually grazed by sheep in June each year at rates that will fully utilise the pasture by early summer. Liveweight changes of the sheep will be measured. Trees will be measured for growth rates, changes in form and nutrient uptakes.

Other areas were also thinned and pruned but left without pasture. Half of these areas have been fertilized at the same rates as the pasture plots. This allows assessments to be made of thinning alone, thinning + fertilizing, and thinning + fertilizing + grazing of pastures, on tree growth rates etc.

The pastures were established in June 1977 and made satisfactory growth for such a dry season. Yields of clover herbage on the radiata plots ranged from 2500-4500 kg ha^{-1} and seed yields were high. These pastures were grazed until about 1000 $kg \cdot ha^{-1}$ of herbage was left. Yields of herbage were lower (1200-1500 $kg \cdot ha^{-1}$) on the less fertile and drier soils of the pinaster site and seed yields were moderate. These pastures were not grazed.

3. MANAGEMENT PROBLEMS WITH YOUNG TREES IN PASTURE AND CROP SITUATIONS

When tree seedling are planted into old pasture land it is essential to protect them from competition for light, moisture and nutrients until their roots and foliage extend beyond those of the competing plants. It is therefore necessary to spot or strip spray with weedicide for at least the first season. This leaves most of the area available for growing pastures or crops.

Grazing the pasture between young trees is risky because, once they start, stock usually eat not only the leaves but much of the stem, and permanent damage or tree deaths occur. stock usually start damaging the trees, and must be removed when the pasture is only partly utilised.

At C.S.I.R.O.'s Yalanbee Experiment Station, Bakers Hill, the palatability of several tree species in a range of pasture conditions is being investigated. The species used so far are P. radiata, P. pinaster, E. camaldulensis, E. robusta, E. maculata, E. citriodora and E. globulus.

When potted trees ranging in height from 30 to 150 cm were placed in dry pastures sheep quickly started eating them, and caused heavy losses especially if the pastures were of low quality and dominated by grass or erodium (wild geranium). In good quality pastures of clover much less damage was done, and in a highly palatable capeweed dominant pasture very few trees were eaten or damaged. The pines, E. camaldulensis and E. robusta were much more attractive to the sheep than E. citriodora or E. globulus. Fresh growth was preferred if the leaves were within reach, and sometimes bark was nibbled on trees whose leaves were not eaten.

If the land is arable, hay production and cropping between tree rows are alternatives to pasture for grazing. C.S.I.R.O. workers have investigated the effects of oat crops, on the survival and early growth rates of several tree species (P. radiata, P. pinaster, E. camaldulensis, E. robusta, E. maculata, E. citriodora and E. globulus), planted 6 m apart. In 1976 the effects of crops sown to within 45 and 90 cm of the tree rows were compared with those where no crop was sown. In 1977 the trial was repeated using only P. radiata, E. robusta, E. camaldulensis and E. wandoo. Each year both trees and crops were planted in June and the crops harvested to 20 cm by a header at the end of November.

Each year there was a tendency for the trees protected by oat crops to make better growth in early spring. Following crop removal however, survival and growth were poorer where there had been the greatest shading. In the 1976 trial, even the more distant crops affected survival and growth, probably because these crops were taller than those of 1977.

LIFE AND DEATH IN THE HUNDRED YEAR FOREST

by LEN TALBOT

The '100 Year Forest' is a forestry show place and one of the more popular tourist attractions of the Pemberton District.

This hilltop site was a wheatfield in the 1860's but the wheat crops failed and after a few years the run, of which it was part, was abandoned.

After a bushfire in 1875 the wheatfield was recolonised by karri seedlings which in the intervening 103 years have grown into a magnificent stand of young karri trees up to 70 metres tall.

After the run was abandoned it was apparently forgotten until the forty one year old stand of regenerated karri was discovered in 1916 by forestry officers engaged in survey work.

The history of the place was also largely forgotten and only gradually is it being pieced together again.

The owner of the wheatfield was Mr DeCourcy Lefroy, who erected a house near where the wheatfield was, and on the brook which now bears his name, built a small flour mill powered by a water wheel.

The foundations of the house, the remains of its stone chimney, an old fenceline and a wedge shaped cairn of stones, thought to be a grave, have been rediscovered. The site of the water wheel, of which an old photograph exists, has also been located.

Recently, I was fortunate enough to unearth two old newspaper items which throw some further light on the history of the area, and which give us an insight into life-and-death on Mr Lefroy's property. The first of these is dated October 1861 and deals with the original settlement of the district, and the high hopes held for its agricultural and pastoral potential. It reads as follows:

"Several parties who have been recently looking for and leasing runs on the Donnelly and Warren Rivers give most favourable descriptions of the country, especially that portion of the Warren where Mr DeCourcy Lefroy has taken up his squats, which is described as splendid agricultural land, almost, if not equal to the Toodyay flats. The land in the vicinity of the Donnelly River, from where it is joined by a brook called the ten mile brook, for miles to the southward and westward, is also highly spoken of for its pastoral qualities. Between the Warren and Point D'Entrecasteaux the land is also good."

The second news item is an account of the trial of two white men named Wilkinson and Lee, for the murder of a native named Coomberry. The alleged murder occurred in January 1863, on Mr DeCourcy Lefroy's station "Yakenup" about 100 miles from Bunbury.

The evidence of two native witnesses differs considerably from that of the accused and two white witnesses; but it seems, that during Lefroy's absence, natives had been stealing flour from his place, and two of Lefroy's employees, Wilkinson and Love, decided to arrest the culprits.

Because there were several natives about the place at the time they sought the help of two sawyers named Lee and Tyler who were working in the forest nearby. Because of the number of natives about at that time, the men armed themselves with guns and pistols.

The first two natives they came upon were Coomberry and Narrogin, and although they didn't know whether or not these two were involved in the stealing, they rushed upon them and tried to overpower them and tie them up.

Love and Tyler soon overpowered Narrogin and tied him up, but Wilkinson and Lee had much more trouble in subduing Coomberry, and in the struggle Wilkinson was wounded in the leg and the native was shot dead.

According to Narrogin's evidence, Coomberry managed to grab hold of a short barbless fishing spear, even though his hands were tied, and succeeded in spearing Wilkinson through the leg while the whiteman was trying to tie him up.

Narrogin claimed that Wilkinson then called out "Go and get the gun". Lee brought the gun and shot Coomberry through the left breast. Narrogin's evidence was corroborated in all the important particulars by the evidence of Corrobung, a native woman who was present at the incident, and was further supported by the testimony of P.C. Forrest, who was one of the policemen who investigated the crime.

The evidence of Lee, Wilkinson and Tyler was that Wilkinson could not secure Coomberry and to try to frighten him into submission so that he could be tied up, he called for Love to bring the gun. Love brought the gun and threatened Coomberry with it, but the native continued to struggle and grabbed hold of the barrel of the gun; the gun went off and the shot passed through the leg of Wilkinson, who was kneeling on Coomberry, into Coomberry's chest. Love admitted that his pistol, which was loaded with buckshot, went off accidentally during the affray but he was certain that the shot did not hit Coomberry. He said that Lee had a pistol in his belt and a gun in his hand, but that he did not see how the native was shot because he could not see at the time for the smoke from his own pistol.

The defending lawyer, Mr Landhor, in his opening address cautioned the jury not to attach too much importance to the evidence of the natives, which ought not to overweigh that of the two white witnesses he would call - Love and Tyler. The natives, he said, were restrained by no feelings of religion or morality, and their evil passions had full sway. They were not even afraid of the punishment upon telling an untruth, as the idea of being prosecuted for perjury never entered their minds.

In summing up after the evidence had been heard, Mr Landhor had to admit that Love had given his testimony in a disgraceful manner, but said that having fired the shot, Love was afraid he might be charged with the death of the native.

The Attorney General, who conducted the prosecution, contended that the evidence of the natives was unshaken, while that of Love was worthless.

The judge, after defining murder and manslaughter, told the jury that unless the men could prove the natives stole the flour and that they arrested them without unnecessary violence, they were guilty of an illegal act, and were responsible for any mishap resulting therefrom.

Wilkinson and Lee were found not guilty of murder but guilty of manslaughter and each was sentenced to five years penal servitude.

Any doubt that Yakenup was Lefroy's Warren property is dispelled by the fact that after the affray Wilkinson sent Love to Giblett's place to fetch a chain with which to secure Narrogin. Gibletts, of course, were one of the pioneer families of the Warren district.

Whether the cairn of stones at the site of Lefroy's house is a grave, and if so, whether it and nearby Dead Man's Gully, have any connection with the slaying of Coomberry is not now known.

One of the policemen who investigated the crime and who exhumed and examined Coomberry's body eight days after his death, was P.C. James Forrest, who, it is thought was the grandfather, or great grandfather, of retired forester Wesley Forrest and Des Forrest of the Collie Division.. He was stationed at Quindalup for several years and later at the Lower Blackwood, (Nannup).

BROADCAST SEEDING VERSUS DIEBACK

by J. McCormick

If one believes that the presence of Banksia grandis in the forest encourages the spread of dieback and that the existence of dense thickets of acacia plants is detrimental to the same; then herein one may find, in part, a solution to the problem.

Firstly, we examine the plant community structure in a fairly representative area of the northern jarrah forest; in this case, 13 square kilometres in Pindalup block. Levy point sampling gives the graphical result line A in the illustration where plant cover density (plant repetition) is plotted against plant height. Secondly, we look at an area of reclaimed land (1.5 hectares) in Del Park minesite. This area was sampled two and a half years after being seeded with a mixture of acacia and eucalypt seed. The graph produced by Levy point sampling is illustrated by line B.

When we look at the plant species contribution to total ground cover we find:-

Plant Species Area Cover %:

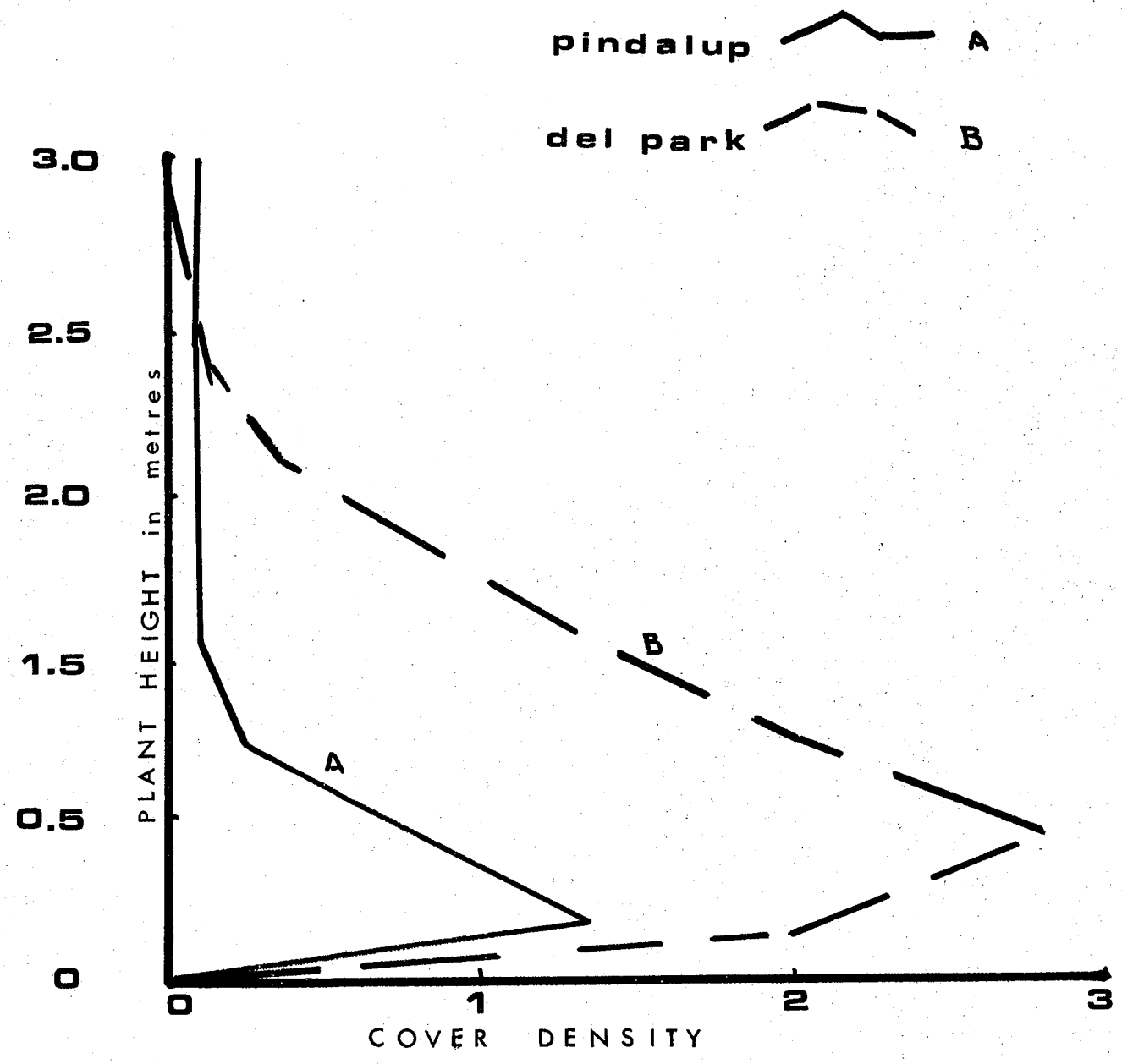
	Mixed acacias	Mixed eucalypts	Banksia grandis	Total ground area cover
Pindalup	Nil	3.5	7.0	39
Del Park	54	4.0	Nil	61

We have in effect created a situation which could prove inhospitable to P. cinnamomi by removing the jarrah stand with its understorey of Banksia grandis re. Photo A; replacing it with a dense ground cover of acacias and mixed eucalypts, including jarrah re. Photo B.

Colonisation of the seeded plot by Banksia grandis is limited to a few seedlings on the extreme outer edge re. Photo C. The establishment of Banksia grandis within the plot is discouraged by dense acacia-eucalypt growth re. Photo D.

The seeding of cleared dieback areas as opposed to conventional planting of same would be cheaper. Such areas could be monitored for the presence, absence or intensity of P. cinnamomi. Furthermore, the establishment of green buffer strips around areas of high quality jarrah within the quarantine area might prove effective; such strips could be seeded and fertilised from the air in one operation.

LEVY POINT SAMPLING



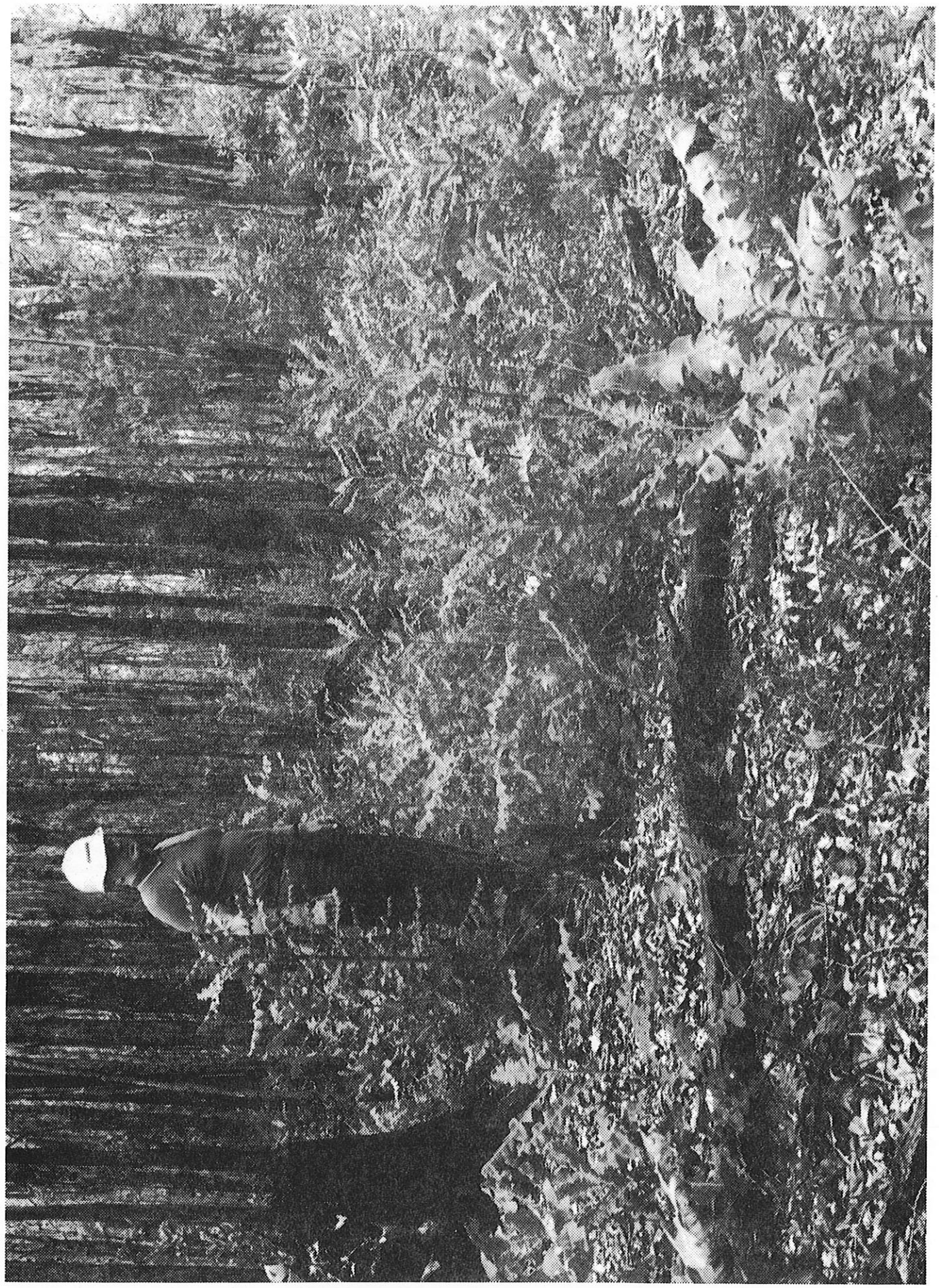


PHOTO A: Jarrah with understorey Banksia grandis

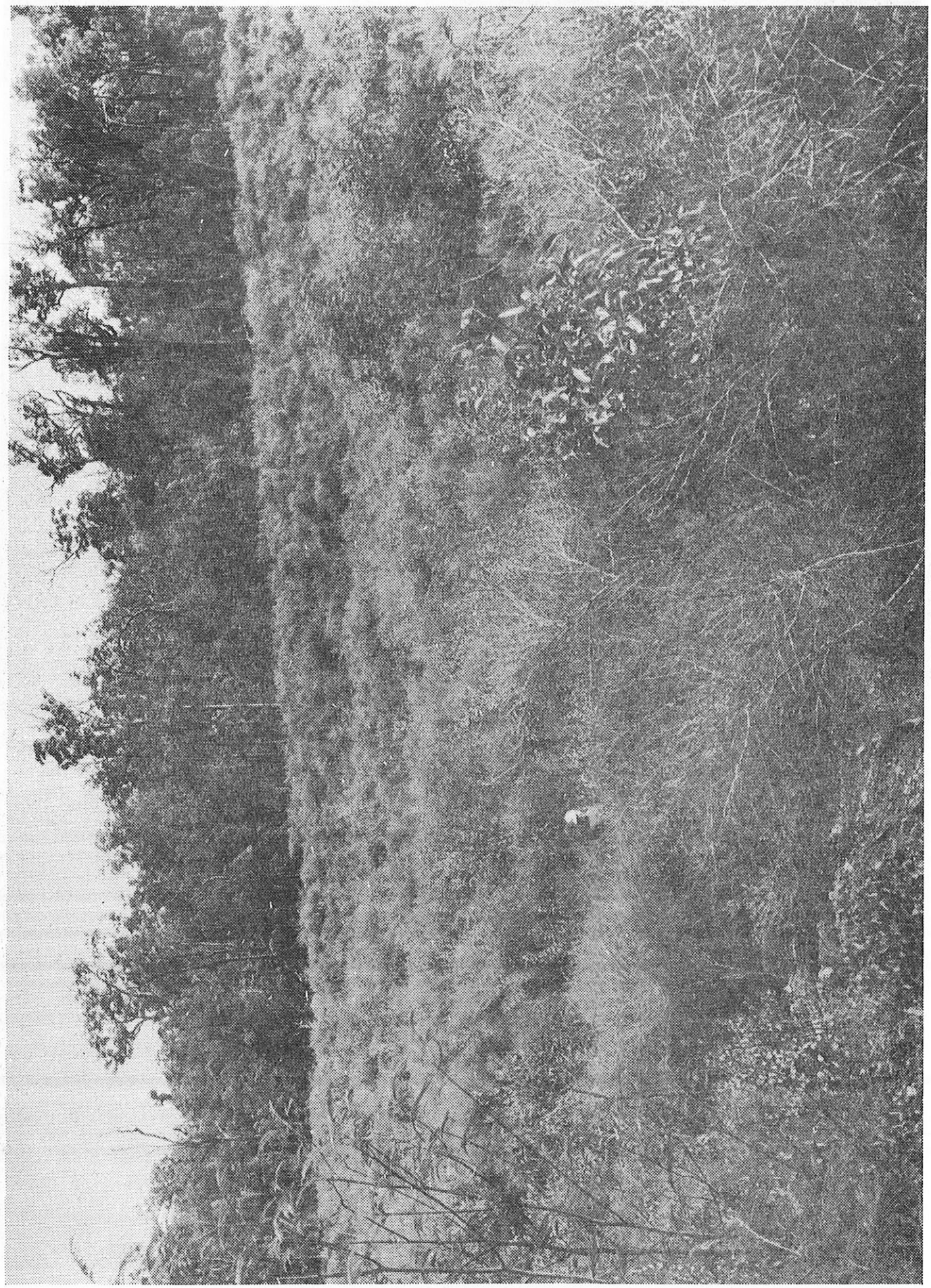


PHOTO B: Eucalypt-Acacia seeding trial - Del Park

PHOTO C: Banksia grandis seedlings on flat edge - Del Park

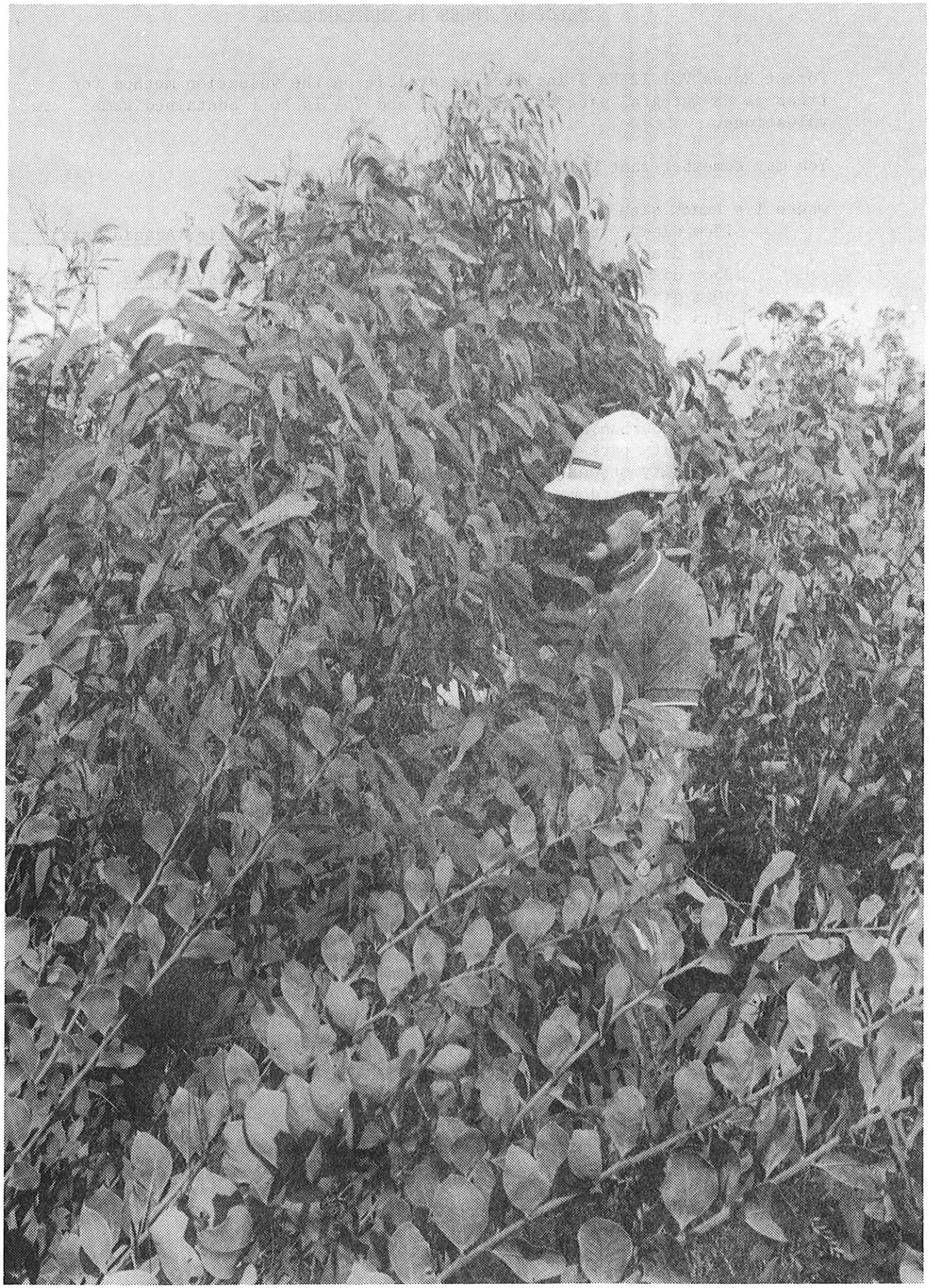


PHOTO D: Eucalypt-Acacia seeding - two and a half years old - Del Park

VALUE OF TREES IN THE LANDSCAPE

Forest Notes Vol 12 No 3 included an article on the valuation method for trees as an integral part of landscape, and Vol 14 No 1 contained some valuations.

You may remember that Value = T x S x L x H x A

where T = trunk size

15cm diam	$100
20cm diam	$150
25cm diam	$210
30cm diam	$280
plus $80 per 5cm diameter	

L = locality

a) 0.25 undeveloped country
b) 0.75 rural area
c) 1.50 suburban area
d) 2.50 city park
e) 3.00 city street
f) 3.50 city garden

A = aesthetic value

0.5 little importance
0.6 groups
0.7 well spaced
0.8 wide plantings
0.9 avenue
1.0 specimen tree

S = tree species

Group I (Virgilia, Acacia data)
0.2 to 0.4
Group II (Acacia saligna, Populus alba)
0.4 to 0.6
Group III (Fraxus, Eucalypts)
0.6 - 0.8
Group IV (Agonis flexuosa, Q. rubra)

H = health

0.5 poor
0.6 fair form, poor health
0.7 fair health, poor form
0.8 reasonable health, form
0.9 average health, form
1.0 healthy vigorous tree

a) Eucalyptus leucoxylon var rosea - Forester's home (suburbia)

7 years old, 24cm dbhob, 10m height

Values T = 20
S = 0.8
A = 1.0
H = 1.0
L = 1.5 Total $240.00

b) Pinus pinaster - Como Research grounds

40 years old, 59.5 cm diameter, 26.2 m height

Values T = 280 + 472 = 752
S = 0.6
A = 0.7
H = 1.0
L = 1.5 Total $474.00

(note: timber value on mill skids is $48.00)

c) Eucalyptus citriodora (street tree, North Perth)

40 years old, 200cm diameter, 25m height

Values T = 280 = 13 600
S = 0.6
A = 1.0
H = 1.0
L = 3.0 Total $24 984.00

THE MECHANICAL HIGH PRUNER

by F.A. Colyer

INTRODUCTION:

Pruning in forestry terms is the removal of limbs from a tree to encourage that tree to produce a straight, knot-free mill log. This is why, in plantation forestry, pruning programmes are carried out at various stages in a tree's development. The removal of the lower limbs is no real problem with manual shears serving as a useful means of branch removal. Pruning a plantation tree to 4.0 metres and 6.0 metres has been a very labour intensive and costly operation. Manual hand saws attached to long aluminium poles have been used.

Nowadays, with the trend to use labour saving mechanical aids, a hydraulic powered mechanical high pruner has been developed to such an extent that it now provides a more than adequate substitute for the primitive hand saw.

The idea of using a mechanical high pruner, like the one now in use, was promoted after viewing and testing similar machinery used in orchards. With a few innovations and a slight change in design the original orchard pruner has been developed to suit a plantation pruning silvicultural operation.

Originally two "makes" or types of pruners were viewed and tested. Both were basically similar in design and method of operation, however parts were not generally interchangeable.

1) The Limb Lopper - was the cheaper of the two "makes". It however tended to be slower in field operation and rather heavy in design.

2) The Fairmont - this is a dearer priced machine. When compared to the Limb Lopper it was found to be a better design, had a distinct weight advantage and was superior in performance in field working conditions.

As a result of these comparisons it was obvious to choose the Fairmont type and innovate on its design and construction to suit plantation type pruning.

Description: The pruner or lance as it is called, consists of a handpiece which is simply an encased cylinder with an operating trigger (see diagrams 1 and 2) and an extension which projects beyond the handpiece which is made of a metal or fibre-glass pipe containing a shaft which reciprocates and operates the shears at the end.

The hydraulic pressures needed to operate the shears comes from a power unit attached to the three point linkage of a Massey Ferguson tractor. The power unit consists of a seal tank or reservoir (160 litres in capacity). Inside the tank is a hydraulic pump which has a capacity

of 55 litres of hydraulic oil per minute. Power to drive the pump comes from the power take off connection on the tractor. The operating power take off is 1400 r.p.m. The hydraulic pump, pumps oil through the high pressure hydraulic red hose at a pressure of 1500 - 1800 psi, into the operating handpiece, which when triggered operates the lance shears.

Mounted on top of the tank is an oil cooling radiator. The hydraulic oil is pumped through the radiator and cooled by a fan powered by a small 12 volt electric motor. Oil can be pumped through the radiator at a rate of 100 litres per minute.

The need to cool the hydraulic oil is due to an excessive heat development (38°C air temperature) during the summer months, which is in turn transferred to the handpiece.

Also mounted on the top of the tank are the hydraulic pressure hose couplings and a spring attachment. This spring attachment is a means of supporting and lifting the hoses off the ground. Under working conditions these hoses tend to catch in the scrub and fallen limbs.

PRUNER SPECIFICATIONS:

Length Overall:	Lance used in 4.0m pruning - 2.25m long.
	Lance used in 6.0m pruning - 3.4m long.
Weight:	Lance used in 4.0m pruning - 4.5kg.
	Lance used in 6.0m pruning - 5.5kg.
Cutting Capacity:	70mm
Oil Flow Recommended Range:	20-25 litres per minute.
Recommended Operating Pressure:	1,800 to 2,000 psi.
Maximum Recommended Operating Pressure:	2,000 psi.
Maximum Recommended Back Pressure:	150 psi.
Outer Tube and Pull Rod:	Fibre glass or aluminium (recommended aluminium).
Shear Blade and Hook:	Heat treated tool steel.
Hydraulic Hose:	6 meters long.

MAINTENANCE AND SHARPENING OF BLADES: The blades are stone sharpened regularly or as required by the operators. The actual sharpening angle and bevel is illustrated in diagram 3. After each sharpening and before the commencement of work the hose couplings should be checked for leaks, all moving parts associated with the pruning lance be oiled, especially between the cutting blade and the hook. Daily the tractor should receive a check also.

CAPABILITIES: The mechanical pruner is capable of cutting a limb off a tree of up to 70mm in diameter. Using several cuts it will cut slightly larger limbs. It is however very undesirable to attempt to cut a limb over 70mm in diameter as a lot of strain is put on the blade and hook. Many blades have been damaged beyond sharpening repair and other parts associated with the blade and hook have been damaged or broken purely through attempting to cut off oversized limbs. The operators do carry spare parts for the unit should these breakdowns occur.

Oversized limbs present no real problem as many limbs in plantations where the pruner operates, do not reach these diameter sizes. Only break

and edge trees will tend to have oversized limbs. Silvicultural prescriptions now tell us not to prune these trees for that very reason.

METHOD OF OPERATION: Access is vital. The tractor must be small enough to fit between the rows. Usually a M.F. 35 or 65 is an ideal sized tractor. The two pruners walk between the rows of trees in the plantation and "work" four rows at a time. As they go along selecting and pruning the desired trees the tractor driver tries to keep the tractor close enough to the pruners so that the hoses don't become fully extended.

PRODUCTION: The mechanical high pruner, with three trained operators is capable of pruning 3 hectares at a rate of 250 stems or trees per hectare in an eight hour working day. This production rate is slightly higher with the shorter lances. Factors such as weather and breakdown affect the production rate. A well maintained unit and regular sharpening of blades will also affect production.

COSTS: Apart from the initial outlay for the machinery, operation costs are mainly kept to wages and tractor running costs. Breakdown and lances can contribute to costs as the lance, blades and hooks are fairly expensive to replace. The whole lance being approximately $520.00 to replace, blades $35.00 each and the hooks $25.00 each. The frequence of breakdowns has now been minimised due to better design and more experienced operators.

SAFETY: The Forests Department places a great emphasis on safety and some mention should be made. The obvious hazard of falling limbs is part and parcel with the job. Generally the limbs are small and are no real hazard to the operators. It is necessary to wear a hard hat and eye protection at all times. When pruning the tractor driver is sheltered from falling limbs by a cab mounted on the tractor. Other hazards such as scrub fatigue and weather are subject to terrain, weather and mental attitude to the job. Mechanically, the machine is not hazardous and will not be if it is respected by its operators.

SUMMARY: The mechanical high pruner now has had many hours of testing and working. Results show that is has proven to be a more than adequate substitute for the handsaw and has a quite valuable place in plantation silviculture. With even more greater understanding of the machines capabilities and innovations in design and silvicultural planning, the mechanical high pruner will serve as a great use in future years.

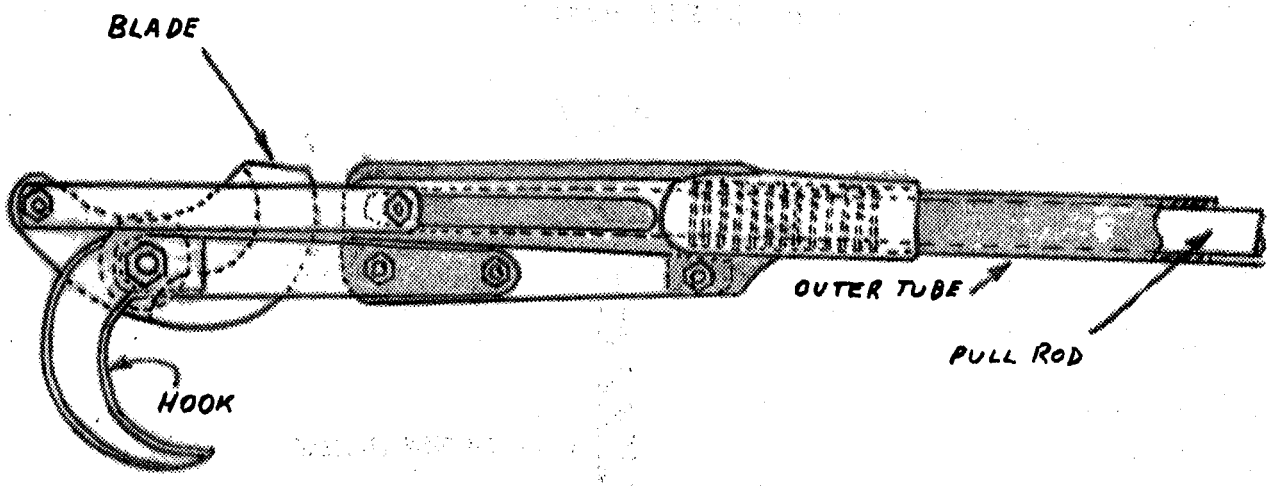


DIAGRAM 1 CUTTING END.

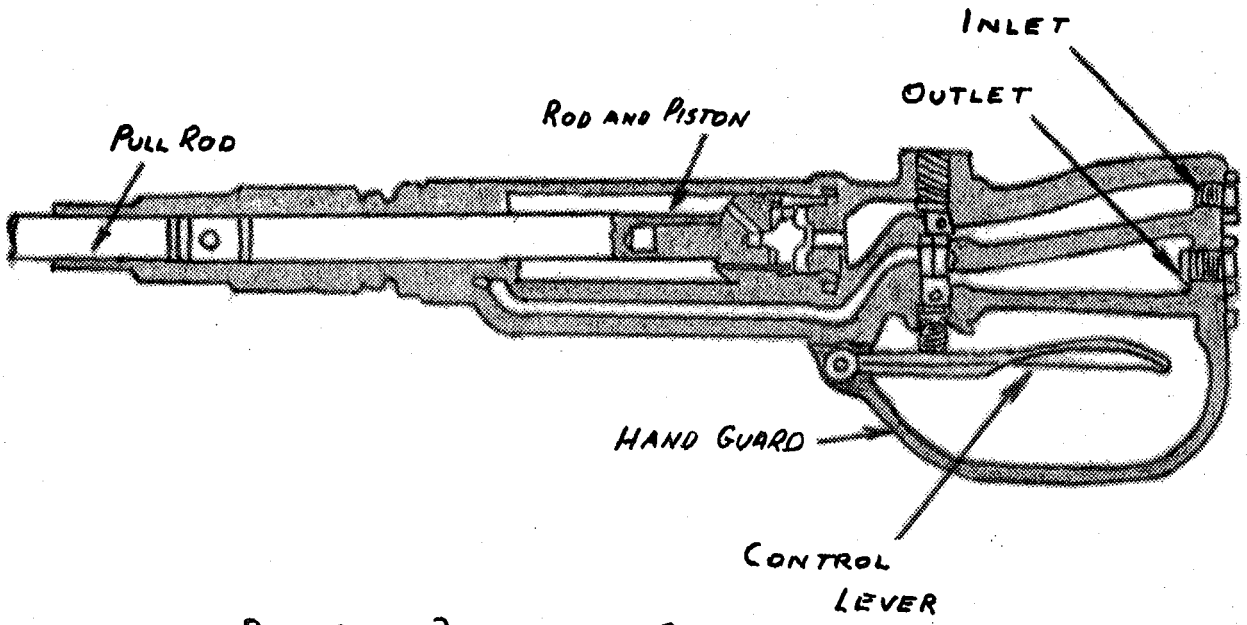


DIAGRAM 2. HAND PIECE

mechanical high pruner;

SHARPENED EDGE
OF SHEAR BLADE

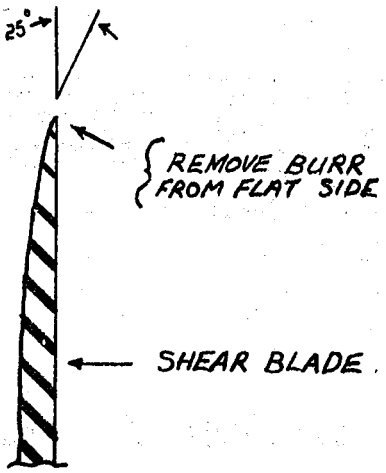


DIAGRAM 3

PIEZOMETERS INSTALLED BY JETTING

by A.B. Selkirk

A technique originally used by Italian orchardists in probing both vertically and horizontally for supplies of water has been tried for the installation of shallow piezometers on study areas of the Helena River Catchment.

As a labour saving mechanism it has proven advantages over the usual 50mm hand auger in most soil types.

Difficulty was experienced in the hard-pan zone, but this was generally overcome by using a jumper bit to break up short sections of hard material.

The deepest hole completed to rock bottom was 6m after passing through a hard-pan at 0.5m.

Water supply under pressure was derived from the standard firefighting heavy duty unit adapted via canvas hose to a 19mm pipe cross-head onto which were threaded additional short lengths of pipe to the desired depth.

Action in operation was simply to twist the tee bar of the crosshead to and fro over a distance of 60° and occasionally use a pumping action by raising the boring tube up and down to clear the material in suspension.

Slitted piezometers were installed immediately with a sand fill around the slits. These were then sealed with a cement grout at the desired level and capped off with a fire-proof asbestos-cement pipe section and cap.

Reference: Piezometers installed by Jetting. Extract from Agriculture Handbook No. 60, United States Dept. of Agriculture.

FERAL PIG SURVEY

Towards the end of last year a questionnaire was circulated as a preliminary to the present feral pig survey. This note is to thank those from whom replies were received and hopefully to encourage further awareness and comment about the situation as it exists. As a result of your efforts much useful information has been compiled on which to base, in the coming year, a more intensive study of these animals and their effect in the forest.

The major infestation of feral pigs, as determined from the questionnaire returns is shown on the map below. Smaller, isolated populations of feral pigs also have been reported from Woorooloo Brook and the Harvey Estuary region.

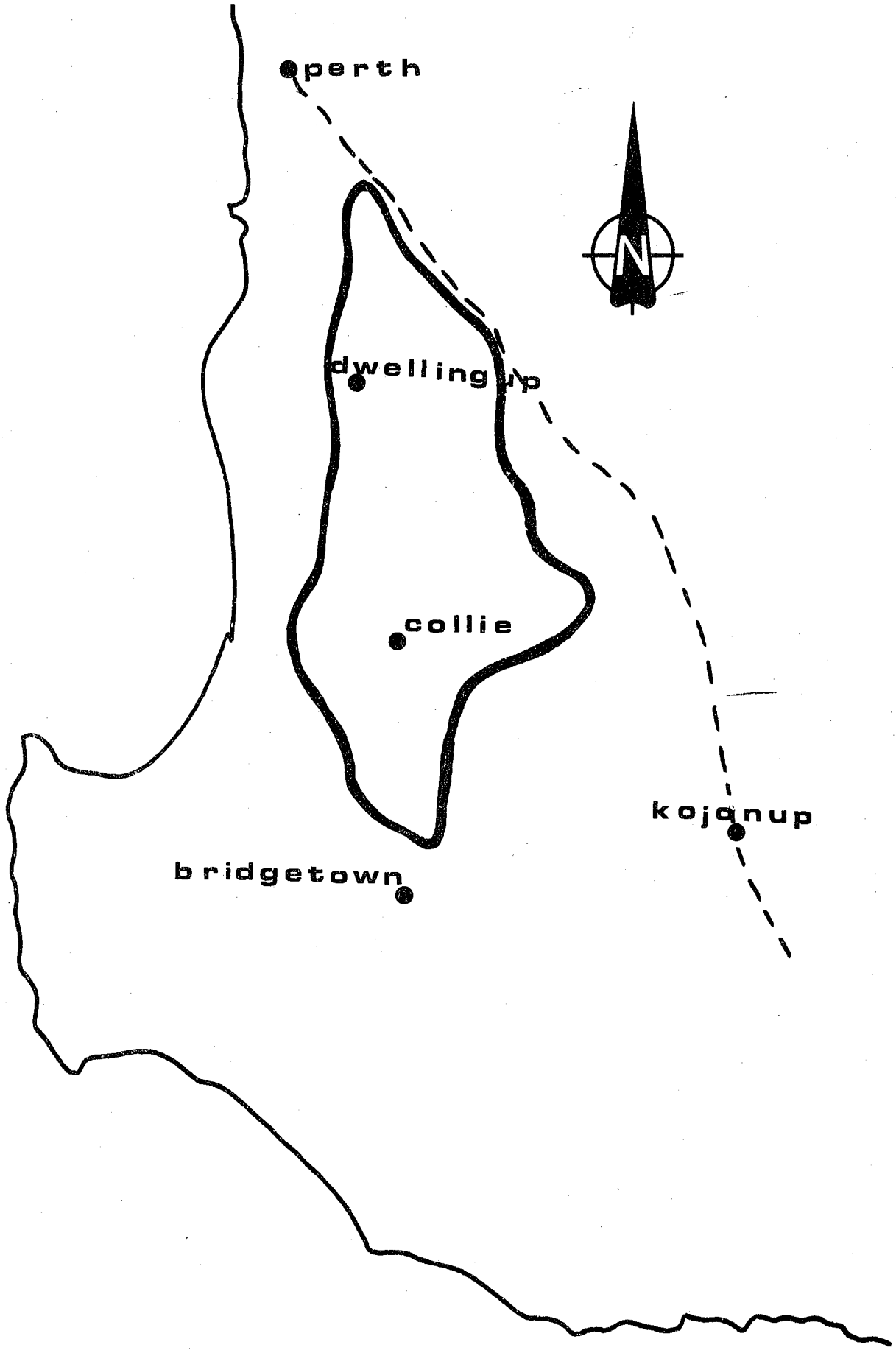
Because these pigs tend to avoid contact with humans sightings are rare and I must rely heavily on your continued reports to support whatever findings I make. For this purpose I have included a sighting log as a guide to the type of information I am looking for - this can be filled in, removed and returned to me at the following address ...

Kim Masters
Zoology Department
University of W.A.
NEDLANDS 6009.

SIGHTING LOG - FERAL PIGS (& SIGNS OF)

DATE OF SIGHTING	LOCATION F.D. 1:63360 Maps-Grid Ref: (if possible)	NUMBER IN GROUP			AGE (SIZE OR WT) OR LITTER	WHAT WERE PIGS DOING WHEN SIGHTED?	IF SIGNS OF PIGS ONLY WERE SEEN WHAT WERE THE SIGNS?	NAME, OCCUPATION AND HOW TO CONTACT IF NECESSARY
		ADULTS		JUVENILES				
		M	F					

FERAL PIG DISTRIBUTION



MARRI CROWN DEGRADE

by J. McCormick

Crown deterioration in marri trees is a phenomenon to which we have grown accustomed in recent years.

The intensity and progress of crown degrade is observed on 71 large marri trees tagged along Scarp Pool and Whittaker Roads. The mean girth of the trees was 2.7 metres G.B.H.O.B. No fire damaged trees were included. In November 1975, the trees were classed as having:- full crown, 3/4 crown, ½ crown and ¼ crown remaining. The trees were inspected again in March 1977 and 1978, re. table.

Date	Full Crown	75% C.R.	50% C.R.	25% C.R.	Dead	Mean Crown Capacity
Nov. 1975	21	38	11	1	0	78%
Mar. 1977	3	28	26	13	1	57%
Mar. 1978	0	24	27	19	1	51%

At the commencement date, 50 of the trees had already lost an average 22% of their crown capacity whilst 21 trees had complete healthy crowns. Two years later all crowns are affected, one tree has died and the mean crown capacity has been reduced to 51%. All trees exhibit cambium rupture on bole and limbs.

TUART REGENERATION

by D.J. Rowe

When utilisation of the tuart (Euc. gomphocephala) began the problems associated with regeneration of the species were not readily recognised. Today the tuart forest is dominated by Agonis flexuosa (W.A. Peppermint). There have been many attempts to re-establish the tuart forest and some experimental plots have been planted.

Tuart, like many other eucalypt species, has a fairly regular flowering and seeding cycle, but one can find odd specimens flowering at irregular intervals. Generally tuart has a five year cycle, from bud formation to mature seed in the seed capsules.

1975 WILDFIRE

In January 1975, a wildfire burned some bulldozing in Jamesies Paddock. Initially it appeared there would not be any seedlings on the ash beds, but as winter came, so did the odd seedling germinate. By the end of July there were, on the ash beds, more than an adequate number of seedlings. Today the average height of the tuart regeneration is 6 metres plus, and it has dominated the Agonis flexuosa on this area.

TUART REGENERATION

In 1975 an area was marked in Jamesies Paddock for clearing, using a Fiat 70C i series, equipped with a rake blade and tree pushing arm. The area was bulldozed in the winter months of 1975. All debris was pushed into openings, where there was no mature or pole sized tuart. The debris was left in bulldozed heaps until May 1977, when it was burned. The resulting ash beds are now literally carpeted with seedlings. Some seedlings are now 1 metre in height, but an average height of the whole area would be about 0.8 metre.

During this summer it is expected that some seedlings will die due to drought and also competition from other stronger seedlings.

It is planned to control burn the 1975 wildfire area in the late autumn. Hopefully this will aid in controlling the Agonis flexuosa and also may help to control insect species which attack the tuart foliage.

The current Tuart Working Plan allows for the regeneration of 25 hectares per annum. Tuart seedlings will be planted on ash beds if insufficient natural seeding occurs.

FURTHER NOTES ON ADENANTHOS APICULATUS

by A. B. Selkirk

This species was under investigation at the time the article in Forest Notes Vol. 7 No. 3 was written and has since been allocated the name of Adenanthos teges by Mr Alex George of the State Herbarium in 1973. (Nuytsia Vol. 1 No. 4 1974).

"Distribution: restricted to a few populations on the Darling Plateau, near Mundaring Weir and Chidlow, east of Perth.

Other collections: type locality, December 1969, A.B. Selkirk (PERTH) ± 2 km north of Chidlow, Western Australia - 31°51'S, 116°16'E, 7 December 1973, A.S. George 11759 (PERTH, MEL, RSA).

Adenanthos teges is remarkable for its dense, mat-like habit: the margins of the plant can be lifted almost like a carpet and then replaced on the ground. It was discovered in 1966 by Mr A.B. Selkirk, of the Forests Department of W.A., who was intrigued by its resistance to burning. During controlled-burning of the forest near Mundaring, this plant not only resisted burning but in doing so protected those plants growing within the margin of the "mats".

The species is allied to A. cygnorum Diels and A. sericeus Labill. Besides the markedly different habit, it differs from both in the smaller flowers, the indumentum, and the larger glands at the apices of the lobes of the leaves. A. cygnorum has thicker leaves, often more divided than those of A. teges and occurs on deep sands of the coastal plain north and south of Perth. A. sericeus has bright red flowers, and occurs in deep sand or rocky sand of the south coastal heaths from Albany to Israelite Bay. A. teges grows in lateritic soils in Jarrah forest (Eucalyptus marginata Donn. ex Sm.) in a few localities near Mundaring Weir, east of Perth."

In 1971 two plants were established on a gravel road verge in conjunction with several plants of A. cygnorum at Mundaring Weir H.Q. These plants have now extended to a radius of 6 feet and maintained their perfect prostrate form.

The main growing season is during summer with the greatest seed production towards the end of March.

Without forest canopy protection these specimens suffer from frost damage in a severe winter.

A further attempt at establishment in grey deep sand has been unsuccessful. However, as a ground cover in native vegetation cultivation in soil of gravelly clay or gravel over clays, the species has a broad potential with a pleasing result.

WHAT'S IN A NAME?

Formerly known as Working Plans Office, Manjimup
or W.P.O. Manjimup
or Manji Whoppo
.... among other things!

Now known as Inventory and Planning, Southern Region
or I and P, South
or Manji Ips
.... the other things are still coming

(Reference - General Working Plan No 86 1977 pt 1 pg 134)

EN-LIGHTNING TOPIC

by A.G. Brightspark

"STEP POTENTIAL"

Something we as toilers in the great outdoors should know and pass on to our loyal troops.

During electrical storms knowing about "step potential" may save you from being remembered as "Fried Freddy" or to a lesser painful degree "Soprano Sam".

We were all told as kids "Don't stand under a tree, lightning may strike it". O.K.! O.K.! So you may get clobbered on the dome by a branch! Big Deal! Most of us wouldn't feel it. However, getting back to "Soprano Sam" we come now to the real crunch. The serious bit:

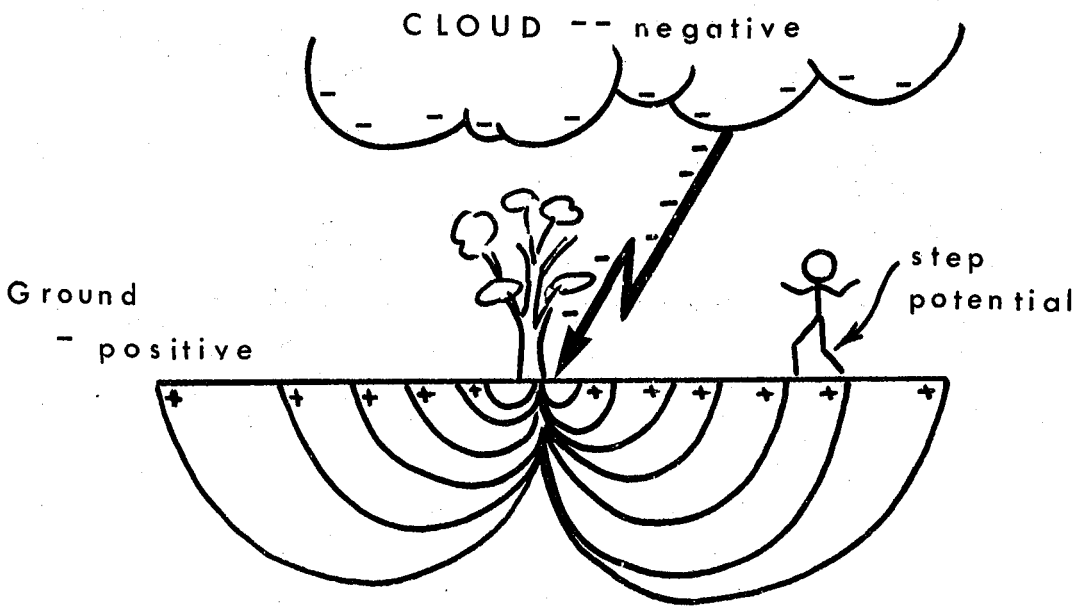


Fig 1 Voltage gradient about a strike point

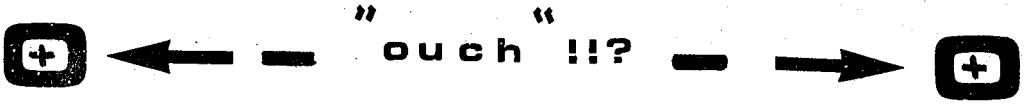
One problem associated with conveying an impulse current into the earth, is that it causes the strike point to rise to a high potential. This potential decreases exponentially with distance from the strike point and creates 'step potentials' which are of danger to people and equipment. The high voltages of an earthing system also create the risk of breakdown of telephone and power lines. These represent a remote earth. Fig. 1 shows the voltage distribution about a discharge point.

If you recall your elementary science lessons on electricity and magnetism (cousins I think) we observe that:

1. Opposite poles attract:

"boing" !!? Remember??? O.K.!

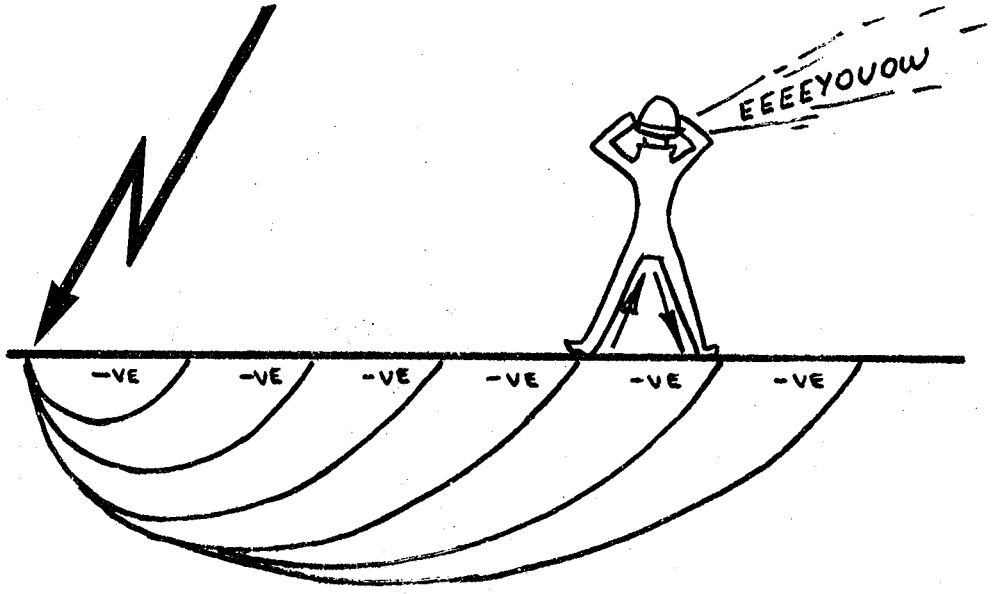
2. Therefore similar poles repel:

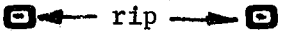


"ouch" !!?

Right??? O.K.!

So, referring to Fig. 1 we see that all the gradient lines are of the same polarity yet potential wise differ greatly ... what do we get??



Remember! "Similar poles repel"  rip

So chaps, to save the dome <u>don't stand under a tree</u>, to keep your manly voice <u>keep your knees together</u>.

THE "ROUTER" AND ITS USE IN FOREST SIGN PRODUCTION

by A.B. Selkirk

The development of methods in the use of the router for producing an aesthetically acceptable rustic sign of lasting quality has been something of a revolution after years of fragmented efforts by numerous individuals using conventional materials.

The 'growing up' period in the production of timbered signs passed through the hammer and chisel stage to the power router some years ago. A greater degree of perfection in the manipulation of the power tool was firstly evident in the Kelmscott division and mainly due to the personal dedication of craftsman Fred Wheatly.

Fred has developed a system of jigs or templates to control the machine on the numerous letter forms. A circular disc, if not a part of the machine base, is attached to the contact face and becomes a permanent part of the machine.

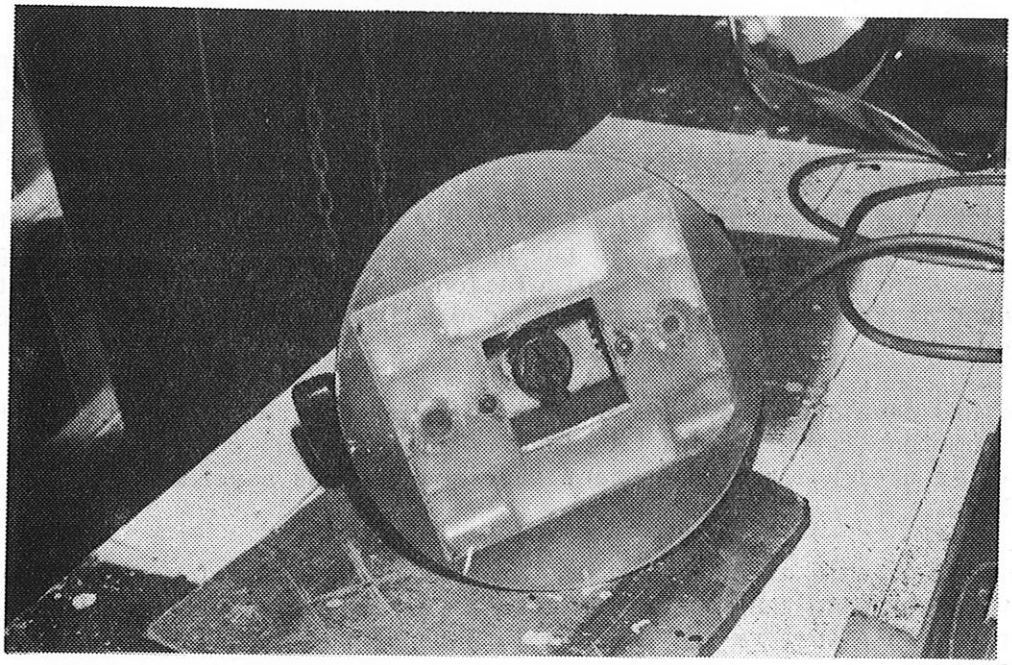
The edge of this disc is used as the contact point against whichever jig is used to guide the router bit either vertically, horizontally, or at any sloping angle to form the various letters of the alphabet in squarish characters.

All vertical lines are routed in one operation and, likewise, horizontal lines to eliminate frequent jig changes in the production of words or a line of words.

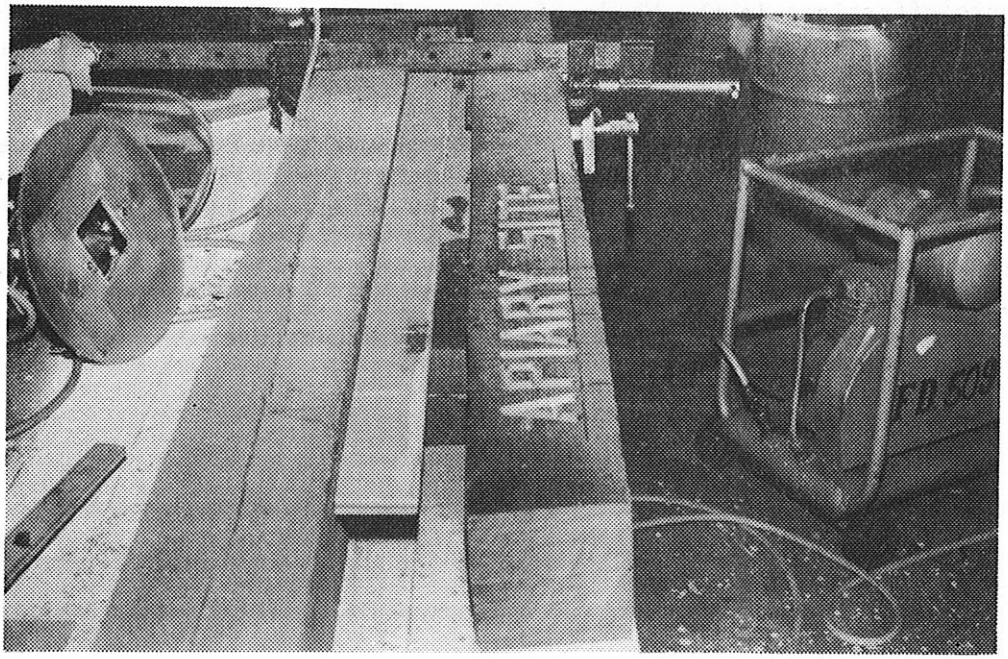
The rolling action of the disc in contact with the edge of the various jigs appears effortless in the hands of the craftsman. The result is a rapidly produced high quality article with a life expectancy equal to the timber being worked.

For the more specialised letter forms sometimes requested in private orders, the jig is only used in the basic straight line sections and the finer curved or decorative types are finished by free hand control.

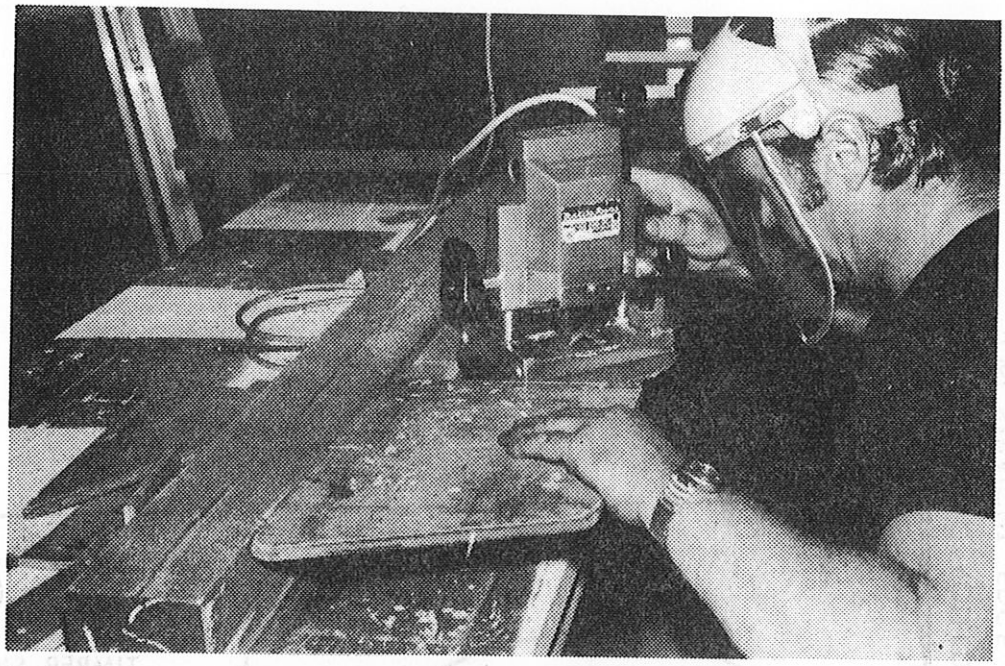
Various diagrams to illustrate the different actions to obtain router control in conjunction with jig manipulation are set out below.



Showing Router bit and circular disc



The finished work

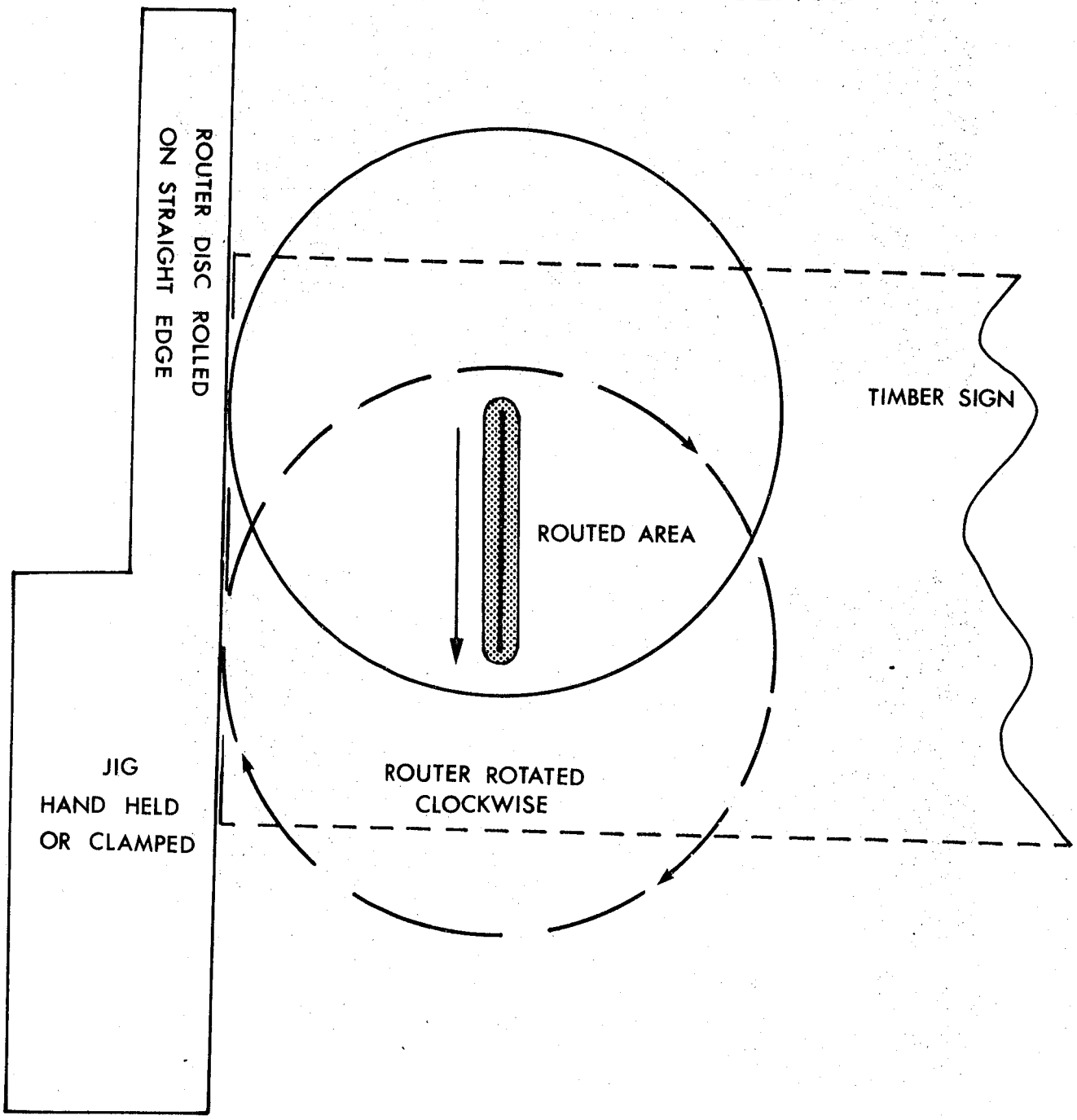


Router in use with angle jig

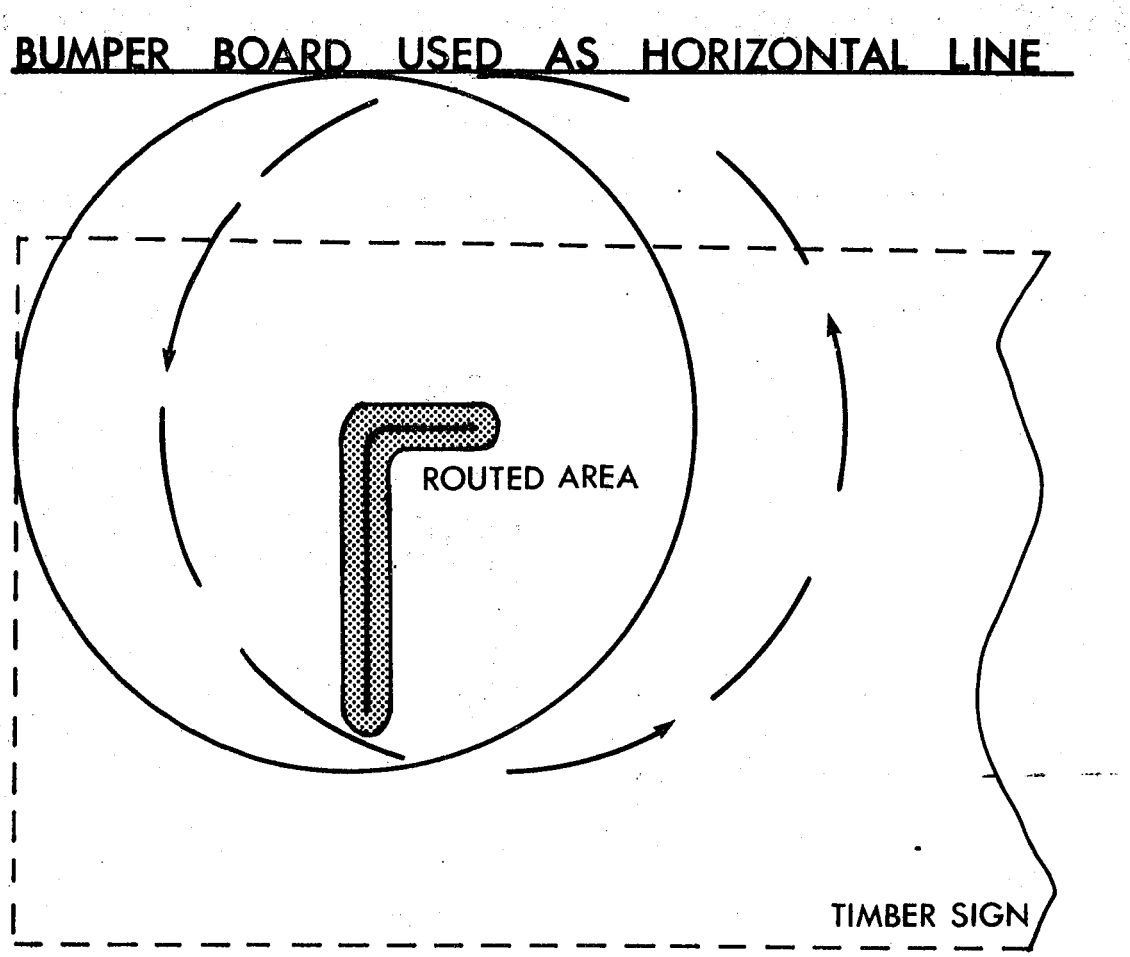
Router in use with straight vertical jig

METHOD OF USING ROUTER ON VERTICAL LINES

BUMPER BOARD ON BENCH



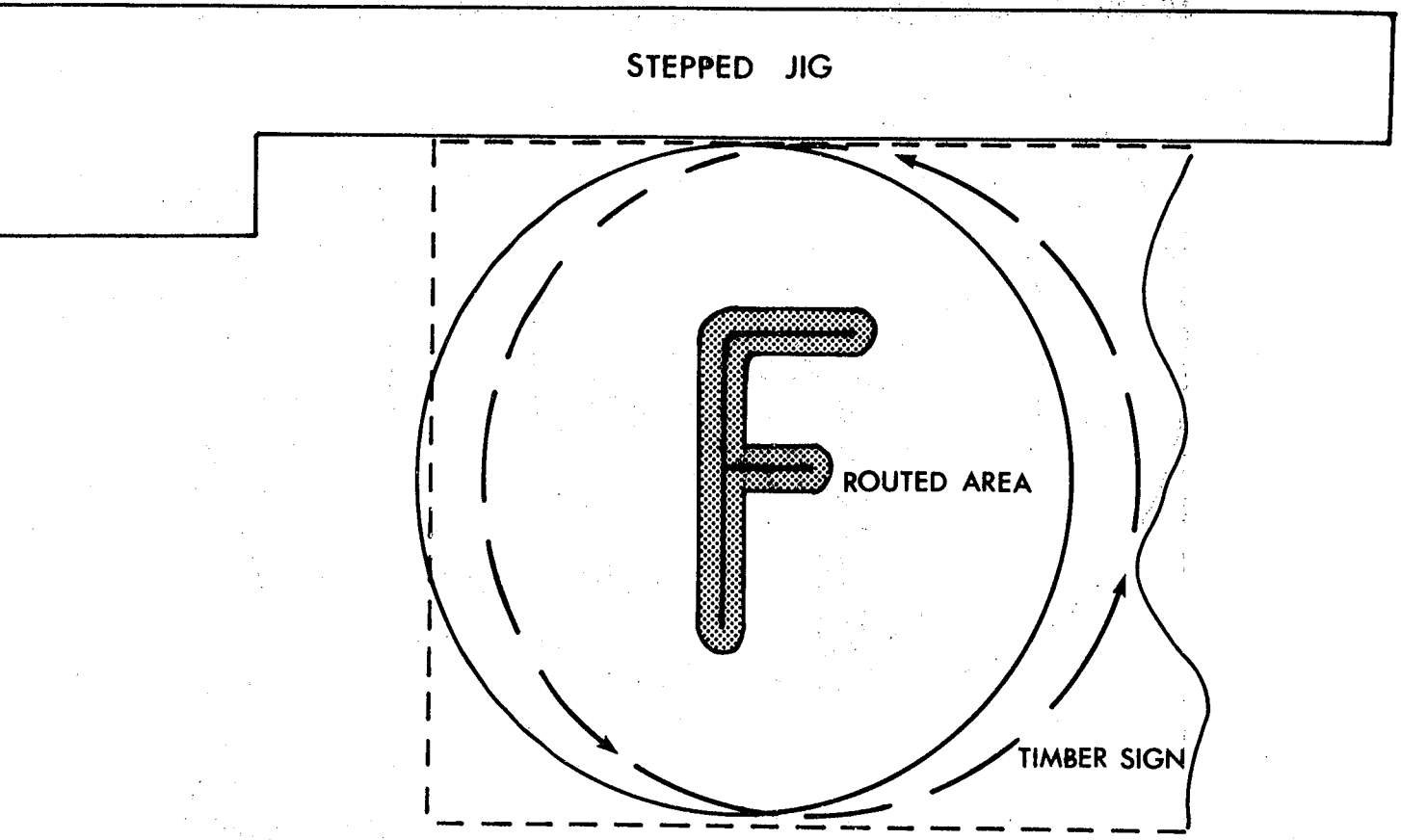
METHOD OF USING ROUTER ON HORIZONTAL LINES



ROUTER ROLLED FROM L to R ANTI-CLOCKWISE

METHOD OF USING ROUTER WITH STEPPED JIG ON HORIZONTAL LINES

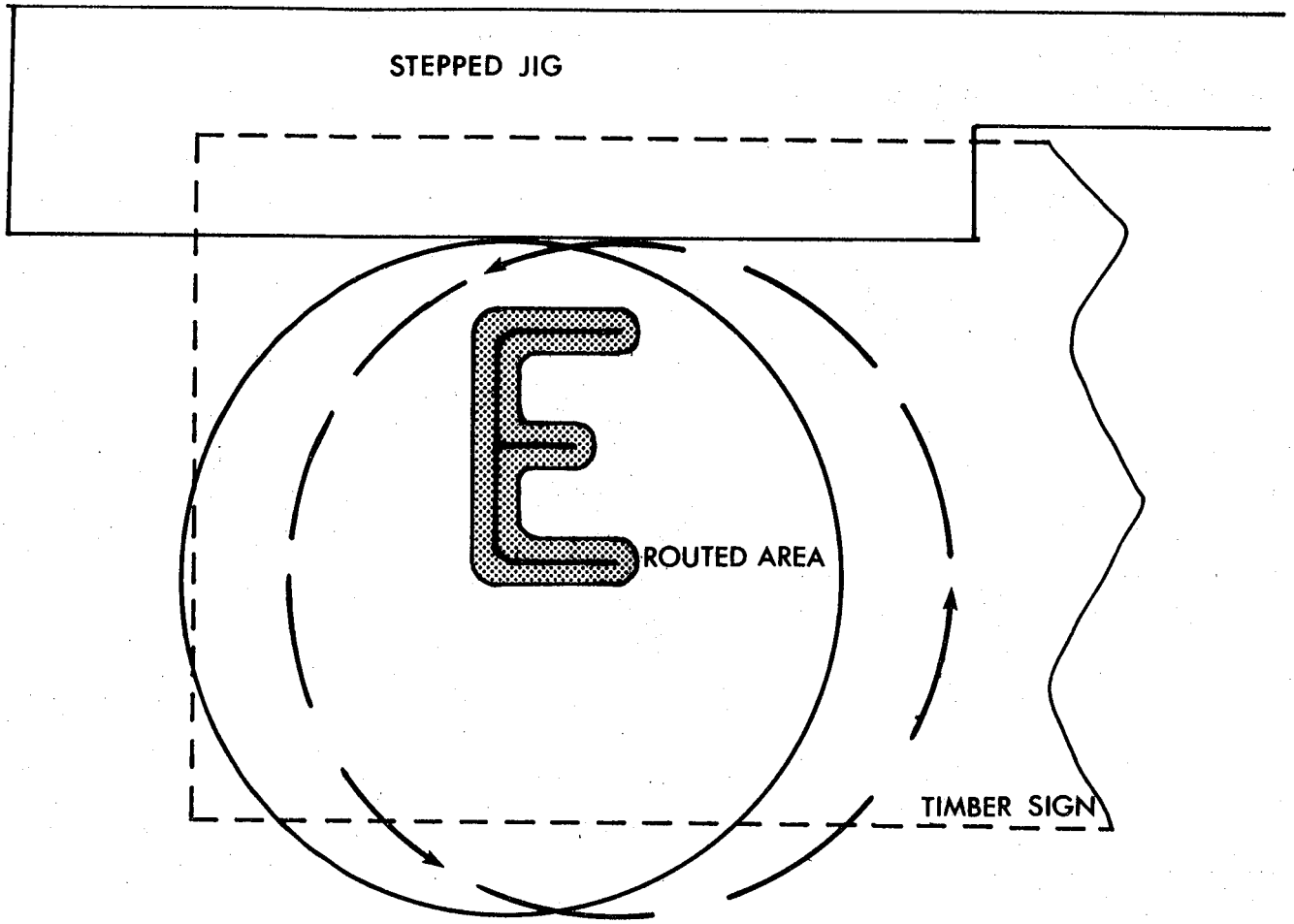
STEPPED JIG USED TO GIVE ACCURATE CONTROL



ROUTER MOVED FROM L to R BY ROLLING ANTI-CLOCKWISE TO CUT MIDDLE BAR OF THE LETTER E

METHOD OF USING ROUTER WITH STEPPED JIG

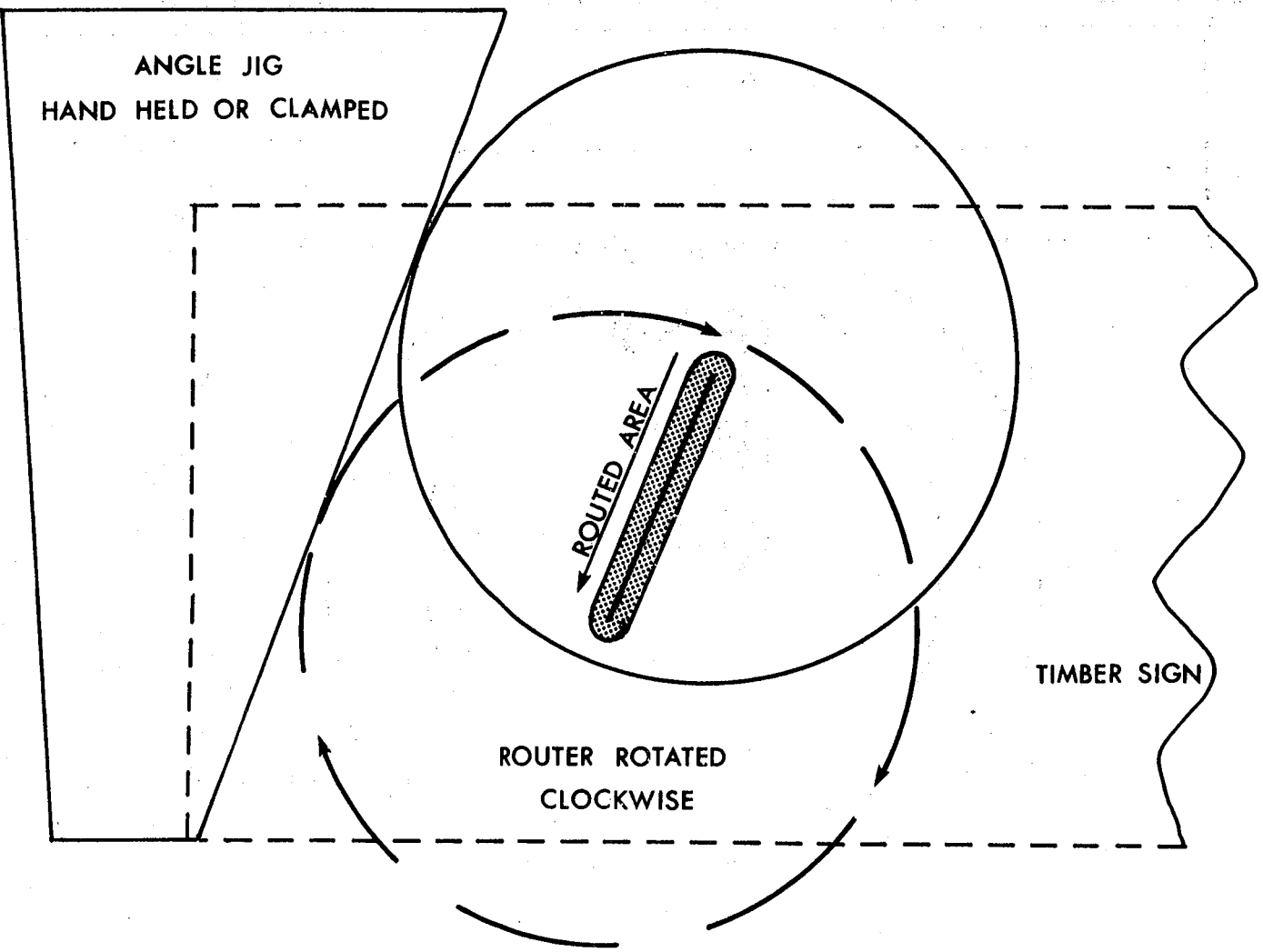
STEPPED JIG USED TO GIVE ACCURATE CONTROL



ROUTER MOVED FROM L to R BY ROLLING ANTI-CLOCKWISE TO CUT LOWER BAR ON THE LETTER E

METHOD OF USING ROUTER WITH ANGLE JIG

VARIOUS ANGLES eg. 'A' 'N' 'Y' 'Z'



DIEBACK

In the dreamtime
Chukchuk take handful of seed
An' throw them on the groun'
Chukchuk say "You makim plurry trees"
An' the seed growd into littlefellah trees
Then they growd into bigfellah trees:
Long time go by, maybe thousands years
An' there is big forest.
Blackfellah he no' cut down tree
Maybe jus' little bit stick for fire
For cookim tucker on.
But whitefellah come and take down trees
Leave only littlefellah trees wots no good for 'im.
Now them littlefellah trees
They try to grow into bigfellah trees
My word they try but it no good
For magic all gone.

John McCormick

MARRI PROVENANCE TRIALS - CLARKE ROAD, HARVEY

by A. J. HART

INTRODUCTION:

With further reliance tending to be placed on the resistance of marri (Eucalyptus calophylla) to dieback fungus to maintain adequate canopy cover in such areas, a need was felt to check the possibility of some provenances of the species having greater suitability than others for this purpose.

Accordingly, seven (7) provenances of the species were collected from areas ranging from Julimar forest in the north, to Crowea block in Pemberton division.

Included with these is E. haemotoxylon (mountain marri) ex North Dandalup, at the bottom of the Darling Scarp.

This note is to acquaint those interested with the fact, so that they can be inspected if desired.

SITE LOCATION AND PLOT DESIGN PREPARATION

LOCATION: A real grave yard area was selected to establish the trial. Soils are predominantly black gravel with whitish sand with large laterite rocks on the upper slope and inclusion of yellower sands on lower slopes. The whole area is an upland typified with a shallow drainage gully at the bottom of a rocky ridge.

Rainfall is estimated at around 1250mm.

The site is located adjacent to the south side of Clarke Road (as per sketch). Map reference Harvey '80' DQ 61 4/9.

PLOT DESIGN: The design of the plot was prepared by T/O D. Ward as per sketch plan below with 2 replications of ripped and unripped, one on each of lower and upper slope situations for each of the total 8 species included in the trial.

Species included were as follows:-

Plot No. 1 - Tree 1 Crowea

2 - West Manjimup

3 - Julimar S.F. (large seed)

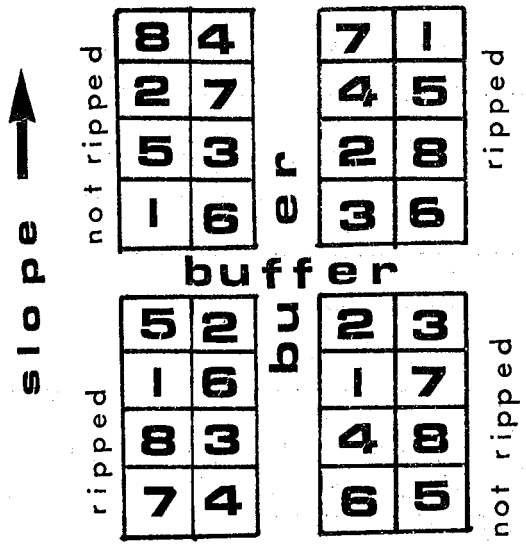
4 - Willowdale

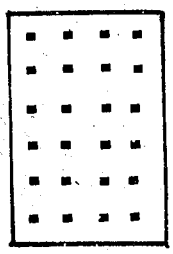
5 - Collie

6 - Chalk Block, Harvey

7 - Manjimup Reserve

8 - E. haemotoxylon ex North Dandalup





Provenance Cell of 24 plants.

PREPARATION: The site was prepared by removing logs from the site with D7 dozer and ripped plots ripped using a single ripper on a D7 to a depth of 1 metre.

Seedlings raised at Hamel were planted either into ripped lines or onto bare unripped but disturbed soil.

Fertilizing was carried out at P + 14 days with 100 gms of "Agras" 12:52.

SURVIVAL AT 6 MONTHS: Counts in December, 1976 indicated no significant interactions, apart from that with Chalk Block, which exhibited worse survival in downhill ripped site at the 0.05% level.

The provenance from Manjimup Reserve at the .01% level showed worse survival upslope than downslope.

BASIC DATA OF PROVENANCES: Listed in Table 2 are basic details of the provenances selected except for that of Willowdale provenance which is not available.

The plot layout and details should enable those interested to check the progress of this trial.

At present it is far from encouraging, probably due to the rather severe summer experienced following planting.

It is of interest also, that a provenance was established in Bussell's Arboretum Collie, which was also not inspiring when last inspected.

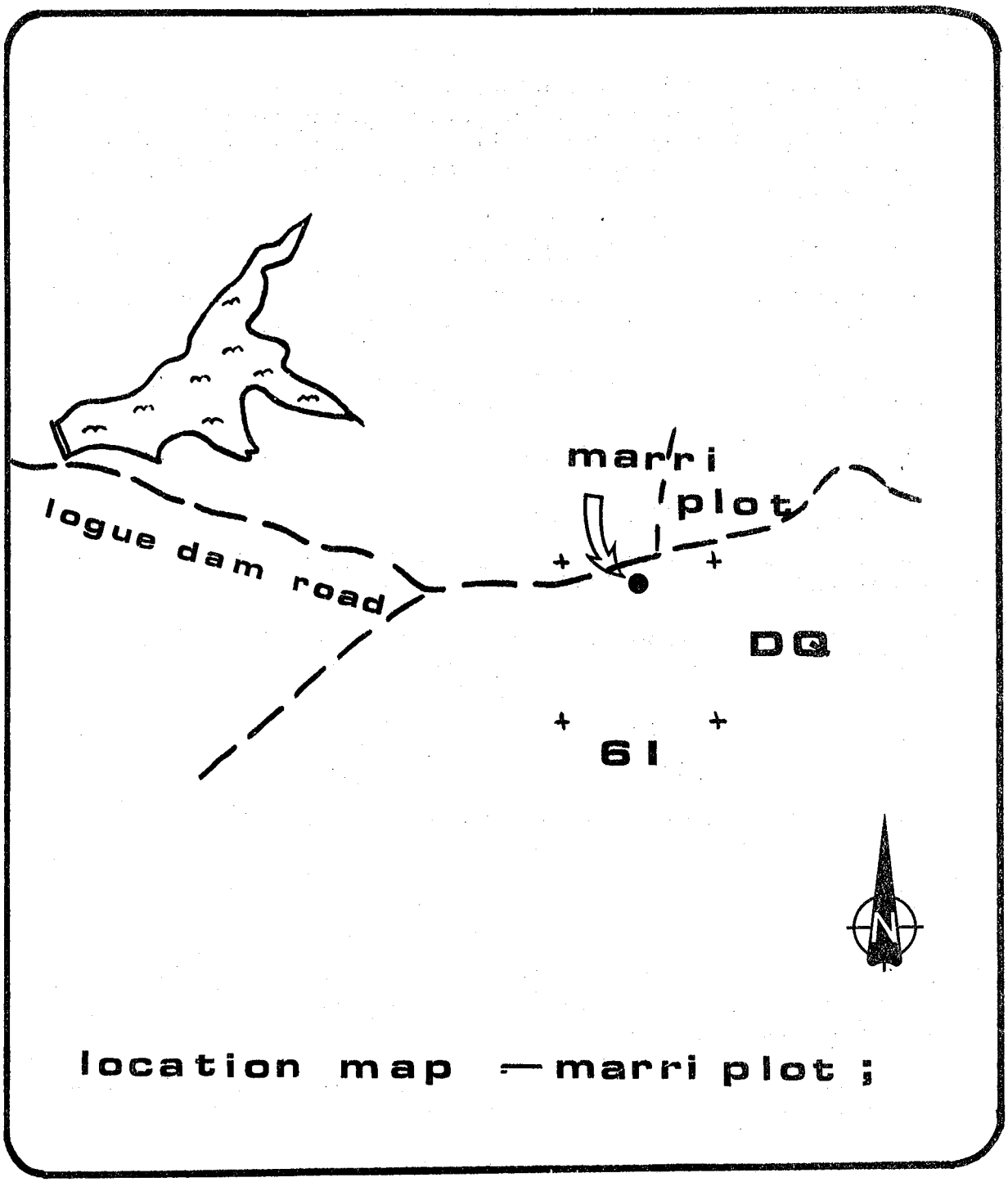
ACKNOWLEDGEMENTS: The assistance of T/O D. Ward in provision of a design and statistical analysis of data, is greatly appreciated and Harvey personnel, in setting up this trial.

MARRI (EUCALYPTUS CALOPHYLLA) PROVENANCES TRIAL - HARVEY 1976

INCLUDING EUCALYPTUS HAEMOTOXYLON (MOUNTAIN MARRI)

SAMPLE NO.	ORIGIN	MAP REFERENCE	WT OF SEED VESSELS SAMPLED	WT OF SEED EXTRACTED	TRASH WT.	TRASH AS % OF SEED WT.	NO. SEED PER GRAM	COLOR OF TRASH	CAPSULE SIZE	ESTD RAINFALL (mm)	LINEAR DISTANCE TO KNOWN MOUNTAIN MARRI	TO TRIAL PLOT
1	JULIMAR S.F. (a) Large	LF 77 9.2	970.00	310.00	155gm	50.0	5.32	Pale straw coloured	Large (17.3 gm/ vessel)	500-600	100km	✓
	(b) Medium		N/avail	454.00	262gm	58.0	4.70	" " (Lge pces)	Medium			
2	NTH DANDALUP (Mtn marri)	CG 57 9.1	N/Avail	56	N/Av.	N/Av.	23.5	Reddish color	Small (Typ-ical)	1000	-	✓
3	HARVEY (Chalk Block Block)	DU 76 2.6	N/Avail	N/Av.	N/Av.	N/Av.	14.0	Unknown	Small	875	30km	✓
4	COLLIE	ET 56 4.7	900	18	10	55.5	12.7	Reddish colored	Small (7.2 gm/ vessel)	1150	10km	✓
5	MANJIMUP-(1) -PEMBERTON	HV 65 3.9	840	9.72	-	-	27.58	Pale orange/ red	8.8gm/) vessel))	1300	110km	✓
	(2) (Crow block)	1.8	872	27.40	-	-	12.21	Dark orange/ red	9.7gm/) vessel)		110km	✓
	(3)	West Mjp	N/Avail	N/Av.	-	-	14.72	N/Av.			80km	✓

NOTE: Details of seed vessels etc., for WILLOWDALE and MANJIMUP RESERVE provenances not available.



location map — marri plot ;

LONGEVITY OF ACACIA SEEDS

by D. WATSON

The following results from germination tests with seeds of Queensland silver wattle (Mt. Morgan wattle) Acacia podalyriaefolia A. Cunn. and black wattle Acacia decurrens Willd. are of interest, particularly because of the current interest in Acacia sp. seed for dieback and bauxite areas rehabilitation.

Acacia podalyriaefolia Serial No. 1069

Seed was collected by the Kalgoorlie district in January 1953 and tested for germination in October 1976 - nearly 24 years later.

1 gram of seed containing 37 seeds was tested, with 21 germinants in 15 days and another 9 on the next few days.

This total of $^{30}/37$ germinants is 81%.

Acacia decurrens Serial No. 84

The black wattle seed was collected by Forester Ken of Hamel district in May 1925.

In October 1976 a germination test was carried out with one gram of seed (70 seeds) with the following results:

4 days	.....	17 germinants
7 days	.....	52 germinants
Whole test	.....	64 germinants (91%)

The test was repeated in November 1976 and gave comparable results.

4 days	.....	11 germinants
8 days	.....	31 germinants
Whole test	.....	41 germinants (58%)

It is of interest that the October trial was done using an abbreviated technique, while the November test, giving 58% germination was done in the standard manner.

A further germination test on this same 1925 seed was done in November 1977 with the results from 100 seeds being:

6 days	.....	33 seeds
15 days	.....	66 seeds
27 days	.....	66 seeds (66%)

The resulting 66% germination with seed over 52 years old probably helps to explain why Acacia germination will often appear after fire in an area where the species have not previously been recorded.

SIX STEPS TO SAFE LIFTING

By A. Kesners

A number of back injuries were recently incurred in several divisions. Whilst our Departmental Frequency Rate has been steadily improving, back injuries are the biggest single factor causing a relatively high Duration Rate in the Forests Department.

Knowing how to lift objects properly is not inborn. One has to know how to do it correctly:

* Put one foot alongside the object you are lifting and one foot behind.

* Keep your back straight.

* Tuck in your chin so your head and neck line up with your back.

* Get a firm grip on the object with the palms of your hands; your palms are stronger than your fingers alone.

* Draw the object close to you, tucking arms and elbows into your sides; this way your body weight is centred.

* Lift straight with a thrust of your rear foot.

April 1st 1940

Sometime in last July I think it was between the 13th and 20th I was dragging Blackboys with the Horse and about 3 oclock in the afternoon the horse stepped on my left foot and also knocked me down. It was very painful at the time. I reported the accident to the Overseer, E. Farrell I did not think it was serious enough to go and see a doctor, but I have been lame since that time. On April the first I was offriding to Mc Fadden and a log got fast, I went to lever it out and at the same time the Horse jerked the log which swung around and knocked me about twelve feet when I got up I found I was hurt in several places especially my ankle and toes. I continued working until thursday night, and being so lame and so much heat in my foot. I decided to report sick and see what the doctor could do for me Signed

H Vivian.

DID YOU KNOW?

The average hard safety hat weighs only 400 grams (compared with a World War II helmet's 1360 grams), but it offers a lot of solid protection for the building tradesman.

These thoughts are offered to the chap who thinks it is "too hot or too cold to wear a hard hat". or "too heavy and uncomfortable" to keep one on:-

- A 100 gram washer falling 10 metres generates a force of 30 Newtons of impact. This means that such a washer upon striking an unprotected head, would hit the skull with a force of 254 kg. Meanwhile, the lucky guy who has his hard hat on when the washer strikes feels the impact of 29 kg upon his neck and spine ... and he can, probably, live with it. Think about that!!!

- Now what about the common complaint that a hard hat is too hot to wear? Safety experts say that a hard hat is actually cooler than a cloth cap or a felt hat. Tests in 37°C temperatures show that the inside temperatures of a cloth or felt hat were only 2° cooler than the prevailing outside temperature. The inside temperature of hard hats, however, varied from 5° to 12° cooler. The material reflection and air space of the hard hat were the governing factor.

As we say, the average hat weighs 400 grams. The average worker's head weighs about 6000 grams. That's a gram for every 15 grams of head.

KEEP THIS ... ... AND THE HARD HAT ... ... ON YOUR MIND.

ROAD SAFETY

You watch the guy who drives ahead
and the guy who drives behind;
You look to the left and look to the right
and drive with a calm clear mind;
But the guy you really have to watch
on the highway you will find,
Is the guy behind the guy ahead
and ahead of the guy behind.

THE CONSCIENCE OF A FORESTER

by Leon S. Mincler

Extract from American Forests - March, 1977.

Probably the only basic way to solve this dilemma is to change the structure of the bureaucracy. I have no illusions that this will happen soon, perhaps it will never happen. But my vision of good forest management of public land is virtual autonomy for the forest manager on a natural and economically logical unit of forest land. It should be small enough so that the manager and his staff, from several appropriate disciplines, could manage the forest resources for integrated multiple uses within ecological imperatives, and for the needs and desires of the people of the region and the nation. It would be "old-fashioned" forestry in the sense that the management group would be intimately acquainted with the forests, the streams, the soils, and the wildlife and it would fit the generally intensive silvicultural practices to these conditions and to the management objectives.

These managers could then practice genuine forestry free from the horrendous red tape and directives from the Washington, Regional and Supervisor's offices. Coordination from a streamlined Washington Office would be needed, and Congress would need assistance and advice, but the main management decisions would be made on the ground by dedicated professionals who were responsible mostly to themselves and to the people. Under this type of bureaucracy a forester could follow his conscience with considerably less difficulty.

THE WISE OWL CLUB OF AUSTRALIA

JOSEPH HERBERT HUGHES

is enrolled as a life member of the

WISE OWL CLUB

of

FORESTS DEPARTMENT

and is acclaimed for his judgement and foresight in the conscientious use of the eye protection which saved his vision in a work accident on

12th January, 1978

.....for *Australian Foundation for the Prevention of Blindness.*

.....for *National Safety Council of Australia.*

Federal Director...

International Sponsor—NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, U.S.A.