1962 REPORT ON MALLET PRODUCTION
Taken from H/O File no:-00305GF0909

COSTS + INCOME

Preamble

The Mallet Bark Industry has been in existence for about 62 years. It commenced in 1903 and was marked by an explosive increase in production during the following three years and then a gradual and somewhat irregular decline. The total value of mallet bark exported from the State has been of the order of £1,700,000. Approximately half of this viz. £840,000 being during the initial period 1903 - 1913, inclusive. The principal buying country was Germany.

Factors which have influenced the trade have been:

1. Exploitation of natural stands in a wholly extractive manner at least until 1925 on crown land and up till the present date on private property.

2. The alienation and in many cases subsequent burning or clearing of a high proportion of the remaining stand.

3. Buying pressures by local users and agents for exporters operating through local storekeepers etc.

4. The general employment position in the rural areas.

At no time up till the commencement of World War 2 was there any indication that production was limited by the capacity of the market to absorb.

Actually during the early depression years when trade generally was at a standstill production increased - probably reflecting the acute employment position.

In the annual report of the Forests Department for the year 1929 the following appears:

"Last season the prices offering for mallet bark were higher than usual and as a result extensive stripping took place, chiefly on private property. The trees were in the main small and many fine young stands were wiped out, a fact which will prejudice future supplies from private property. There are indications that the demand for mallet bark is greater than the present supply."

At that time the price offered was in the region of £9. to £10. per ton.

On the basis of the Wage Rate index this would be equivalent to £36. to £40. per ton today.

Despite the undoubted demand which existed for mallet bark early in the century no serious efforts were made to reserve areas carrying good stands of mallet or to protect or regenerate stands which had been exploited.

In the 1920's areas of land mainly of poor Agricultural potential and infested with poisonous plants, mainly in the Narrogin, Highbury, Cuballing area, were reserved. Regeneration of mallet commenced in 1926 and proceeded cautiously for the next four years. By 1929 five resident overseers had been established in the region.

With the onset of the depression mallet sowing was seen as a suitable means of employing relief labour and the sowing programme was rapidly stepped up. This rapid expansion of the programme without adequate preliminary investigations of the species' limitations with respect to adaptability to the various sites available led to a pattern which ultimately included an appreciable proportion of inferior stand.

This concentration of the bulk of the sowing ~~up~~ in the depression years resulted in an unbalance in age classes with consequent problems in later thinning operations. These are very much in evidence today when extensive uneconomic thinnings are called for to arrest stagnation in overcrowding stands.

A period of uncertainty marked the industry during and immediately following World War 2 but after about 1956 the effects of the competition of plastic materials with leather became apparent. Leather was displaced from many of its traditional usages. In June 1962 the main tannery engaged in the production of sole leather in this State closed and since that date there has

materials in the world's markets has restricted the prices that can be offered by buyers and the industry is now unable to compe effectively with other rural industries for labour. There appe to be no reasonable prospect of any reversal in the trend.

The prices per ton at siding for stick bark offered las season (£16.) was approximately equivalent to the weekly basic wage. Thirty years ago the price was at least twice the then basic wage.

Moreover the human factor has to be considered. From 1903 onwards a number of men in the mallet areas had developed as skilled mallet strippers and even up to the commencement of the w these operated.

After the war the old strippers were no longer availabl and the later generation men were not interested in manual labour of this type. Skilled mallet strippers are no longer available.

GEB/JB
4th March, 1965.

16.12.65

ADMINISTRATION : NARROGIN DIVISION

The administration of the Narrogin Division at presen involves three resident officers, viz. -

One Senior Forester

One Forest Ranger

One Forest Assistant

The total salaries 1963/64 were £5,365.

A break down of duties is as follows -

	Senior Forester	Fore Rang
General supervision of plantations } Office work etc.	38%	8%
Fire control	19%	10
Nursery work (supervision etc.)	14%	53
District work (other than plantations)	12%	6
Plant and equipment	1%	1
Arboreta	2%	2
Seed Collection	1%	1
Land Inspections	3%	-
Sawmilling control	3%	1
Timber inspection	-	6
Leave, Public Holidays, etc.	7%	12%

No detailed segregation of duties of the Forest Assista has been attempted. However, a reasonable division would be -

Plantation administration, office work	45%
Nursery orders etc.	25%
Fire control	10%
Plant and equipment	5%
District matters other than plantation	5%
Leave	10%

The fact which stands out from these figures is that th Narrogin Division consists in the main of

However the maintenance and protection of 19,000 acres of actual plantation of a fire tender species in a semi-arid region, plus the protection of other areas of natural mallet stands is not a task which can be attended to by a smaller staff Fire control has to extend, at times, well beyond the limits of the forest.

It is to be noted that the various phases of nursery control, despatch of plants, etc., absorbs the services of one officer (Currie 14%, McAlinden 53%, Barham 25%) - allowing for leave.

The normal complement of labour required for the maintenance and protection of the plantations and nursery is of the following order.

	Overseers	Me
Dryandra		
1. Controlled burning, thinning mallet, stripping, mallet chipping	1	3
2. Grader - dozer driver - Road and fireline maintenance		1
3. Spare man - vehicle maintenance, extra nursery assistance and establishment maintenance		1
4. Nursery men	1	2
5. Tower man (6 months)		1
Contine		
Controlled burning, thinning, stripping, grading and subsidiary lookout	1	-
Highbury		
Controlled burning, thinning, stripping and break and track maintenance	1 A/g	-

In recent months labour strength has been well below the above, due to the acute labour shortage in rural areas. It i

While the aim has been to maintain the Dryandra settleme to ensure the presence of an adequate gang within the plantation, it is by no means certain that this will be possible indefinitely. The senior forester, after twenty-five years at Dryandra, found it necessary on account of his wife's critical ill health to transfer to Narrogin.

Lesser employees are attracted to jobs offering in localities where school facilities and social amenities are better

The alternative of transferring the settlement to Narrog is not attractive as the employees would be from fifteen to thirty miles away from the bulk of the plantations. Even with improved bitumen roads, this would be excessive.

Briefly the costs associated with the Narrogin Division are of the following order based on 1963/64 figures -

	Ref.	C.R.F.	Total
Salaries 3 officers	£3509	£1856	£5365
Capital and maintenance	5702	-	5702
Plant costs	3325		3325
Bark and hardwood conversion	-	3502	3502
Nursery (excluding salaries)	-	2684	2684
			£20578

Revenue

Bark - Hardwood Conversion (includes mallet logs £50)	£3651
Nursery sales	5546
Royalty on firewood (estimated)	200
Rents	530
Total :	£9927

Actual cost of maintaining the Division = £20578 less £9927 = £1065

Returns from Timber Inspection and local sawmilling royalties would reduce the above figure slightly.

While it is possible to employ labour for part of the year on works returning revenue, it is not possible to avoid expenditure on plantation maintenance. If we are to retain the

MALLET PLANTATIONS - SOWING DEVELOPMENT
SILVICULTURAL TREATMENT

Mallet sowing commenced in 1926 and may be divided into five broad periods as set out hereunder - see also Fig. 2 (graph).

Period		Area Sown	Annual Average	Percentage of Total
1926-30	Investigational	683 acs.	137 acs.	3.6
1931-38	Relief work	10,482 "	1,310 "	55.1
1939-44	War years	5,527 "	921 "	29.1
1945-60	Post war years	2,256 "		11.8
1961-64	Cessation of sowing	63 "	16 "	.4
		19,011		

During the depression years, a very vigorous sowing programme was pursued actually before any very thorough investigation had been made of the ecological problems involved. Consequently much of the area sown was unsuitable for the development of satisfactory mallet stands - see below.

It will be seen from the table above that 88% of the mallet plantation lies within the age range from 20 to 38 years. This has meant that in recent years we have been called upon to :

(1) protect a considerable area of immature mallet plantation

(2) carry out thinnings to prevent large areas from becoming moribund through overcrowding. This thinning is behind schedule.

Thinning before plantations are about twenty years of age i.e. before the understorey of poison plants has died, is inadvisable and generally ineffective. Even then, thinning needs to be done in stages.

We are in brief faced with very large areas, sown as a depression relief measure, which now require expensive treatment

Assessment made in 1952 by Mr. Sprengel placed the condition of the mallet stands at :-

(a) FAQ Mallet fully stocked (with smaller areas of superior stands) from which thinnings are available: 50%

(b) FAQ Height growth 18" per annum - No thinnings available a/c low stocking: 16%

(c) Non mallet areas in which mallet is lacking or occurring as isolated trees: 34%

Ground assessments indicate that these figures are optimistic and a more likely proportion would be :-

(a)	30%	=	5,730 acres
(b)	35%	=	6,690 "
(c)	35%	=	6,690 "

No recent detailed overall estimate of the quantity of bark available has been made but results from thinnings in recent years indicate quantities of the following order :-

5,730 acres at 1½ tons per acre	-	8,700	tons
6,690 " " ½ ton " "	-	3,300	"
6,690 " " 1/10 " " "	-	600	"
Natural groups within or adjacent to plantations:		2,400	"
	*	15,000	tons

* Allows for 12% of stands being below 20 years of age.

At the most recent price of £16 per ton F.O.R. for stick bark this represents a quantity of bark worth nearly a quarter of a million pounds. However, cost of stripping it would be of the same order.

The response of mallet to heavy thinning is an increase in bark thickness with a consequent increase in weight of bark per individual. Response to thinning appears to be delayed from three to five years.

Recent thinnings in the older stands have produced 8 - 10 cwt. of bark per acre. On the basis of 9 cwt. per acre, a sustained yield from thinnings on an 8 year thinning cycle would on 5,730 acres provide an annual yield from thinnings of 320 tons. To this could be added one hundred tons of bark from adjacent natural stands to give a total of 420 tons per annum, i.e. four times the present figure, which has been limited by labour shortage.

Thinning schedules as originally proposed have had to be considerably amended. It is considered that the low rainfall of the region is not capable of sustaining the heavy stocking originally aimed at. Comparable figures proposed are as follows :-

Sprengel 1952	Reduce to
At height 20' - 25'	1,000 trees per acre
" " 30' - 35'	500 " " "
" " 40' - 50'	300 " " "
" " 50' - 60'	160 " " "
Harris & Brockway 1964 (File 573/64)	
At height 20'	300 " " "
" " 30'	240 " " "
" " 40'	180 " " "
" " 50'	140 " " "

Unless sales of firing sticks are to be made, thinning is seldom carried out below height 30 ft. by which time the understorey is weak or dead. No firing sticks have been produced for several years.

Trials have been made to speed up first thinnings where trees are small and crowded and bark thin and unprofitable to thin by bulldozing of strips through the denser stands. Results of this have not yet been fully assessed.

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MALLET BARK PRODUCTION BY FORESTS DEPARTMENT

Stripping of mallet bark by the Forests Department in thinning operations commenced in the winter of 1952 (Financial year ending 30/6/53) and for several years was supplied in stick form.

A chipping plant was installed, and chipping of bark prior to sale was commenced in 1957. This step was taken with the object of providing gainful summer employment for the work force necessary for the maintenance and protection of the plantations.

The following table sets out the various sources of mallet bark for the financial years 1953 to 1965.

	Supplied by Forests Department	Obtained under License from Crown Land	Obtained from Private Property	Total from all Sources	Percentage of total supplied by Forests Department
1953	49 tons	151 tons	1032 tons	1232 tons	4.7%
1954	78 "	60 "	643 "	781 "	10%
1955	99 "	106 "	639 "	844 "	10.7%
1956	167 "	136 "	1016 "	1319 "	12.8%
1957	149 "	141 "	723 "	1013 "	14.7%
1958	178 "	45 "	620 "	843 "	21.1%
1959	229 "	77 "	731 "	1037 "	22.1%
1960	146 "	20 "	338 "	504 "	29.0%
1961	186 "	9 "	371 "	566 "	32.9%
1962	127 "	9 "	58 "	194 "	65.5%
1963	98 "	14 "	204 "	316 "	31%
1964	134 "	NIL	185 "	319 "	42%
1965	86 "	NIL	209 "	295 "	29.1%

8th December, 1965.
GEB.CA

FUTURE BARK STRIPPING AND CHIPPING OPERATIONS

In view of the obvious trend away from natural tanning material and the inevitable further depression of the market for such materials, the obvious course appears to be to liquidate bark supplies as expeditiously as possible. This will necessitate a departure from from the established silvicultural principle which aims at arranging thinnings to ensure a high quality final crop.

A start was made during the winter of 1965 by thinning by piecework strippers and licensed strippers to a minimum girth. It is proposed that this system of exploitation shall continue.

A target of 1000 tons of bark per annum is aimed at initially with the object of liquidating existing plantations as quickly as possible. Even at this rate it would require fifteen to twenty years to dispose of developed and developing bark supplies. At the present time extreme labour shortage is preventing this target being even approached. It is considered possible that the labour position will ease within two or three years following the completion of large mineral development projects in the North of the State.

It is aimed to concentrate this work initially on the distal portions of the plantations - treating first the areas of poor quality open grown mallet which once stripped will have little residual value and will consequently be available for control burning, thereby reducing the general fire hazard.

Other stripping will be from edge trees and in association with firewood cutting from denser stands.

As an inducement to strippers to operate in plantations it will be advisable to make adjacent areas of larger natural mallet available to supplement the plantation stripping.

With the uncertainty regarding labour availability no definite schedule of operations can be laid down. However, tentatively it is proposed that operations in the immediate future should be on the following areas -

Kennedy — Compts. 1, 2, 3, 4 and the northemportion of C5. This will need to be supplemented with stripping in natural groups in C6 and C7 and possibly C3 South Newman.

Montague — C's 4, 6, 7, 9. To be supplemented by a natural group in C8.

Bald Rock — C's 1, 2, 3. To be supplemented by a natural group in C6 with further natural stand in Candy block if necessary.

Contine — C 16 (Partly worked over in 1965). C's 7, 9, 12, 14. These are not attractive and as no natural groups are available nearby, stripping could be difficult to arrange.

Congelin — It is proposed to strip out an 8 chain belt running East-West across the Northern sides of C's 9 and 10. This will then be burnt to provide an effective firebreak.
C's 13, 14, 15 to be butt stripped and firewood

In all cases it is anticipated that the timber will be used either as firewood or fence posts.

In order that chipping of bark from these distant areas may be done economically, it will be necessary to move the mallet chipping plant from Dryandra to a site near the rail. This should be arranged for completion before November, 1966.

8th December, 1965.
GEB.CA

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15/12/65

VALUE OF MALLET AREAS ETC. AS FAUNA AND FLORA RESERVES AND PUBLIC UTILITY AREAS.

Increasing concern is being expressed throughout the world at the wholesale destruction of native flora and fauna in the process of agricultural development. Conservation minded Australians are aware of the position but local pressures activated by self interest make the task of returning adequate habitat areas extremely difficult.

This concern has been Publicly expressed recently in quite emphatic terms by no less a person than the Duke of Edinburgh.

The W.A. Sub Committee of the National Parks Committee set up by the Australian Acadamy of Science emphasises the importance of several reserves within the Narrogin Division for the preservation of native flora and fauna. That section of the repor dealing with these reserves is attached as Appendix 2.

While stressing the need for the retention of adequate areas, one should not lose sight of the fact that the retention of areas in the natural condition means some reduction although ~~extensively~~ EXTREMELY small (which subsequent figures will indicate) in the agricultural production of the State. It is desirable therefore that while the reserves should embrace as complete a range of vegetation types as possible the proportion of good agricultural land should not be excessive.

The mallet reserves, embracing as they do large sections of high laterite country, measure up to these requirements fairly well.

That the position in Western Australia is far from satisfactory can be judged from the comparison with California which climatically is somewhat similar to W.A.

	California.	Percentage of Area of State. W.A.
National Parks	5%	0.5%
State Forests.	20%	0.5% 4%

In the mixed farming and wheat belt areas the position is rather worse.

Within these agricultural areas, totalling some 52,000,000 acres some fifty percent of which is already cleared, the following reservations exist :-

State Forest (S.F. 51, 52, 53)	57,000 acs = 0.11% of total	= .13%
Timber Reserve under Forest Act	11,700 acs = 0.02% of total	
Reserves for Jam and Sandalwood	22,800 acs = .04% of total	
Temporary Timber Reserves Land Act	19,300 acs = .033% of total	

A number of temporary reserves in the South Eastern areas (beyond Hyden, Newdegate etc.) were set aside without survey nearly 40 years ago. These included some patches of mallet. While they originally totalled some 210,500 acres they are being progressively reduced in area as the region is subdivided. It is anticipated that only token areas will be retained to ensure the presence of some tree groups in the region. They have very little forestry potential.

A number of small fragments of Crown Land remain throughout the wheat belt some of these reserved for various purposes - some not reserved. Considerable caution needs to be exercised in releasing these. Provision needs to be made for the retention of gravel areas for road making, areas for golf courses and other sporting facilities etc. Already golf clubs in several country centres are operating on local catchment areas, nothing else being available to them. Such courses cannot be operated satisfactorily, from the course maintenance point of view, while the human activity on the catchment is certainly not in conformity with water purity ideas.

The only large area of National Park in the region is that

The total Reserved area within the drier Agricultural areas is between 0.7% to 1% and much of this is land which is not particularly attractive agriculturally.

Briefly the total area reserved or dedicated under the Forest Act constitutes about one sixth of one percent of the total of the drier Agricultural areas.

Several C class reserves for fauna and flora have been retained in fringe agricultural areas, but in view of the lack of permanency in this type of reservation, and the strong local pressure for their release, one would be indeed naive to regard their future as being in any measure assured.

The small proportion that the Forest Areas represent of the drier Agricultural areas, viz., one part in six hundred makes the fuss created about them appear extremely ludicrous and indicates the extremely limited outlook of the persons pressing for their release.

The reasons usually advanced for their release of reserves are :-

1. To provide land for farmers children.
2. Land which at time of reservation was regarded as useless can now, with modern scientific treatment be made productive.
3. Areas are breeding grounds for vermin, carry poison plants and constitute a fire menace.

Dealing with these in order -

1. Even if all this land were released for this purpose, and

in every thousand could be accommodated.

2. This is correct and in effect means that enormous areas of land near the South and West Coasts can now be successfully brought into cultivation. Accepting the Government's claim of one million acres being released each year- the total Forest Act reservations would represent the equivalent of one month's release. Chipping off petty little reserves hardly fits into a masterly overall policy of this nature.

3. When persons have property which they wish to protect, they take steps to ensure that it is protected by fencing or other means of surrounding it. The farmer can likewise reasonably be expected to provide protection for his own property from vermin, fire, &c. A farmers argument that he is not prepared to do this is not really a strong one.

Land holders are required by law to surround their properties with cultivated firebreaks. No serious objections are likely to be raised to cultivating on the reserve side of the boundary and by so doing, removing poison plants from near the fence line.

The greater portion of the mallet areas lie within the Cuballing Shire and it has been argued that the investigation of the position should be made within that shire. This could quite easily give a wholly unbalanced picture of the position. Any investigation should be made of the agricultural areas as a whole with Cuballing coming near the end, thereby providing a clearer overall picture.

While reserves for the conservation of native flora and fauna are undoubtedly necessary, these cannot look after themselves

No provision has as yet been made to provide such protection and the protection of the major areas in the Cuballing-Narrogin area is being wholly provided by the Forests Dept. In view of the shrinking sales of mallet bark on a buyers market, and the reduced revenue from the plantations this Dept. cannot reasonably be expected to provide the whole of the protection. A grant of at least £5,000. per annum is needed to supplement Forests Dept. expenditure in the area.

Attached are relevant extracts from the report of the Academy of Science and Committee for Conservation declarations and 1961-2.

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PINGELLY and DRYANDRA RESERVES

Map No. 8

Some of the most varied and biologically productive areas in Western Australia lie in the Wandoo (E. redunca var. elata) Forest along the edge of the wheatbelt. In spite of the fact that much of this country has been taken for agricultural development, a number of outstanding reserves still remain today, and these should quite clearly be reserved in perpetuity for the preservation of fauna and flora.

Three reserves, in particular, are selected for permanent preservation as being of National Importance and these are the East Pingelly reserves, the West Pingelly Reserves at Boyagin Rock, and reserves in the vicinity of State Forest 51 at Dryandra.

The East Pingelly Reserve in particular has a remarkable diversity of flora which interdigitate to produce unusual floral complexity for such a small area. Here, in this single small reserve, occur the floras of sand-plain, granite rocks, and breakaways of laterite, in addition to the more widespread temperate savannah woodland with open canopies, well developed tree layer and abundant ground flora. The main associations are Wandoo (E. redunca var. elata), Powder Bark Wandoo (Euc. accedens), Brown Mallet (Euc. astringens), Sheoak (Casuarina huegeliana), and sandheath. In addition York Gum (Euc. loxophleba), Jam (Acacia acuminata) and Acacia cyanophylla are dominant in small areas. The outstanding botanic importance of this reserve despite its small size, is the great diversity of the vegetation associations to be found within its boundaries.

The mammalian fauna is also outstanding in its richness and includes Woylies (Bettongia penicillata), Grey Kangaroos (Macropus ocydromus), Tammars (Protemnodon eugenii), Possums (Trichosurus and Pseudochirus), Quendas (Isoodon obesulus), Wambengers (Phascogale tapoatafa and P. calura), Numbats (Myrmecobius), Marsupial Mice (Sminthopsis and Antechinus), and Echidnas (Tachyglossus). Some measure of its productivity in small mammals is given by the fact that two pairs of Wedge-tailed Eagles (Uroaetus audax) nest within the reserve. These predators support themselves and raise their young upon prey taken from within the reserve.

From the point of view of the history of our knowledge of Western Australian mammals, the reserve at East Pingelly is of great interest because it was one of the localities at which the important Western Australian collections in the British Museum were made by Guy Shortridge during his stay in Western Australia in 1906. As a result of Shortridge's work, there is a good record of the mammal and bird species available in the area early in this century and comparisons today make it clear that this reserve retains almost all of the varied fauna which Shortridge found there fifty years ago.

The Boyagin Rock reserve, although less diverse in its environments than the East Pingelly reserve, contains a magnificient exposure of granite rock and its associated fauna and flora. Alongside the Boyagin Rock reserve there is a small and pleasant picnic spot which is a reserve for

outskirts of the main reserve..

The Dryandra State Forest (S.F. No. 51) area is also extremely diverse in its fauna and flora and contains excellent mammals and birds. Projecting into this State Forest is an area of 4,300 acres which is called the Congelin railway water reserve (Reserve No. 16201). The Dryandra State Forest and this water reserve are chiefly remarkable the very fine populations of the Banded Anteater or Numbat (Myrmecobius) which were recently studied by J. H. Calaby of Wildlife Survey Section, C.S.I.R.O.

These three areas of major importance are all small and, as such, they are liable to destruction as natural bush areas. All have good access roads through them and along the edges of them, and tourists wishing to see the animals can do so by simply driving through them after dark when a surprising number of rare forms may be seen crossing the road and in adjacent scrub. Accordingly, the Sub-committee feels that there is no need for any form of tourist development to take place within the reserves, in fact such development would be undesirable. Accommodation for visitors is supplied in the adjacent towns.

Location: 32°25' - 33°0' S
116°25' - 33°0' E

State of Reservation:

State Forest No. 51

State Forest No. 53

20338: Timber.

20610: Timber

A 11144: Parkland. Class A.

19128: Timber.

19125: Timber.

25555: Flora and fauna. Vested Fauna Protection Advisory Committee of W.A. Class C.

19794: Timber.

12623: Cancelled.

18856: Timber.

16201: Water for Railway. Class C.

Area: 80,900 acres approx.

Literature: Calaby, J. (1960). — Observations on the banded ant-eater Myrmecobius f. fasci (Marsupialia), with particular refere to its food habits.

Proc. zool. Soc. Lond. 1960 : 183-207

Shortridge, G. C. (1936). — Field Notes (hitherto unpublished) on Western Australian mammals - South of the tropic of Capricorn. (Exclusive of Marsupialia and Monotremata), during the Balston Expedition (November 1904 to June 1907).

Proc. zool. Soc. Lond. 1936 : 743-749.

Thomas, O. (1907). — List of further collections of mammals from Western Australia, including a series from Bernier Island, obtained by Mr. W. E. Balston; with field notes by the collector, Mr. G. C. Shortridge.

Proc. zool. Soc. Lond. 1906 : 763-777.

ommendations: The Sub-committee recommends that:

1. the reserves at Boyagin Rock and East Pingelly be reclassified as Class A Reserves and that both be vested in a Statutory Body as National Nature-Reserves;

2. the East Pingelly reserves be set aside for the preservation of fauna and flora and that the main area of reserve at Boyagin Rock be classified for the preservation of fauna and flora, while Class A Reserve No. A 11144 (parkland and picnic grounds) be transferred to the control of the authority which controls the main reserve;

3. the Congelin water reserve No. 16201 (Class C) be made a Class A Reserve for the preservation of fauna and flora, and its control be vested in the same authority which controls the East Pingelly reserve and the Boyagin Rock reserve;

4. should the State Forest No. 51 or portions of it and the adjacent State Forest No. 53 be no longer required for purposes of forestry, that they be set aside for the preservation of fauna and flora;

5. these areas so reserved together become a National Nature-Reserve to be maintained as natural bushlands (excepting the picnic ground A 11144 at Boyagin Rock) and that no further development take place within these reserves.

POSSIBLE AVENUES FOR UTILIZATION OF MALLET TIMBER

A. MANUFACTURE OF HANDLES

Mallet is the outstanding Eucalypt timber for the manufacture of tool handles. However, it has not been found economically possible to date to base a sound industry on it. The handicaps which such an industry has not been able to surmount are -

1. The comparatively young age and small size of almost all mallet trees, both on private property and Crown Lands. This is the direct result of -
   a) Repeated stripping from early in the century - trees down to a very small size being removed.
   b) Uncontrolled fires destroying areas of mallet (which is a very fire tender species), resulting in a replacement by dense regrowth which in most cases has not reached a marketable size.
2. The fragmentary nature of mallet stands, except in the main Forests Dept. plantations which are as yet immature, and the extensive region over which they are distributed makes collection at a central depot economically impossible.
3. The spasmodic nature of stripping operations in respect of time, quantity and location, and the lack of liaison between and with the various operators.
4. The seasonal nature of mallet stripping which restricts log availability to the winter and spring months only.
5. The tendency of barked logs to deteriorate rapidly and to become quite useless if not milled soon after stripping.

In view of the above difficulties the only mallet timber which has been utilized has come from Forests Department operations. Strippers on private land have contributed nothing.

1963 but did not continue after this date. Timber which was obtained in connection with Departmental stripping operations was milled in Narrogin and transported by road to Quinana. Handled in this manner costs were excessive.

It is possible and even probable that a small plant situated centrally at Narrogin could operate economically. The plant would need to be limited in intake to about four tons of logs per week during the winter months only. This would mean that it would need to be associated with some other industry to ensure alternative work for the operators.

Timber supplied at the outset would be mainly obtained from natural groups (90%) and about 10% from plantations. A progressive decrease in the former and increase in the latter would follow.

Royalty on timber for such a project would be small - of the order of £200 per annum.

B. MINING TIMBER

Mallet has proved eminently suited for use in mining operations, mainly in the form of lagging poles of crown diameters from three inches upwards, and in lengths of from 7 ft. to 10 ft. A small amount of even smaller timber in the form of firing sticks was also supplied to Big Bell.

With the closure of the Big Bell goldmine and later of the various leadmines in the Northampton district, this market was lost and only two small consignments have been sold in the last five years.

Owing to the availability of suitable local timber, mallet, with its long haulage and associated high freight, cannot compete on the Eastern Goldfields market.

C. FENCE POSTS

With the expansion of agricultural development into the

fence posts is increasing but their availability is declining. In developments of this nature, as at Esperance, about three posts per acre are required. Assuming that portion of these are in Jam, boree, steel and other materials a market should still exist for mallet posts of good form for use in roadside fencing. According to Mr. R. Bower who has studied the problem at Esperance a market could be found for preservatised posts of desirable appearance at a cost of about 5/6 each - presumably on the job.

Mallet is a species classified by C.S.I.R.O. as easily treated by preservative. Stems are of good straight form which would enable them to be driven. The economics of treating at a central plant would need to be worked out. The operation of barking is solved by the use of trees already stripped for their tan bark.

An estimate of posts likely to be available from the plantations on a silvicultural basis -

1st Thinning	100 posts per acre over	5,700 acs	570,000 posts
2nd Thinning	100 " " " "	5,700 acs	570,000 "
	From lower stocked areas	6,700 acs	100,000 "
			1,240,000 "

However, with the aim of liquidating plantations progressively over say 15 years, considerably more posts would be available - possibly at least twice as many which would provide from plantations 2,500,000 posts over 15 years or 170,000 posts per year.

Subject to labour availability this number at 4d. per post would return a revenue of nearly £3000 per annum. If the Department carried out the treatment, returns could be higher.

Estimated firewood requirements of Narrogin is 250 tons per month; i.e. 3000 tons per annum - spread over 15 years this would amount to 45,000 tons.

Royalty on firewood at present is 2/6d. per ton.

The greater proportion of firewood removed from the plantations has been from trees from which the bark has been stripped. However, a trial in which thinning has been done by firewood contractors under supervision at Highbury has given promising results and could be developed.

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