(Thirty-second Day)

TRANSCRIPT OF EVIDENCE

given before

THE ROYAL COMMISSION APPOINTED TO INQUIRE INTO THE CAUSES AND ORIGINS AND OTHER MATTERS ARISING OUT OF BUSH FIRES IN VICTORIA DURING THE MONTH OF JANUARY, 1939,

held at

MELBOURNE

on

SATURDAY, 1st APRIL, 1939.

PRESENT:

HIS HONOUR JUDGE STRETTON, Royal Commissioner.

-------

MR. GREGORY GOWANS, appeared to assist the Commission.

MR. E. H. E. BARBER; appeared on behalf of the Forests Commission.

MR. A. E. KELSO, appeared on behalf of the Melbourne & Metropolitan Board of Works.

MR. A. D. HARDY, appeared on behalf of the Victorian Branch of the Australian Forests League.

MR. W. SWINDON, appeared on behalf of the Victorian Bush Fire Brigades Association.

-------

CHARLES EDWARD LANE-POOLE, Sworn and Examined:

MR. GOWANS: What is your full name?—Charles Edward Lane-Poole.

You are the Inspector General of Forests for the Commonwealth of Australia?—Yes.

Would you tell us just shortly something of your qualifications and where you received your early training and your experience since then?—I was trained at the National Forestry School of France at Nancy, where I obtained the degree of Civil Engineer in Forestry. I then went to Cape Colony and afterwards to the Transvaal, then to West Africa, then to Western Australia, where I was Conservator of Forests, I was then appointed to the service of the Commonwealth Government and reported on the forestry
resources of New Guinea and Papua, and was appointed Inspector General of Forests on my return from those territories. Since then I have been in charge of the Forestry Bureau at Canberra, and also am acting principal of the Australian Forestry School, which is a Branch of the Commonwealth Forestry Bureau.

How long have you been Inspector General of Forests for the Commonwealth?—

---Since I think 1931, but I am not sure of the date.

You can I think take it that we have had certain evidence as to the increase of the severity of fire in Australia since the advent of the white man and since the increase of settlement and that, speaking generally, fire has certain effects upon timber insofar as affecting the timber itself is concerned both by gum veins, the promotion of coppicing, and the general effect upon the soil cover and the tendency to create erosion. I suppose you agree generally that fire has effects in those directions?---Yes.

Do you desire to add anything to those general statements at this stage in the light of the evidence you have read?---I should like to say that the Commonwealth Forestry Research side has been making investigations of the fire question as being one of the most important investigations that it has to do. First of all, in regard to the first matter mentioned by you, that is whether fires were more serious in the blackman's time or less serious than in the whiteman's time, that has been gone into rather thoroughly, and we have reached the conclusion that fires in the blackman's country were very small in comparison with those in our day. The evidence is quite clear on this point from several directions. First of all, there is the evidence of the rings in the trees in the mountain country. The trees in the mountain country make annual rings, with the result that we can go back to before white settlement and analyse the stems of the trees and see what condition they were in before the white man ever came to the country. As I say, fires then were less. The evidence of those stems shows that fires were less frequent in those days than they are now.
Another piece of evidence which has been very helpful in this direction is a grass tree which grows in Western Australia, known as Kingia. This grows or rather grew to a very great height one at least that I have measured was 28 feet in height, and it has been shown that it grows at the rate of one-eighth of an inch in height in a year. These tall grass-trees are disappearing rapidly and none is replacing them. They are burnt before they reach any height. But the best evidence of all that we have managed to get in quite recent years is the evidence of peat.

In the mountain country within the Federal Capital Territory there are deep deposits of peat, spagnum peat, as it is technically known, and this peat in one place has been found to have a depth of 8 feet. Peat, the scientists have shown us, is laid down at the rate of about one millimetre a year. If you take that 8 feet as being equal roughly to two metres, you have a measure of the length of time that it has taken to deposit it. When we examined that peat, we did so very carefully because we wanted to find out what the vegetation was like a thousand years ago by the examination of pollen grains, but that work I may say has not gone very far yet. Another thing in our mind was to find out whether charcoal was present. Charcoal is indestructible and a thousand years make no difference to it. If we find a deposit of charcoal in this peat we would conclude that fires occurred in the pre-white man's time, but we have had great difficulty in finding charcoal, although we have found one piece at the bottom. We have not completed our examination, I may say, but from a comparison of the deep layers and the earlier layers of the peat, it is quite evident that fires today occur frequently and that they were very infrequent before the white man's settlement came. The top layer of the sphagnum is all burnt, although, as I say, the work is not completed, the evidence
is leading us to the conclusion that the fires before the white-man’s settlement were not of the intensity nor did they occur so frequently as they have done since the white man settled the country.

Now in regard to the effect of fire on the tree, that has been the subject of a fairly long investigation. First of all there is the question of the susceptibility of species to fire. That has been dealt with already by witnesses before this Commission, but I think one point has not been made quite clear and that is this: Why is it that the ash is so susceptible to fire? The whole of the ash group is more susceptible to fire than is any other eucalypt in Australia. The reason is that the ash does not put out epicormic branches. Our stringybarks and all other species of eucalypt put out greedy branches from their boles and from their branches after they have been defoliated by a fire. Even if the fire is so intense as actually to kill the stem of the stringybark, the messmate or any of the other species, the tree rejuvenates by putting out what are commonly known as suckers from the base. That marks a great difference between the ash and the other eucalypts. As a ash forest severely burnt over is killed, whilst a forest of the other species can become green again, and restore its canopy or can grow again from the stool.

I think Dr. Paton suggested that messmate was the most vulnerable of all Australian eucalypts. Do you agree with that or have you any comment to make in regard to that view?—I should say that the heat developed on a stringybark—and messmate is a stringybark—is greater than on a smooth-barked tree, and therefore fire will kill messmate out probably through that intense heat, but the messmate would rejuvenate again from the stump whereas an Alpine ash would not. I would therefore say that Dr. Paton is wrong in saying that the messmate is more vulnerable than the ash. The ash is certainly the more vulnerable because
because it cannot rejuvenate from the stem. The question of that coppicing or suckering, as it is more commonly known as in the bush, raises a very important point. Unless the ash carries seed in its capsules at the time of the fire it is obvious that the forest will be wiped out by the fire. If the capsules are there, well, the position is much better because a dense re-generation will follow. The ground is in excellent condition actually for the reception of the seed which falls after the fires pass through, and an excellent re-generation ensues, but, and this is the important point, the fact that ash will not coppice means that if another fire goes through, the young seedlings are wiped out and no coppicing can take place from their little stools. There again the ash differs a good deal from stringybark. An area of stringybark burnt over and de-foliated, with every tree apparently killed, will rejuvenate from the stems. The seed will re-generate, and if another fire comes through, the young seedlings, even although they are only two or three years old and are burnt off to the ground, will send out little coppice shoots from what we know as ligno tubers. Ash makes no ligno tubers, but most of the other species do make ligno tubers.

Coming now to the question of the deterioration of timber through fire, I do not think there is any need for me to point out the terrible destruction of wood boles by fire, because everyone who goes through the bush knows and sees it. What is generally lost sight of by the uninitiated travelling through a piece of forest after a fire is the evil effects of these epicormic or greedy branches on the bole of the eucalypt, one that is not killed by fire, not the ash group, but one that sends out these greedy branches.

THE COMMISSIONER: Are those the tender curling little green shoots that you see growing out from the stems and the branches of the trees some time after a fire has passed through?
--Yes. Just as we see them now when we go through some of the burnt portions of the forest.

Do they grow into large branches again?--Yes.

How does that tree develop?--The epicormic branches develop on the branches of the tree and on the crown of the bole. The leaves on those little branches are what we call juvenile leaves. In these species you will generally notice that the mature leaves are of a different shape from the juvenile leaves, and the leaves on the epicormic branches are juvenile. When the epicormics on the crown grow out a little bit they assume the other foliage, which is an intermediate type, and finally they assume the mature foliage, which is the same as that of the big tree. When that point is reached a very interesting thing happens. The epicormics on the bole itself, all the way up the bole, die, while the epicormics on the branches survive and keep the tree alive. We have not proved it yet, because the work is still going on, but we make the picture that if the tree must continue to live its leaves are its chemical factory and in order that it may go on living its dormant buds burst out wherever they can to produce new leaves. Then when the crown establishes itself the tree finds no need for the leaves on the bole and those die off, but here comes a serious point that when they die off, at the insertion of the branch, which may be as big as your finger and there may be a dozen breaking out from each side, there is a gum pocket. That is always associated, so that the result of a fire, although not killing the tree, owing to the tree producing these epicormic branches, is actually to bring about, from the timber man’s point of view, one of the worst detriments of our timber, that is the gum vein. It may start as a small pocket but being there it will go right round the tree in successive years and cause that timber to be rejected at the mill when the tree comes to mill size.
MR. GOWANS: Is there any relation between knots and coppicing?—There is a change in the direction of the fibres in the wood around all the epicormic joints. They are small branches and therefore a small knot develops there. When it reaches its highest development, it forms those curious burrs that you see in the forest sometimes, known as nigger-heads, and that of course is a detriment.

Then there is the other obvious damage by fire, that is when a branch or log or portion of another tree falls close to the bole of a standing tree. Then you have a fire condition that is exceedingly severe. The bole or the trunk or the branch is on the ground burning, burns a hole into the base of the standing tree, and then you have the characteristic shield formed on the base of the tree. The fire then enters the wood and starts burning inside, it may burn only a very short way the first time, and may only expose the wood a little bit, but the next fire comes along and gets a little further in and as fire after fire passes through, the hole gets larger and larger until you get what we call the chimney, the fire enters the tree and the tree burns out from the inside... Those who travel in the bush have seen that frequently. Those, then, are the main effects of fire on the tree.

May we take it that these effects may differ in intensity according to the heat of the fire and the nature of the timber; that is to say, the species of the tree?—Yes.

We have to bear in mind in what I propose to ask you to speak of now. Do you want to say anything about the effect of fire in causing erosion?—The effect of fire on the soil cover would come under that heading. I think Mr. Kelso has dealt with that very fully and extremely well, and, whilst I am not in agreement with all that he has said, I am entirely in agreement with him so far as the actual effect of repeated fires on the soil cover is concerned.
THE COMMISSIONER: For the purpose of this enquiry - and no doubt you have gathered the purpose of it - you think that on that aspect of the matter we may well accept Mr. Kelso's evidence?—Yes, I do.

MR. GOWANS: I want to go on now to discuss the use of fire as a measure of fire protection. In order to clear the ground, I should like to tell you that all over the countryside we have had statements of opinion which may be un-enlightened or which may be limited, to the effect that it is a desirable aim to clean up the forests, as the expression is - that this is not only a desirable but also a feasible object. Will you tell us first of all what you think of that as a proposition - that it is both desirable and feasible to clean up the forests for the purpose of fire prevention?—That is the great question of controlled burning. First of all I would like to explain the researches of the Commonwealth Forestry Bureau in regard to the accumulation of matter in the forests. Our work has shown that an ash tree completely changes its coat of leaves in 18 months and during that period the fauna and flora of the soil, the microbes, the funguses, and the insects, completely get rid of the whole of the leaves that fall on the ground, so that after a short period of years after a fire a complete balance is established between the leaf-fall and the destruction of the leaf-fall by natural agencies. That is a very important point. In the Federal Capital Territory we have had areas under observation from which fires have been excluded since the fires that occurred in 1926, and we have had areas also under controlled burning for the usual periods. We find that after a very few years it is impossible to tell the difference between the amount of leaf matter in one and in the other. That fact is not generally recognised. The usual opinion is that an enormous accumulation of inflammable material occurs if the forester excludes fire. That is incorrect. Actually in that area
that I am speaking of from which fires have been excluded since 1926, the natural succession of plants was just reaching the stage when the wattles were dying out, and the ground floor of larger shrubs was becoming clearer. We were beginning to get back to those conditions which Mr. Kelso has described so well which all the old people in Australia remember, that is, our forest was becoming more open through the exclusion of fire, and not thickening. That is a very important point. The thickening up of our forests is entirely due to fire and the exclusion of fire will render them less susceptible to fire because it will get rid of an enormous amount of inflammable material.

What was the type of timber?---Ash.

In both areas?---In both areas, yes.

What was the degree of controlled burning that had been practised in the second area?---Fires had been put through on two occasions in the controlled area.

Do you know at what periods?---With four years' intervals between them.

And the whole of that area had been covered by the controlled burning?---Yes.

THE COMMISSIONER: If by leaving it in its natural state it may at first get very thickly grown with scrub and covered with litter in places, how long do you think it would take to get back into a reasonable safe condition from the point of view of inflammability or fodder for bush fires?---That would depend entirely on the species and the condition to which it had been brought by repeated fires.

I know there are many factors and that the question is much too general and perhaps not well conceived, but do you know our forests in Victoria at all?---Only very little. The Rubicon forest is the only one I know at all well, and I spent only a matter of three weeks there.

Taking that forest, if fire were excluded from that area, how long
do you think it would take to become a clean forest? I cannot answer you. We have not done it yet in Australia.

I mean could you say in any period of years? The answer is that we have not done it yet in Australia. Fires have always come in before we have been able to reach that position where the wattles have disappeared.

Over what periods have you observed the results that you have described? That is the longest period that it has been observed by my Bureau in the Federal Capital Territory, that is from 1926 to 1939. That is 13 years? The early area is still protected. Fire did not get through it.

I am not trying to bind you down because the question is impossible of precise answering, but I suppose it is a question of many years? A great number of years certainly. What we overlook is that nature has a succession of trees, shrubs, bushes and grasses to replace the climax formation, which is the highest possible vegetation formation that the environment will stand, and nature, left to itself, has got to go through these successions. With us in the ash belt, both in Victoria and in the Federal Capital Territory, there are one or two major species only. These are the hop bush and the wattle. The time comes when those successions give way to others, they continually get smaller as the trees get larger and establish themselves above them, until, in the end, we must get back to the original conditions which were possibly a very low ground cover of grass and other small shrubs of low risk from an inflammability point of view.

MR. GOWANS: Does that proposition, that leaving the forest area in its natural state ultimately reduces the fire menace, depend upon the absence of interference with that forest area in any way, by milling operations, for instance?
operations must naturally increase the danger. When an area is opened up you cannot have those heavy successions of bushes that must come in, and it will take longer after the area has been severely opened up. Where the forester steps in is to help the area towards its own regeneration by filling up the holes left by the sawmiller, replacing the original timber where necessary with the species that he wants.

It follows that the achievement of that ideal state of affairs is much more difficult in the case of a commercial forest than in the case of a forest which is not being used commercially?

Undoubtedly.

You told us that in those two areas you have in the Federal Capital Territory of Canberra the condition is much the same, in spite of the fact that one had been burnt and one had not. Would you say that it is the same or much the same from the point of view of fallen debris as well as from the point of view of undergrowth?—No, that is the point I wanted to make. I meant to say that you could not tell the difference between the two by examining the leaf litter on the ground. There seemed to be the same depth of leaf litter in one area, which you can call Area A, out of which fire had been kept since 1926, and in Area B, where the fire had gone through 4½ years ago. I merely use the two areas to illustrate the point that balance between leaf fall and destruction of leaves is established very rapidly.

What was the comparison from the point of view of undergrowth?—From the point of view of undergrowth the wattle succession had come back again into Area B, which had been burnt 4 years ago. We had started the ball rolling again so far as the succession of bush was concerned. Every time we returned there we re-started the succession of shrubs.

Then at the end of a four year period after burning had been done in one area would the amount of undergrowth in that area be equal
to the amount of undergrowth in the other area?---The other area was actually slightly more inflammable because the wattles were higher and were dying out. There were dead wattles about.

Is that the natural area?---That is the one since 1926 which had reached the condition where the wattles were dying out and the other was covered with green wattles.

Then possibly after a further period of years the graph might start to go down and the natural area would become less inflammable according to your ideas?---So far as our examination goes, we anticipate that the wattles will go out entirely in Area A. and be replaced by lower shrubs, of which there are an enormous number, but quite small things, and an increase of grass.

Is there any scrub in the nature of dogwood in either of those areas?---I think there is a little in the gullies but I am not quite sure what dogwood is.

Its botanical name is casinia?---Casinia is not present in any large quantity. Veronica takes the place of casinia in the Federal Capital Territory. All I can say about casinia is that it is present.

MR. HARDY: Dogwood is what is commonly called scrub itch or dog itch.

MR. GOWANS: Have you anything to add in regard to the research functions of your Bureau in that respect?---We have gone very seriously into this question of control burning and we regard it as a pis aller -- that is to say we regard it as only to be resorted to in extreme cases. Only areas which carry timber of any commercial value may be burnt over at safe periods to provide protection for more valuable forests adjoining, but we must admit that continuous control burning will result in complete denudation. That must be the ultimate result and therefore it is a course which we can adopt only as an extreme one. It is justified I think in cases where the slopes are not seriously steep and where the land can be converted into

2385. LANE-POOLE.
better grass land by being denuded, but that is not really of
great interest to us because we are dealing with mountain
country where the slope is generally steep enough to cause
erosion if it is denuded of its timber.

Have you carried out any inquiries into the possibility of preventing
erosion from following control burning, by planting out the
areas which are control burnt with grass or some other form of
growth which can be cropped?—That is the policy in the Federal
Capital Territory and I should like later on, if I may be allowed
the time, to show you a map explaining it, but I may say now
that the policy is to convert the whole of the useless
scrub eucalypt timber in the Federal Capital Territory into
plantations of exotics with a view to bringing the country into
profitable bearing and to paying for the very expensive business
of fire protection. Fire protection is a most expensive
business; unless you can get a crop off the country to pay for
it, it is very difficult to see how it can be done economically.
Someone else has to pay for it.

In the Federal Capital Territory you have a large catchment area which
must be protected?—Yes, and the best way that we can protect
it is to replace valueless stuff by valuable trees on the area,
and that is the policy. As regards the upper country, where
it would be dangerous not to protect the natural forest growing
there, that is the snow gum country, I do not think anything
else can be done. We must leave that there for all time.

Then is this the position in the Federal Capital Territory, that the
forest areas within it are in a much better position for the
prevention of sheet erosion than the surrounding areas by
reason of this policy of pasture conservation?—I do not
think there is any difference between the Federal Capital
Territory and the areas outside it. It is only a matter of
policy that we have adopted a conversion policy inside the
Territory. We have been forced to do that, owing to the need
to do it from the point of view of fire control and making the
country pay after adopting a fire control policy

Are you of opinion that the areas in the Federal Capital Territory are
any better off than the forest areas in the country outside
and immediately surrounding the Federal Capital Territory?—
They are certainly better off because an asset is being built
up, which is going in the future to bring in money from country
which was of no value and the soil is being protected at the
same time by a cover which is as good as if not better than
the eucalypt cover.

You have expressed the opinion that control burning is only to be
resorted to as an extreme measure. Supposing you have the condi-
tions that we have here in Victoria as shown on the map which I
am now holding up for you to see. The parts coloured blue
are Crown lands and the parts coloured green are reserve
forests, and, taking it by and large, you can assume that the
green parts are the more valuable ones and the blue the less
valuable. You can see from that map that there are enormous
areas of Crown lands, or less valuable timber country. That
being so, and bearing in mind the fact that we have had disastrous
fires here in 1926 and 1932, which the policy failed to stop,
do you think that the practice of control burning can be and
should be accepted in Victoria as a measure of ultimate
necessity—that is, as an extreme measure?—It is very hard
for me to answer that question. I have not an intimate knowledge
of the water-ways in that country, which depend very largely on the
question of erosion. If we control burn over that vast area,
it must, if it is continued, end in the complete destruction of
all forests on that area, which must be wrong.

When you speak of control burning, you are contemplating the burning
of the whole area, are you not?—Yes.
Suppose you have control burning in selected strategic positions and if there were continued and regular burnings in those positions only, resulting in the destruction of the forest, could that practice be regarded as a legitimate one for the purpose of saving the rest?---I think so, as long as the areas were quite restricted and it does not affect stream flow to an extreme extent.

On those parts where you would practice regular control burning as a measure of fire protection what steps could be taken to ensure that you did not create a greater evil in the way of erosion, or perhaps an equally great evil?---The burning would have to be done at a time when the fires would not attain any great intensity, and that is one of the most difficult things to do. Control burning is not at all an easy matter. You have an area to burn off, and you give instructions to have it burnt. If the climatic conditions are not satisfactory when it is safe to burn, you cannot get a burn through, and at various other times of the year it is extremely dangerous. That is one of the very greatest troubles of control burning. It should be burnt either very early after the winter, as soon as it can be burnt then, or very late before the winter. That is all I can say.

Has control burning been adopted as a legitimate measure of fire protection in other countries?---I do not think so. Outside Australia you mean? In Australia, yes certainly. Western Australia has done it.

Successfully?---Yes, successfully, so far as the fire protection is concerned.---the areas that they have under regeneration and so forth.

May that be due to the fact that in Western Australia you have not the same steep slopes that you have here, and consequently not the same danger from the point of view of erosion?---I correct myself, I mean successfully from the point of view of fire protection. I do not know the results of erosion. I do not think they know themselves yet.
Do you know anything about the practice in India?

Only from what I have read, that fire control burning is used as a sort of cultural practice for the getting of better regeneration of the wanted species.

Have you heard that it has been used there as a measure of fire protection?

No I did not know that it was used as fire protection.

You are familiar with Hawley?

Yes I know Hawley.

A passage has been read here to the effect that control burning has been used successfully in India in Chir pine forests?

I had overlooked that in his book. It is explicable, because Chir pine is one of two pines in the world that sends out coppice like our stringybarks. All the other pines if they are scorched die - they are finished - but Chir pine does send out coppice which may be quite explicable for them using control burning in Chir pine.

Can any comparison be drawn between the Chir pine areas of India and our Messmate Peppermint areas, or stringybark areas in Victoria, from the point of view of using control burning as a measure of fire protection?

Yes I think so, that might be done.

Do you know whether their pine is more or less heat-resistant than messmate, Peppermint, or stringybark?

No, we have carried out no work on Chir. All I know is that it does coppice.

Can you tell us anything about the practice in New South Wales with regard to the use of control burning?

No I have not very good information on any extensive control burning in New South Wales. It is carried out there around various areas in poor adjoining forests in the same way as it is done everywhere in all forestry departments of Australia, as far as I know.

Do you think it would be possible to deal with the erosion danger in those places where you are forced to carry out regular control burning by planting them out in any way?

The only possible solution that I can see on those steep areas
is to do what we are doing in the Federal Capital Territory —
replace the scrub eucalypts and useless timbers by pines that
are of commercial value. That is not possible everywhere,
because in some cases the slopes are too steep. If they are
too steep, we cannot burn, so that knocks that out. Where
they are not so steep, we should be able to find a species that
will grow there to better advantage than a eucalypt which
has failed to produce marketable timber there.

Would there be any value in control burning of eucalyptus areas and so
destroying the timber in those areas and then replanting with
pine which might be almost as inflammable?---On the contrary,
pine is not so inflammable. That is definite. You have got
a very much better fire break with pine than you have with
eucalypt.

Would there be any value in leaving that area free of trees, but planted
out in some way?---The best solution of all is the conversion
of your scrub country into grass country, but it is not econom-
ically possible. There is the difficulty; it is an economic
question. After all, these people who are grazing their
cattle in that country along New South Wales next to our
border in the Federal Capital Territory do so because it is
the only way in which you can possibly raise the cattle. If
you want to the expense of ringbarking that country and trying
to raise grass there, the cattle in it would not pay. It would
cost too much. I say that everywhere where the country could
be converted into grass country you would have a magnificent
solution as long as the slopes are not too steep, because
of erosion.

You may to choose between what may be an expensive measure of fire
protection and a less economical measure from the point of view
of utilization?---Yes, there is a balance between those.

I am afraid I rather led you away from your general thesis. Had you
completed what you wished to say about control burning as a
measure of fire protection?—I have certainly lost the thread

You started off dealing with the research functions of the Bureau, abb th
results of its researches in connection with control burning as a measure of fire protection?—You have actually brought me in back to the point. The economic considerations determine the presence of extensive— as opposed to intensive— cattle grazing industry. The question of whether the grazier must burn is another matter altogether, an agricultural matter about which I am not competent to speak, but from my reading of the work that has been done by the Forest Service of the United States, it would seem that there are better methods of improving grass country than burning, and that they should be very carefully investigated by agricultural people in Australia. After the great reservations of forest in America by Theodore Roosevelt, reservations which embraced the tops of mountains carrying no forests at all, and these reservations were handed over to the Forestry Service to look after, the Forestry Service found itself in the position of having to employ range experts, men who spent their whole time not in cultivating trees but on improving the conditions for the grazing people who were still allowed to graze there, getting better grass into their country, and they have actually got better rentals since through the work they have done. I submit that that is a direction which might well be investigated in Australia. Is the grazier right to regard, as he frequently tells me, a box of wax matches as the best grass seed he can sow?

We have a problem here in Victoria which I think I can express in this way: we have fairly large areas called the High Plains, where the timber value is not very great, and the value of the land, from the point of view of grazing, is pretty high, and in those areas the graziers exercise the right, and claim the right, to burn at regular periods for the purpose of promoting growth of grass. How can those areas be dealt with? At the present time they are mainly Crown lands under
the control of the Forests Commission, from the point of view of fire protection and under the control of the Lands Department from the point of view of issuing grazing licenses. What is the best way in which those areas should be controlled?—I would like to ask are these plain areas subject to cattle or sheep grazing?

Cattle grazing?—From what you have told me, it seems extremely like the country that we had in the high mountains of New South Wales which is all subject to sheep grazing.

It is very similar, I understand, to the Southern table-lands?—That is the country that I have in mind. It is country carrying snow grass, and snow gums at infrequent intervals, little patches of snow gums on ridges and places here and there. Is that the type of country?

Yes, I understand so?—In New South Wales out Kosciusko way, and round through all that country that I know very well indeed, the grazing people get their fires through immediately after the snow melts, as soon after as possible, and I should regard them as the least dangerous fire settlers that we have from a forestry point of view and from an erosion point of view. They must get their fires through very early because of the very short season in which they can graze. They move their sheep up generally in December. When I was there on the 1st January I saw 21,000 sheep on 17,000 acres, so you can see it is very rich country as relief country, but they can only stay there for four months. It seems that between September and December they have got to burn that country. They have to burn it very early to get enough grass for those sheep to eat as soon as they arrive there. The result is that those fires are burnt at rather the season of the year that we would burn ourselves if we had to burn it, and they tell me it is absolutely essential to burn in order to get the young grass for those sheep to eat. The tufty snow grass, last year's snow grass, is not good feed for them; they must get the young grass. There again I come back to the proposition
Are they right there or can agricultural experts show our merino people in New South Wales that other grasses can be cultivated at an altitude of 5,000 and 6,000 feet which will give better grazing and which will not require burning every year, because in spite of these very fires, lit really at the best season of the year, now and again the result is what I have in those photographs here, which actually is not entirely in the same position because it happens to be Notham. It is the end of the snow gum on the ridges in that particular type of country. Notham, I think, would correspond very closely to my country which I know still better than Notham.

Does the erosion problem come into that area at all?—Here and there very badly indeed owing to the steep slopes, but on a large portion of it you have these curious plains at high altitudes which are almost flat. It depends very much upon the position. So far as those flat areas are concerned, I suppose the question of erosion hardly crops up?—No.

And the humus lies at a very much lower altitude than the tops of those areas?—Well, there is humus everywhere.

Our problem is this: our law is to this effect, that in no part of Victoria, except in the north-west, which we can disregard, between late in November and early in March is it permissible to light a fire without the authority of the forest officer, or without certain conditions, and in general you can take it that the authority of the forest officer is usually not important, so that practically you have during that period a prohibition of burning even in those high plain areas. The consequent result is that the graziers lighting fires during that time in those areas are lighting illegal fires. Now that is our problem:

How can we make the practice accord with the law in some way or make the law accord with practice so as to safeguard all interests?—We are coming here to the legal question and the machinery
required to enforce the law, are we not? The law is there and it is not enforced.

The position may be that it should not be enforced having regard to economic considerations, and also having regard to the measure of fire danger in those areas. Have you any views about that, as to whether the law should be in some way amended so as to permit of that being done, or should it be enforced in the interests of the rest of the community?---I would like to deal with that under the main question of law. It is such a very large matter without introduction.

THE COMMISSIONER: Deal with it in your own way. I am sure that will suit Mr. Gowans?---The function of the Australian Forestry School has made it necessary for us to go very seriously into the legislation. We have to teach men in the various States of Australia, and we have got to give them the proper background. Our laws have been built up with a good deal of scissors and paste from the laws across the sea, adapted to our conditions. They vary in Australia, and the result is that we have to teach the forest law side—I will not say the legal side—very carefully at Canberra and go into all this very difficult problem of how to control fires legally and how to establish the machinery to give force to that legislation actually. We have come to the conclusion, from examining the results of the work in Australia and in other parts of the world, that you must have one authority in charge of your fire control, one authority administering the Fire Act, whatever it may be, in every State, from Bush Fire Brigade Act to Careless Use of Fire Act, but wherever the control is divided you have difficulties arising. You must have one control. That is the fundamental teaching at Canberra. Unfortunately it does not obtain everywhere in Australia. New South Wales is a bad case where the authority is vested entirely in the Shire Council. I would like to refer to that when we come to deal with the question of means of suppressing
fires, detection and so forth. The fact remains that the Shire Council in New South Wales may proclaim close seasons against setting fires, but, if they do not wish to apply for the Proclamation, there is no close season.

MR. GOWANS: May an answer to the question that I asked you be this, that, if the application of the proclamation here depended upon its being brought into operation by Local Authorities, then you might be able to deal with just such a problem as I put to you, this problem of grazing, the lighting of fires in areas where timber is of little value and grazing is the main element?--If it is left to the local authorities?

If it is left to the local authorities?--I would say no, because the local authority has not the vision to see anything more than the immediate grazing revenue. It is a dreadful thing to say, but I am afraid that none of them can look further than that, as a body.

Would you perhaps get over it in this way, by having representatives of the local authorities on the Central authority that you speak of, or the other way round perhaps?--I do not see that it is necessary. It would help decidedly, but I cannot see why a Forest authority should not be trusted. A Forest authority, first of all, alone knows the methods of fire suppression and fire control. It alone can carry out the job.

THE COMMISSIONER: Suppose for the sake of argument I preface this with all those safeguards that I have used in this Commission. Suppose you have a Forests Commission that cannot be trusted, then what?--There is an obvious answer.

Get a new Commission?--Yes.

But suppose you cannot. You are in that position, say, that they have life appointments. Let us talk about a body in Queensland, to make it safe. Suppose you have in Queensland a body with a life appointment, and they cannot be trusted to prevent fire or to take proper measures, what do you do then?--Of course, I should say it would correct itself very
quickly. An inquiry would be held and the action that was suggested would take place. I think one would have to risk the extraordinary thing of an authority being established by a parliament - after all that is what it comes to - which is incompetent.

Do you think that is extraordinary in most walks of life?---

MR. BARRER: An address in both Houses of Parliament might do the trick and in Queensland it would only need one House.

MR. GOWANS: Let me put a suggestion that does not sound so dark. Suppose you have a Forest Authority which directed its activities mainly to the propagation and preservation of timber, and you put under the control of that forest authority the areas that we have just been speaking of where there is no timber element entering into it, and the grazing element is all-important. Would you be safe in doing that?---I think so, because the forester is a trained man whose business in life is to advise the Government as to the best use to which the country can be put. He is not working selfishly, in the aims of timber only. He is considering every economic interest of his forest area and his surrounding area. A forester could not lock up agricultural land in a forest. If the land is capable of growing agricultural crops better than forestry, it is his duty to tell the Government so and see that country of that sort is utilised for the purpose. The same thing would apply to your big grazing areas, as I shall be able to illustrate later on in connection with the work in fire suppression in the last fire in Canberra. A forester would never wish to exclude grazing altogether from country which can be only used for grazing. Why should the forester be regarded as a worse landlord than any other department of State.

THE COMMISSIONER: That is not perhaps putting it on a very high plane? Why should he be regarded as a bad landlord?---I stand corrected, why should he be regarded as a bad landlord?
You see, rightly or wrongly, we have heard a number of people who say that the Forestry Commission do not regard any interest save that of the raising of timber. I do not know whether they say it in so many words, but they strongly point to that being, in their minds, the position.

MR. GOWANS: Should that be so?—Their main function is to raise timber. Why should that be the main function of a forest? There are many things to be won from a forest and many forms of living?—The main function is living. As you say, there are an enormous number. There is the question of the minor products of the forest, to begin with, and then the much larger question of the protection of land which is subject to erosion. As I have pointed out in regard to America, all those mountain tops carrying no forest at all are placed under the Forest Authority because he is the best person who is able to say "Must this go on being grassed; can we get a better crop off it in timber"? He is the best man to look after any country which subject to potential erodibility.

THE COMMISSIONER: Do you think it is the correct idea to take the view that the main and only object of a forest is the getting of timber from it for commercial purposes?—No, distinctly not. This may become a question of philosophy, but do you think that all men should be allowed to earn what living they can in the forest as long as they respect possibly the main object, the preservation of the timber?—As long as the main object of the Forestry policy is maintained, there is every advantage in the complete cooperation between the Forest Authority and all utilisers of anything in the forest, anything at all. I suppose the best example of that is Europe itself, where the forests are a beehive, as it were, of workers all the year round, from the early time in Spring, when they go in to make a good business in mushrooms, collecting things we do not eat in this country— we call them toadstools—and charcoal burning. There are industries.
going on connected with that operation all the time, and I think the forest landlord there, the Forest Department, is regarded as an exceedingly good landlord. He understands the agricultural interest just the same as he understands his timber interest. That is part of the training we inculcate into our foresters, and into the young men in the Australian Forestry School. That land has got to be put to the best use, and the forester has got to study all those questions when it comes to him in the end to advise governments as to the utilisation of land, whether it should grow timber, whether it should be cut under protection every year, whether it should be converted into pine plantations, or whether it should be handed over for intensive settlement in fee simple. That does seem to be the more mature, proper view of the forest to my mind at present, but I think we are leading you a long way from your discourse.

MR. GOWANS: In what we have been discussing there are two rather allied subjects. If you are going to have the Forest Authority as the Fire Authority for the State, then obviously that Forest Authority has to look at the whole problem rather more widely than from the mere timber point of view, I take it, because there may be areas where the timber element does not crop up—-.

Decidedly.

Then here in Victoria, as I told you, we have reserve forests, where the timber is generally of value, and large areas of Crown land, where the timber is not of such great value. If you are going to treat the Forest authority as being the responsible Fire authority in those Crown Lands, the less valuable timber areas, then do you agree that it would be necessary for the Fire authority to regard itself as something in the nature of an obnoxious Bush authority, and not merely to carry out fire protection measures on those lands from the point of view of protecting valuable patches of timber?—-I think so, if you put it that way. The Forest Authority must have

2398.
complete control over all those areas, fire becoming a noxious weed.

Well bush becoming at all events a noxious weed from the point of view of creating a fire menace?—where it is so, certainly; but as I said before, the places where the forest—even bad timber—is regarded as a noxious weed are rare, are they not?

Perhaps treating it rather more widely, you could conceive of areas, I suppose, where timber is of such little value and the country in general is of such little value than the area constitutes nothing more than a bush fire menace?—Yes, I agree, with one reservation, that erosion has to be studied in each of those cases.

There may be cases, of course, where although the timber may be of little value, the forest may be of some value from the point of view of a protection forest?—Erosion.

MR. BARBER: Which most of the forests on Crown lands are. We have the evidence to that effect; they are mainly protection forests. Most of the forests, the trees on the merely Crown lands part, are protection forests from the point of view of erosion.

MR. GOWANS: I have not heard that evidence.

MR. BARBER: It has been given on more than one occasion.

THE COMMISSIONER: It seems new to me, we have been sleeping at the same time, you and I, Mr. Gowans.

MR. GOWANS: Perhaps so.

MR. BARBER: I am putting it in this way, that a great deal—

MR. GOWANS: "Most" you said.

MR. BARBER: I said "Most" before, but perhaps that is putting it a bit too far. A great deal of the protected forest is in fact protection forest. It is timber that is useful from the point of view of protection against erosion, and that is all its value.

MR. GOWANS: I wish you would refer to the evidence.

MR. BARBER: I cannot for the moment, but I am perfectly certain that
has been given.

MR. KELSO: I do not think it has been substantially given, although I am quite sure in some instances that is so.

MR. BARBER: The reference was made particularly to the Omeo district, and there is a good deal as to other parts.

THE COMMISSIONER: I think Omeo was the only one I had in mind. However we are quibbling a little. If that is so, well and good, but I did not think it had been said. Perhaps the intelligent observer would have picked it up.

MR. BARBER: I will investigate it a little further. There is still some more evidence to come from us. I know that evidence has been given as to the Omeo district, and I understood ——

THE COMMISSIONER: You are possibly as to the fact of it protecting against erosion, but I did not seem to remember it having been said.

MR. GOWANS: I think Mr. Galbraith in regard to the Omeo area said there was a difference of opinion as to whether that in fact was of value as a protection forest. He contended himself that it was, and he said that was the attitude of the Forests Commission. He also said that he knew that certain officers of other Departments did not agree with that. (To witness): Then all this leads us to this point: If you do place the Forests Commission in the position of a Fire Authority over those areas, then it may be necessary to re-orientate its policy a little and its practice, and direct that practice towards getting rid of the fire menace in such areas, not merely from the point of view of protecting valuable timber, but from the point of view of protecting the State as a whole?—Yes.

Perhaps you will go on to another matter on which you feel you can be more helpful? Would you carry your suggestion as to the desirability of a unified fire control authority to the extent of putting that authority in charge of water catchment areas?—Yes.

2400.

LANE-POOLE.
And to the extent of giving it power to apply fire protection measures in special catchment areas which are at present under the control of special bodies?---Yes.

Now there obviously arises a possible conflict of ideas and a conflict of practice between the practices of such a unified fire control body and the practices of the Water Authority. How would you reconcile those?---I cannot imagine any conflict between two such authorities. First of all, the policy in regard to the catchment area must be decided on general lines. The big economic question has to be decided - is this area going to be utilised from the forestry point of view or can we afford to neglect the potential value of a crop that can be grown on that area, and regard the country purely as a water catchment area? The policy in most countries is that they cannot afford to do that. Most countries say "Well, we cannot hold up a large area of country merely for water. We have got to protect it from fire; we will be burnt out if we do not. We must make it pay." That is the policy of the Federal Capital Territory, Western Australia, and South Australia. Their catchment areas are under intensive forest management, and the timber crop is aimed at in order to pay the cost and make the land productive. It is quite possible, of course, for the country to say "Well, we do not consider that is really very important, and we will give up the profits that can be made, and we will make the water user pay for the whole cost of the protection of our forests". If that is the decision, that might be a matter of high Government policy, but there will still be no conflict with the Forests Commission in its fire measures. The fire measures would be altered, of course, to suit the conditions. The forest in the catchment area will be worked on what we foresters call the physical location of the forest. May I just explain that, because I think it is really worth
elucidation. There are three general rotations. By "rotations" we mean the age to which we must grow a tree before we cut it down or utilise it. First, is the commercial rotation. That is the rotation of the highest commercial yield, which is the peak of the graph taking into consideration the compound interest, that is to say, the actual cost of growing the forest. The commercial rotation is a rotation employed by the small landowner, also very often by a municipality, growing a forest. It is generally rather a short rotation. Then comes the Government Forester. He has to consider something more than that. He has to supply big timber of all sorts for the community. He will go rather further than the small man will. He will extend his rotation to what we call the economic rotation. That is the rotation under which a forest is cut rather later, rather older, and supplies a very much larger number of products, and produces wider boards for the trade. That is a very important point. We must have wide boards, and it costs a lot to grow those wide boards, and only a Government can do it because it can get its money much cheaper. Then we have another type of forest work, what we call a physical rotation, and that is the forest to which we are now referring. We have got the forest in the catchment area, the forest on a ridge top, the forest in Europe, and in the avalanche areas on the Alps. In such forests it has been decided for some reason that we must not interfere with the canopy to any great extent. In such a forest they work on a system of cutting the trees out as soon as they show that they are useless, going back, or beginning to die. The forester then goes in and he takes out those trees which means that very very few trees indeed are cut, because the forest is in that condition is growing
as fast as it is dying; it is a very slow business, and a few trees are taken out of the catchment area, or whatever it happens to be, as they reach the end of their physical life.

By whom is that done?---By the forester, and of course the timber is utilised. It is taken away from there, it is not abandoned. It helps usually just to cover the cost of getting it out. To leave it there, of course, is a great mistake because it will die there and add to the fire risk, and it will make it more difficult to get the young timber up to replace it.

Nature's method of replacing it would be the slow ecological process of replacing its own forest. It is a very slow process. The forester steps in; he takes out his unwanted tree now because it is dying, and he makes sure by cutting back the successions that come up, perhaps even planting a tree there if the worst comes to the worst. The young trees will come up and they will want thinning. He would have to go in and help them to thin. For one tree that goes out you have to have 40 or 50 trees in the hole that it made to produce the one tree again in 100 year's time, so that the forester has got to step in. You have got to have someone who understands forests and realises what has to be done, and the only authority obviously is the forest authority to look after that, whether the country is locked up from the main timber point of view or whether it is going to be used for timber in a general way.

If the policy of the country is not such as I have described, that is to say the timber is going to be made rather an important factor; -- the Water Supply people want to make their water a little bit cheaper by getting a revenue off the country; the government of the country says "We cannot hold this country up from production, we must grow a crop there, it is ridiculous for us to have large areas
simply to supply water under another authority" — then that area could again be worked on the economic rotation only with this difference, that the silvicultural system used in a protection forest or catchment area on the economic rotation would be what we know as the selection system. Instead of just taking out your dying tree, you would take out your tree of rich maturity, but you would always maintain your forest as an uneven age forest. You would not strive to get an even age stand anywhere, which means clear felling. As soon as you see an even age stand — an even age stand must come at some date; all the trees must come to a fellable age, an age when they should be felled for commercial purposes — that would mean clearing a large area. That must be avoided on a catchment of that description, and so we adopt the selection system, which aims at maintaining an uneven stand. You have got the same amount of timber over 100,000 acres, but your age classes instead of being in blocks from one-year old to 100 years old, we will say, are scattered all over the forest, and on the same area you will have to an acre trees of one year old and a tree of 100 years old to be felled this year. But all through the management of that forest, you have got to have foresters there thinning and looking after that forest. So that the authority to look after any catchment area must be the Forest Authority if it is to remain a catchment area.

I should warn you that you will probably find yourself at sea with Mr. Kelso in regard to most of what you have said in the last five minutes.

MR. KELSO: Mr. Gowans is throwing me into a fight. I think I should be able to choose my own fights at least.

THE COMMISSIONER: I think he is trying to protect the witness against you.

MR. GOWANS: Particularly I think on the question as to whether there
would be danger to the purity of the water.

MR. KELSO: Do not warn him.

MR. GOWANS: My duty is a good deal different from Mr. Barber's and yours. (To witness): I want you to comment on the argument that the greatest evil you must avoid is the placing of a catchment area, which is at present under the control of a body responsible to Parliament for purity of the water and supply of water, under the control of any body which is not responsible to Parliament for purity or for supply. I suppose you have given consideration to these arguments, have you?---I have.

I thought possibly there might be some misconception, that you might not have understood the position. I want now to get away from catchment areas, and to take you on to milling operations.

To what extent in your view should the milling industry provide for or pay for the protection of the forest from the results of its own activities, always from the point of view of fire protection?---Forestry begins with the axe, as a great forester once put it, and the milling industry has got to pay for the replacement of the forest. The price we sell our timber for should be adequate. It should pay for the whole cost of replacing the timber that the miller cuts out. That is fundamental. To ask the miller to pay more than that cost would be to tax the sawmilling interest. To ask him to pay less than that cost is to tax the whole community for the benefit of those who use the timber.

Can you tell us anything of the practice in other countries with regard to, say, a particular matter such as top disposal, cutting up, and burning of branches, trunks of tops, on the one hand, or broad-side burning of tops, on the other hand, which is a cheaper method?---This brings us back to control burning, where it is justified. Top disposal, as it has come to be called as a forestry term, is practised in
certain of the States of Australia, particularly in Western Australia, and it is practices in conjunction with silvicultural operations. When the sawmiller has gone through the country he leaves a certain amount of seed trees, reserved by the foresters, or stages that he cannot take, and those are mother trees, seed-bearers. The forester desires a good regeneration on that area, and the system he adopts is to carry out his top-disposal and his regeneration burn, as it is called, for the preparation of the soil for the reception of the seed from these seed trees. It has been found that a most economical practice, and the one which leads to less danger of fire getting away is having these two operations carried out very closely together if not at the same time. The top-disposal is a very expensive operation, and it certainly adds to the sawmiller's cost. I anticipate a question being asked probably "Is it economical'? It is impossible to say that without examining each case. It is certainly economical in the jarrah country, but I am not in a position to speak at all for your ash country. It means, of course, that it is not just putting a fire into a top. It means it has got to be done properly; the top has to be burnt. It means cutting the branches back and stacking them. It is a serious operation which may add quite considerably to the cost of logging.

Here in Victoria we know from the evidence which has come before this Commission that the practice is to put a fire into the top and to burn. As I understand the evidence, there is no suggestion of cutting, stacking and burning, or lopping and burning. In the case of wood cutters and sleeper cutters they do lop?—-I would like to emphasize that point. That is the one time that I regard fire as justifiable in the forest-growing timber as opposed to the scrub stuff about which you were speaking before, when you mentioned...
your noxious weed country. You have one fire there to promote regeneration, but after that fire has gone through then complete protection is essential. Top-disposal is a very important point there, because there is no doubt that the tops do form a very heavy fire risk; create a very heavy fire hazard, shall I call it.

You are in no position to answer the question as to whether it would be economical from the point of view of a miller to require him to dispose of his tops in that way in our mountain ash country here?—No, I am not in a position to answer that.

(Continued on page 2412).
Will you tell the Commission something of detection and suppression methods used in Australia and abroad?—A very careful study has been made of the practice in various countries, and again we have adapted the practice of countries overseas to our own conditions. There are of course great differences. In some countries they have water easily accessible to their forests, which makes matters much easier. That is one of our greatest difficulties. We have to do much of our fire control work in spite of the distance of water away. That means the transport of water, and the utilization of other means for controlling fires, such as the use of rakes and fire beaters. The detection is the first and most important, and then comes the blacking out of small fires which should follow immediately on detection. The main methods of detection have been shown everywhere to be either high topped mountains, if they exist, or, if they do not, it means creating an elevation by the construction of watch fire towers. These fortunately can be constructed at a low cost of between £1.5.0 and £1.10.0 a foot. From those towers the forester can see the next towers. All towers must be close enough together for at least two towers to see each other. At the head of the tower is a table map on which revolves an alidade, which is a ruler with a sighting vane at each end of it. That enables the forester to look along it and rotate it and sight a smoke. He must then get into communication with his next tower and advise that tower that he has sighted smoke. That tower also sights with its alidade the same smoke, which gives the angle, and the two angles enable them to fix the spot exactly. The watch towers themselves thus inter-communicate with one another and communicate also with the central authority for that district for fire control, and immediate action must be taken to deal with that particular fire. The watchmen do not leave their
towers. They are there to report fires and that is the job that they attend to. Communication between the watchmen on various towers, which are all reticulated, and placed at distances which makes visibility immediately possible has so far been entirely by telephone, which has been one of the weaknesses, but now, thanks mainly to the work of the Queensland Forest Service, our manufacturers of wireless equipment in Australia have constructed an excellent sending set which can be installed with a motor for recharging the batteries, all complete, for the sum of £156. They also make, and we have tested these in the Federal Capital Territory, a small set which can be carried in the bush and which will enable the watch towers to get in touch with gangs working in the forests. These portable sets receive and send perfectly satisfactorily to the central station. They are much cheaper in price, being, I think, £75, about half the price of the central set, and they enable communication to be continuously kept up between the various watch towers and also with gangs in the bush who can carry the portable sets. The portable sets, thanks to Queensland's good forestry work, have been made so robust that they can be carried on horseback and can even be dropped on the ground without injury. The test I think is a five foot drop on to the ground, and if the valves can stand that, they are all right. We gave these things a very good test in Canberra in mountain country and they proved most efficient. The only thing against them is that they seem to be exorbitant in price but when you consider the work they can do, it will be seen that the cost is not at all out of the way.

What did you say they cost?---£75 for the pack sets, and £156 for the central sets, which will look after a very large number of pack sets.

THE COMMISSIONER: What about the pedal set?---That is a very cumbersome one and I do not know that there is any advantage in price;
General's Department which has experts on the radio side, and after we tested them and found this central set and the pack sets perfectly satisfactory in the bush, we got the Postmaster-General's Department to "vet" them, from the general viewpoint of price and so forth. The Department recommended this particular set which successfully passed the tests. The Department said that it had called for tenders all over the world for similar things, but had not received any tenders, and it therefore considered that the Australian-built article was probably the only one that could be obtained at this price.

MR. GOWANS: Are they both transmitting and receiving sets?---Yes, they call them Transceivers. There is one point that is worth clearing up while we are on that matter. The pack sets are easily screened by intervening hills, and I regard their maximum range for certainty as 4 miles. They will get 10 miles but you can say 4 miles in all weathers and all conditions, but that is not really a bar against them because A, carrying a pack set can transmit his message to the central station C, and C can talk to B, and therefore the message can be relayed from any pack set to any other pack set. As regards the distance over which reception and sending is possible from the central station, I may say we get 22 miles in Canberra without any difficulty. I do not know what the extreme limit is, but we regard that as quite sufficient for any central station to ask for. The next point is that you have your watch towers in intercommunication with each other, and in intercommunication with gangs of workmen in the forest, and this is very important because these workmen are employees of the Forestry Department, and they know their job in fire fighting. They get a message from the central station: "Fire broken out in Compartment so and so", and they know just where to go and what to do. They have to go to the place where the fire is and so communication by radio is fundamental to fire control. The next point is that there must be a

2414.
net-work of roads through the whole country where those towers are erected, otherwise the towers are just as useless as aeroplane detection or any other detection. We must have the means of getting the men to the fire. That, I suppose is the most difficult problem that we have to face in Australia in these large areas of scrub country carrying a very small stocking of cattle. How are we going to build roads economically to that country to get the fire brigade out to put out the fire when it is in the condition when it can be put out by ten men? That is our whole problem. The putting up of the towers and having men on horseback to go between the towers, is all simple, and to get the news of a fire breaking out is perfectly easy, but how to get the men to the spot is the hardest of all. It means roading and that is very expensive. Western Australia did the only country that has been able to do this economically so far. She can build roads through the jarrah country at a cost of £50 to £100 a mile. In most of the other States we would have to multiply that figure by 10. The reason is that Western Australia possesses an ironstone country in the jarrah belt, where it merely means opening a track and you could drive a vehicle along it and once it is established that way, it drains so well that there is no further maintenance of any serious nature to carry out. It is a very different story in New South Wales, and I am sure it is a very different story in Victoria. The road question therefore is a very serious one. I should like to say something about motor vehicles. It is most important that these should be of the right construction and type, and here again I think Western Australia leads the Australian States, although I have not seen the Victorian vehicles so that I cannot say for certain. So far as concerns the fire fighting vehicles that I have seen elsewhere in Australia, I can say definitely that Western Australia leads the way. She has adapted the Bedford truck and has constructed bodies to those
trucks in such a way as to provide space for all the equipment required for fire fighting as well as for the men to sit. Thus there is space for two tanks of water, space for a pack, and space for the spray pump, and for the rakes and for everything else required by the gang. That may not seem very important, but actually it is of great importance, because in the time of stress all these tools must be there and the fact that there is a place for each of the tools makes it possible for the man in charge to see if anything is missing, and you can replace it and get out to the fire. Then with regard to water, we have to use it very sparingly, actually it very often comes down to this, that the greatest need for water is for the fire fighter himself. We cannot use it for any other purpose, because our men get so fearfully done fighting a fire, but when we can get water to a fire, it is of great importance particularly in the last stages of all for blacking out burning logs. In that regard we find the Lady Day pack spray very effective. I do not think we can put much dependence on any of those devices such as the Town Fire Brigades have evolved - there are several very good light ones, because they all depend on pumping water from a dam or some other water supply, and that is generally absent where you want to fight the fire, and long hoses taken through the bush which have been tried in Tasmania, where the water supply is rather good as compared with New South Wales, have not proved very efficient.

In spite of that, you think, I presume, that a policy of water conservation, consisting of dams and so on, in places where the fire menace is likely to be great, would not be a misguided policy?—No, it would be most desirable to have depots of water as close as possible to all the various areas so as to replenish these tanks, drums, or other containers which are carried on trucks to the
fire fighters, but I do not think those dams are going to be used by anything like a fire engine. Then of course it is a question of the man-power, when it comes to the putting out of the fire. Well, the only man power that we can really depend on for satisfactory work is the Forests Department's own employee. All experience has shown that the volunteer fire fighter in spite of his enthusiasm and desire to help as much as possible is really rather in the way. He does not know how to go about it. Our Forest Departments all recruit their working men from bushmen, men who have had to fight fires all their lives, they know all about it, they know the bush, they do not get lost to begin with as the volunteer usually does, and they can be depended on without having to be told meticulously what to do, they can be depended on to do the right thing. Of course if the fire became seriously big it means that they have to employ volunteers as well and that makes it all the more important to have a particularly sound number of permanent employees because they become leaders of the volunteers. Those are men who otherwise when a small fire came along would put that fire out, but if the next day there came a greater fire then these men have to be told: "You have to go along to compartment so and so, with a gang of twenty volunteers and show them how to put out the fire that has broken out there". This shows that the Forest Department has had to select amongst its employees men who could take the positions of leaders, although they are ordinarily employees of the labouring type, just as we had to pick men in the trenches to take the position of officers in times of stress.

Can you tell us anything about the payment of volunteers in other States?

We have found one problem here to one extent and that is that if volunteers know that they will be paid, sometimes it happens that fires occur?---I am afraid the same thing has occurred in the Federal Capital Territory and it is one of the problems we have not solved there.
The payment there is so very high owing to overtime, that a man can earn a very big wage putting out a fire, and it has been actually suggested that fires have been commenced for that purpose. There is no evidence and it cannot be proved, but it has been said that it has been done. We are therefore in the same position as you are. The difficulty is to fix a wage for fire fighting which will be fair and reasonable, and we have sat in committee over that and have not yet been able to come to a decision as to what is fair and reasonable. We do regard it as unfair and unreasonable that they should be paid double wages for fighting a fire which is the present practice if they work over the eight hours in the Federal Capital Territory. Then if the work occurs at week-ends, and so forth, there is a regular scale of increases in wages.

The Commissioner: Do you mean it is unfair or unsafe?—Unfair that we should spend so much in the cost of fire control.

Mr. Gowans: Have you completed your remarks on detection and suppression methods?—There is only that question of mill sites that I have not dealt with. It is most important that mill sites should be amply provided with fire breaks. When I was Conservator in Western Australia, we made five chains round the mills compulsory.

Here they make it three. Do you think that is sufficient?—I am not sufficiently conversant with the conditions to say. Then you must remember that the five chains was not only to save the mills and the men in them, but to save the forests around from being burnt through sparks from sawmills. From the point of view of the safety of the employees I notice that the question of dugouts has come up. We have had no experience of this device, but I understand that it has proved most efficient in the last great fire in Victoria.

I do not think we will trouble you about dugouts. All these methods of detection and suppression that you have outlined are of
most value in cases of fires which can be got under control, are they not?---Yes.

Supposing you have an area like that on the map of Victoria which I have already shown you, marked green and blue, the whole of which is timbered country, while the white parts are settled or are at all events alienated land. All this area marked green and blue however you may take as being timbered country. If you had such an area as that, do you think it might be desirable to adopt some policy which would lead to the disintegration of such large areas by dividing them up in some way?---Do you mean by dividing them up into agricultural settlement or by making fire breaks?

Some form of clearing up in order to try to ensure that when a fire starts at this end it will not finish at the other end of the State?---You come back to the old question of whether it is right and proper to clear that country altogether. It is an economic question and that one that is wrapped up in the question of erosion; and I should say that I cannot answer it. If the country is capable of agricultural settlement, it obviously should be settled into small holdings for intensive agriculture. That clearly is impossible or it would have been done years ago. Therefore the country is not agricultural and it is only inx capable of being worked by means of extensive cattle grazing. Therefore it could only be cut up by roads and firebreaks. I do not know the country sufficiently to say whether it could be cut up for agricultural settlement, all I can say is that if it could be cut up for closer agricultural settlement, it should be, and it should have been long ago.

I am afraid that I have taken you round some parts of your statement in not quite the order in which you intended to deal with them. Are there any parts of your evidence that you would like to elaborate or emphasise?---Yes, If I might tell the story of the fire that occurred in Canberra at the same time as the big fires occurred in Victoria it might be of interest.
to the Commission. There were the same conditions and the country was very similar in many respects, whilst a great number of the problems that you are facing were facing us although of course on a very much smaller scale. If I may tell you that story, it may be helpful. On the Wednesday of the bad week fires came into Canberra and we lost altogether 3,500 acres of plantation which, with compound interest, meant a loss of £6 0,000. That, of course, is very minor and very small compared with the vast loss sustained by the Forestry Commission and others, in Victoria, and we had no loss of life. I have here, and now display to you a map showing the Federal Capital Territory. On this part is shown a map of New South Wales, containing the Federal Capital Territory and on this part is a map of the Territory itself. The interesting point about the Territory is how the land is occupied. The whole of the large plain that you see going through here (indicating) is pastoral country, ranging up to an sheep an acre, so that it is really good pastoral country. This country here (indicating) is very high mountain country running up to 6,400 feet, and the average height of this range is from 4,000 to 4,200 feet. Here (indicating) is where the Murrumbidgee rises. This country here (indicating) is high mountain country and covered with snow gum at the top, alpine ash and cut-tail, and then under that we have scrub eucalypts, stringybark of a poor nature, white gum, ribbon gum, and manna gum, and things of that nature. Here (indicating) is where the river Cotter rises in this deep gorge with a high mountain range on each side. That valley of the Cotter and the two ranges of mountains which embrace it are all rough country and all to the east of it is this good merino country. That is very important, because these merino people are just as anxious as I am to keep fire out. They hate fires, and so we have a proper fire conscience and we have no trouble with fire inside the Territory, but here (indicating) over...
the border in New South Wales the people who live here in the country beyond our mountain range are cattle people, and they are the kind of people who tell me that the best grass seed that they can sow is a box of wax matches. What makes the problem more difficult is the fact that the Shire Council in New South Wales which governs this country has never proclaimed a close season for fire. I have spent a great deal of time during the week-ends in walking about this mountain country and from about the end of October right through to Christmas Day I watched those fires burning beyond the mountain tops, between the mountain tops, I mean on this range and, Tumut, which lies over here (indicating). They were being lit continuously. They were always being lit, and there was a pall of smoke hanging over that valley all through the week-ends when I was there. We never got a sight of Kosciusko because of the pall of smoke lying between us and it. I thought that these fires were being lit illicitly but they were not; they were being lit in the course of the ordinary avocation of the pastoralists, and there was nothing in the New South Wales regulation to say that they should not be lit. Then came our bad week and these small fires which had been burning more or less continuously, with logs burning all the time, became a conflagration and that crossed our boundary. You will see these black patches shown on this map. They are the areas that were burnt out in the Federal Capital Territory. The amount of country burnt of course is tiny compared with yours, but it is very large compared with the size of the Federal Capital Territory, and I suppose if we made a comparison with yours in relation to your whole country, we would find that our loss is comparatively speaking as great. We have had innumerable fires started within our Territory since 1926, but our fire detection organization in which I have to thank very largely the pastoral industry, that is our own graziers and sheep men, who have helped us enormously, has managed to keep
those fires down, so that none of them which we have had inside the Territory has burnt out more than eight acres at a time. That is very important. This time the reason for our being burnt out was the fact that the fire assumed the size of a conflagration outside our borders. Our station at Mount Stromlo the Federal Solar Observatory, maintains an anemometer the readings of which when taken showed a wind velocity of 45 miles an hour maximum continuously during that day from 12 to 4 and an average of 30 whereas our forest men at the top of the mountain at the same time were unable to stand and had to crawl up to get a sight of what was showing of the fire on the other side. I venture to say that the speed of the fire over the top there must have been in the neighbourhood of 80 miles an hour, the result was that all our protective measures inside our intensive forest work went for nothing, because the fire on our boundary got alight and fire debris was sent to enormous distances over the heads of our fire fighters below. The mean altitude of this plain (indicating) is two thousand feet, and fire debris was cast from the top of this range here (indicating) into Canberra itself which is 23 miles away. A fire was lit below the Forestry School at Canberra from debris of burning snow gum 22 miles away. No snow gum was burning between the Forestry School and the top of these mountains. You will see therefore that the whole of the internal fire-breaking organization was useless in the face of the attack from the outside; That is what I wanted to emphasise as the most unimportant point of all. I think that every Forest Department of Australia is competent to deal with the forest fire that develops in its own territory. It has its organization and means of access, but it cannot deal with the fire that attacks it from the outside, hence the dugouts, hence all the army of men that the Commission has in its employ, in its areas and hence the need of safety measures which no forester would envisage in any other country in the world. We have to provide for these things because we are
attacked from outside by fires over which we have no control. The Minister for the Interior (Mr. McEwan) appointed a Committee to inquire into this fire, and we laid on the table a report setting out all the mistakes we had made. We learned a lot from that fire. I should like to read you the first resolution of that Committee because it is of great importance on that particular point. It is as follows:

"In the opinion of the Committee no internal fire organization can save the Australian Capital Territory from a recurrence of the disastrous fires that occurred between the 11th and 15th of January, 1939. The only possible solution is to prevent fires from crossing the Brindabella Range, Corree, and the north-west boundaries of the Territory, and this can only be attained by obtaining control of all land adjoining the western and north-western boundaries of the Australian Capital Territory. The control must be complete, and therefore the land in question must be acquired by the Commonwealth Government—-—".

That is, acquired by the Commonwealth Government from the State of New South Wales—-—

"With the object of ascertaining the exact limits of the area necessary to provide a sufficient protective belt, a reconnaisance of the country in question, viz., the Parishes of Gurrandulla, Cooleman, Bimberi, Venteman, Brindabella, Corner, Pabral, Micalong and Urayarra will be necessary."

That is the recommendation that has been put up by the Committee appointed by the Minister for the Interior to inquire into the cause of the fire and to formulate suggestions for the prevention of another fire coming in, and we are all in agreement on that point, I understand that the question of the choice of the reconnaisance party is now under consideration, that is the party whose duty it will be to go out to see the width of the protective belt that we require. That is the answer to your question. I say that it will be necessary in Victoria, and pro-
bably it has been done, to go round the forest reserves and find out in each particular case what is the width of protective belt in your scrub country that is required to make your forests secure. That raises the point: What distance are we going to ask for generally in the New South Wales territory to make us secure? I do not think the area will extend beyond the Goodradigbee. It might be a distance of four miles or it might be a little more in places.

But you told us earlier that debris from the fire travelled 22 miles from the tops of your mountains into Canberra? How can you reconcile that with your suggestion of acquiring only four or 4½ miles of territory from the State of New South Wales? The reason is that we have no mountains beyond the Goodradigbee that could possibly cast debris across our Brindabella Range, but if we had a mountain range across the Doodradigbee like that range, we would have to acquire that too. That is why I say that the reserved must be examined in each case to see how it stands in relation to the topography of the Australian Capital Territory. If there is a range of mountains beyond it, even if there is a deep valley in between, and even if there is a distance of 15 miles in between, that country will not be safe because with an 80 miles an hour gale, the debris will be carried that distance.

MR. CLARK (Lands Department) (By leave): You were speaking of high areas in your Territory, 5,000 to 6,000 feet high on which the country is cleared. We have one almost precisely similar belt of country in Victoria in the Bogong High Plains and we have others approaching it but of lower altitudes. Take an example in New South Wales. Take for instance, the country surrounding the Monaro, that open timber country covered with cabbage gums and others. That is very similar to the Victorian Omeo district, it has been stated that that type of country is also similar to some which you have north of the Federal Capital Territory going towards the Burragorang Dam just after you leave the Territory, that is open timber country with a very bare and hard eroded floor, do you know that type of country? --Yes, I think I know that.
We have got it.

You have some also in the Australian Capital Territory?---Yes.

That has been described as protective forest, a similar type of country to that near Omeo. That class of forest grew close to Omeo but Omeo was recently very badly burnt. It has been put by some of the witnesses — by at least one — that that is not protecting the soil from sheet erosion at all, at least not sufficiently, and it has been claimed by others that it should be retained as a protective forest, what would be your opinion of that country? Should it be grassed or should it remain as it is?---I cannot exactly see the country in the Australian Capital Territory that you are attempting to describe. We have those hills covered down with slates and then we have others covered with dacite which is much more erodible than the slate. We are planting those slopes but we do not think we are going to be successful with conifers on the slate because of the dryness.

Do you know the country immediately after leaving the Territory going on the road to Burrainjuck?---On the Yass road, yes.

That country is suffering very badly from sheet erosion, is it not?---I was not aware that it was, I believe that erosion is going on but it is not very apparent along the Yass Road. It is going on all through that country to a certain extent.

What would be the ground cover of that country?---Yellow box, and here and there red box that have been retained. The policy is to do everything to improve that country which is some of the best sheep country we have along there. That includes sheep country like the Jeor country.

(CONTINUED ON PAGE 2427.)
THE WITNESS: That is all held under pastoral lease or freehold, as you get across the border.

As regards actual ground cover - not the forest cover but the ground cover - what would that be in the parts which had not been so matted in and grassed?—Those are all hills. You have got to go back well from the road to get the best. As I say, it is all hill country, and it has not paid the pastoralist there to clear off the hills.

Is the reason that they have remained as they are because they have not paid?—Entirely.

Would you say if they had paid they should have been put into grass?—They would have been.

Would you say they should have been?—I am not competent to say.

You have seen sheet erosion in that type of country?—Yes, my attention has been drawn to sheet erosion in several of the paddocks in Canberra.

I thought you referred in your evidence to something like that country in which you had encouraged pasture grass?—No, I have not encouraged pasture grass, that is a mistake.

Then I must have misunderstood you. If an area of that type of country were showing signs of sheet erosion, would you say that it would be best to encourage grass to grow on it, to prevent erosion?—Decidedly not. If the climate permits it, I would grow another tree crop that would be profitable. I will try to make that clear. If the country is capable of growing any type of tree like the eucalypt, then the best cover to put on it would be another tree. If it cannot be done, I do not think it is going to carry grass either, is it?

I was referring to country that would carry grass as well. If that timber were killed, it would carry grass very well and make rich pasture?—Then one would clear it and make grass but it is very hard to imagine such country anywhere these areas you are speaking about. I can assure you there is some of that type?—In all my evidence I was
talking of country very much higher than that. This is country down to 2,000.

2,000 to 3,500?—I was talking of country well up; snow plain country really, real mountain heavy erosion country.

On the question of breaking up the country, to which Mr. Gowans has referred, we have had what we might call holocausts in 1851 and 1939 at least—that is about a 90-year period—and very devastating fires much more frequently. Now that would cover something like the period of regeneration of a good many of our eucalypts, like mountain ash, would it not?—You mean regeneration or rotation?

Regeneration after a fire?—I think you mean rotation—the time it takes for a tree to grow from seed to sawdust?

Yes?—One generation of trees, yes.

So that if we are going to have such a fire, say, every 80 years, then we would be growing trees merely in order to provide fuel for the fire?—That is all. I might explain there what I think would answer that question rather better. I am adviser to the Federal Government in forestry matters, while the actual forestry work in the Federal Capital is carried out by a separate branch over which I have no control. I am purely adviser, but my advice to the Federal Government in this matter of the rehabilitation of the burnt out areas, in continuation of other plantings at the rate of about 800 to 1,000 acres a year, which is what we are doing there, is to spend no more money on forestry in the Federal Capital Territory unless this resolution is given effect to. That, I think, is the reply which clears up your question, if I may say so. To continue a forest policy in the Federal Capital Territory with the perfect certainty that in ten year's time another of these fires will come in from New South Wales, is sheer madness, and no professional forester could advise a Government to continue such expenditure. Exactly, which is going further than Mr. Gowans' question to you. Here is
an area 50 miles long of reserve forests running in a northwesterly and south-easterly direction. Take that as a particular area. It has one very high mountain range and some other ranges through it. Would you say that in that area for protection of the forest a very wide clearing, done by burning and subsequently grassing down along those ranges, would possibly stop that from being burnt all in one fire?—It would minimise the risk of complete destruction of the whole area enormously if you could get breaks along all your ranges, provided you have got complete control in between and you can detect a small fire that takes place.

It has been suggested to this Commission that mills should be placed in outside areas. Would you say they might possibly be placed in at such areas?

THE COMMISSIONER: It has been suggested that the mills should be taken out of the forest. Would you think that instead of that you might place them on such an area as Mr. Clark described?—Again I am not sufficiently acquainted with the topography of the country. The location of mills is a matter of economics. Timber has got to come out from the sides of a valley and go to a mill, and it is a matter of economics as to where is the best place to put that mill, and like the dugouts and all the other things, it shows that we are impotent to prevent the big fire coming in. If we can control the big fire outside from coming in, then all these other matters would go by the board.

MR. CLARK: Quite so, but there seems to have been fairly conclusive proof that we cannot prevent it altogether in a tremendous area like that?—I am not prepared to accept that. I say that we can prevent it over any area, provided that we have got the money, the roads, and the right class of men doing the work. I say that we can prevent fires anywhere. It has been done elsewhere in the world, and it is simply absolutely wrong to regard fires as inevitable. There has been a
co-relation of population and lighting fires, but even the fact that fires may occur not through the hand of man - which happen very rarely and are usually in our forest areas accompanied by rain very shortly afterwards - does not mean that fires are inevitable, because on a proper system of road and detection of fires, getting men to the fires, the fire could be put out when it is the size of a man's hand. That is the point.

Is it worth while doing, is the real question. That is another matter of big political economy - what is it going to cost? - but, as I say, fires are not inevitable.

That is so. It is a question of cost. Possibly such areas as I suggested on those main ridges could be agisted - grassed down and agisted - in which case there would be no erosion, and at least some return to the Forestry Commission for their cost of burning and sowing down their growth. Would you suggest it would be impracticable, or is it worth investigation? — It is certainly worth investigating, but I think the Western Australian system of picking our areas of land throughout their districts and establishing those as forest villages consisting solely of their own employees is the better solution of the difficulty. They are trying to get seven employees together so as to be big enough to give them a school. That is always the greatest difficulty in those outside places, how to educate the children. In that way they would have a community living in the forest, a community of forest workers wrapped up in the whole interest of the forest, who are there to help to fight the fires. They are now, with the new invention of radio, established in continuous communication with a watch tower by means of a pack set.

Getting back to the question of soil erosion, which must be giving the Commission some room for thought, have you seen or dealt with any figures in connection with the rate of run-off in the various types of country? — I have not, no.
We are hoping to start that investigation this year. We are appointing a forestry engineer to the forestry school, and all my lecturers to the forestry school are engaged in investigation work at the same time, and the investigation work that we propose for the forestry engineer is soil erosion. We have picked three valleys in Canberra for that purpose. One we are going to clear entirely, one we are going to carry under native forest, and burn as the grazier burns it; and the other we are converting to grass. We may get some valuable information from that, so that the only other observation I have on the question of the forest run-off is that of observation of the effect of burning.

It has a very big relation to soil erosion, the amount of run-off or the rate. That is why I was asking you?--We have not got as far as that in our investigational branch.

(CONTINUED ON PAGE 2432.)
MR. KELSO: I gather that you feel that undivided control is a desirable basis for the operation of fire control in our forests?—Yes.

That is to say the theoretical principle of undivided control is a proper principle, and I agree with that. However, it is admitted is it not, that in very many of our utilities and our activities divided control is necessary to provide for diversity of interest?—Yes.

For instance, our municipalities are not under one control nor are our forests in our different States under one control?—No.

Nor have we gone so far as to bring forestry throughout the Empire under one control?—That is so.

For the obvious reason that diverse interests are concerned?—Yes.

You very properly desire to have roads constructed through your forests. You suggest that the forest authorities should construct those roads no doubt?—Yes.

I put it to you that, for the sake of undivided control, the State road authority should be the one not only to construct those roads but to say where they should go. Supposing I put that to you, do you think that would in every case be consistent with what the forester might desire?—No, I think not.

Then is not that actually a case where division of control may be in the interests of forestry?—Yes, it is.

Then you have come to the position where you will agree with me that there may be a necessity for divided control in the interests of the water supply of the community?—Yes, I see your point.

I do not know whether you are aware of the position in this State, that there are several authorities, but we are concerned at the moment only with two, the forest's authority to whom the State has given the care and control of the forests for their commercial use and for their safeguarding, and another authority to whom Parliament has given a section of the forests for a similar exploitation, that is the production of water, and also
its care and control. Is it not really a better solution of the diversity of control and the uniformity of control problem that those should co-operate rather than that either of them should attempt to control the area of the other one? Is not co-operation really the best way of meeting their diverse as well as their mutual interests?—Complete co-operation would be most successful, yes, I agree.

And it would overcome this rather difficult obstacle that you cannot take away control from an Authority without modifying its responsibility. I am talking now very directly about responsibility for purity and sufficiency of water?—Yes, that is true, you cannot take away the power from the Authority without weakening the Authority.

I mean without weakening its responsibility?—Yes, without weakening its responsibility.

So that that might be a more satisfactory solution than complete centralization in this particular case?—Do you agree?—It might be a better solution but I have my doubts about it. The co-operation must be very complete indeed. Can that be secured entirely between two Departments of State in charge of those two things?

We do have co-operation in the matter I mentioned before in relation to roads. We have co-operation there between the municipalities and the Central State Authority to ensure that their road works are consistent and that they have a common boundary. Why should we not be able to co-operate in two similar Departments of State?

MR. CLARK: Why do you not?

MR. KELSO: Provided that both are genuinely desirous of securing the ideal, for after all we are only talking of ideals, are we not?—I should like to see the area and see how you are managing it, and see whether it is being managed in the best interests of the forests for all time. Have you in your Melbourne and Metropolitan Board of Works anybody competent to
help you in that matter? All these points come up. The continuation of the vegetable growth on that area is a matter for particular professional training, and I feel sure that you will appreciate that better than I do.

I certainly do appreciate it?—And the co-operation has to be so good that you have to be prepared to accept advice in carrying out whatever is necessary from the forest authority.

Providing such willingness to accept advice, and providing, even more, that the body which had been made responsible so recognised its responsibility as to employ the services of competent men, given all those things, may we not obtain a good result by co-operation? That is really the question and I do not propose to take it beyond that particular point?—

THE COMMISSIONER: I do not think it is really a matter for argument.

THE WITNESS: I agree.

THE COMMISSIONER: I think it is self-evident. The point is: What are the facts now existing?

MR. KELSO: Perhaps Is should not cross-examine this witness.

THE COMMISSIONER: Your suggestion is so self-evidently sound that, given the ideal facts, it could not be contravened. The question is only how it would work in practice?

MR. KELSO: I thought the ideal was to put me on the other side, that for the sake of the ideal organization and control of the forests there should be only one control. I am putting the other point of view on an ideal basis, that is that there may be two controls of they are properly co-ordinated.

THE COMMISSIONER: I think the best control, from the high standpoint from which you are putting it now, would be one control that understood and represented every interest.

MR. KELSO: That is the supreme control that we have in Parliament with the best advice that it can obtain.

THE COMMISSIONER: I thought of something much or higher or lower than that. I thought if you had a Commission here that understood all about water problems and was prepared to take the view that you suggest.
MR. HELSO: And also all about forest problems.

THE COMMISSIONER: And all about water conservation. We are anxious to have both departments working to their utmost efficiency, and then the work would be properly placed under either department.

MR. HELSO: That also is rather an ideal Commission.

THE COMMISSIONER: In a place like Australia we are probably wasting time to talk in that way, or perhaps I should say that in modern days we are wasting time to talk in that way.

MR. HELSO: I suggest that there is a valuable point in this matter on which Mr. Lane-Poole might help us by expressing his views. I should like to know if he feels that co-operation, in perhaps ideal circumstances, would be a solution equal or nearly equal to centralised control with its ideal circumstances? However, I will not press that any further. The question of the commercial use of watersheds as a matter of fact is not relevant to this inquiry, but I think you, Mr. Lane-Poole, referred to the Adelaide Supply. That will give an example of what I mean.

There is settlement on the catchments which you referred to, actual settlement, not only commercial use so that if in addition the commercial use of the watersheds is superimposed the problem of pollution must already have been solved by the settlement, do you know whether it is not a fact that the great number of the big cities of the world which utilise their catchments for settlement or commerce, do in fact purify their supply?—I believe that is the case.

So that really as regards the question of purity, if the water supply authority which is responsible and which may be presumed to know its business in a reasonable sort of way, says that, with the condition obtaining in this State, it is dangerous to occupy these catchments, or to have entry into them unrestricted on the part of the persons not controlled by the water supply Department, that may be a justification for refraining from using those catchments commercially?—Yes, but may I
modify the statement I made about dealing with the area in the Federal Territory? The whole of the area in the Cotter catchment is a water supply catchment for the City of Canberra and our Department of Health has established the highest possible ideal, that it has no bacteria in that water, and one of the contributing factors to the loss of our plantations this year was our inability to get the Director General of Health to vary that and allow us to put sheep in to certain plantations which at that time were carrying grass. The health policy was more important, and the danger of possible pollution by the sheep was regarded as so great that the sheep were not allowed in. I am not thoroughly conversant with the problem, but I must add at the same time that the Director of Health does not prevent us but encourages us with our forestry programme in the catchment area because he realises the importance of it in improving the run-off, and the impossibility of our looking after so vast an area with no revenue coming in from it.

(CONTINUED ON PAGE 2434.)
MR. BARBER: Do you think that the amount of pollution that would result from soil disturbance in selected logging would really militate against the purity of the water supply to any great extent? I know you are not setting yourself up as a water purity expert, but do you think that milling in catchment areas, is going to affect pollution at all to any appreciable extent?—As I understand the pollution question, the pollution of the soil is the pollution of the water from drainage from human beings. It is not the pollution of the water from disturbance. To answer the selection question, I say no: A forest managed on the selection system would have no effect on run-off on the pollution of the water supply.

THE COMMISSIONER: I must confess to being a little bit sceptical about this pollution by human beings. After all, some human beings are permitted into the area. It seems to me, even into Mr. Kelso's sacred groves. What about the fishing parties? Do they do any harm, Mr. Kelso? They get right out on the water itself?

MR. KELSO: Is that a question that you really desire me to answer?

THE COMMISSIONER: Perhaps I had better not press you. It seems a bit hard that people cannot go within some miles of the reservoir to earn their living and others go and fish in it. It does seem to me right if your theory is correct.

MR. KELSO: Even I go into the watersheds, but the persons who do go into them are persons who have the same kind of responsibility as myself, and acting under the most strict control, and I submit, in spite of what Mr. Barber is saying, that unrestricted entry by persons not of the same responsibility—ordinary timber merchants not under any control—

THE COMMISSIONER: I think there is an obvious distinction, and I think Mr. Barber realises that.

MR. BARBER: I was perhaps slightly led astray. (To witness): Apart from the human element, you see no objection as far as the actual operations of milling are concerned? As I understand it,
the Department in Canberra controls the catchment areas, does it not?—Over-ridden by the Health Department in regard to the purity of water supply.

But you do mill those areas?—Yes. They are milled very little, we plant them. The forest operations are going on through the catchment area with that one important proviso, that nothing can be done which will contaminate the water. We have to put our forest guard living in New South Wales over the border, five yards from the border, in order that he should not contaminate the waters required by the population of Canberra. Nothing has been done about the kangaroos yet.

What I was getting at though was this: as I understood you, you do have a certain amount of milling operations even on these catchment areas?—Yes.

Dealing with specific areas that are under the control of the Board of Works here, it was put to Mr. Kelso that in his areas he should take out old bulks, to use his own expression, and in answer to cross-examination by me he said they took no steps. At page 1866 of the transcript I put this to him (reads from "I suppose they are a fire menace........" to ".....in the hope you would improve them?—No."). Would you comment on that? That is your attitude, is it not?—Yes, anything unhealthy in the forest should come out. They are unhealthy, they are going back. The practice in other parts of the world is to remove those trees when they reach that stage.

It is unhealthy from two points of view; from the second point of view of being also a fire menace?—Yes, both points of view.

That leads me to this position, to put to you the actual facts in regard to this divided control. We have in Victoria large forest areas, and adjacent to them in some cases, actually included, surrounding them, are areas under the control of the Board of Works. Do you think it desirable that the Forest Commission or the Forest Authority should have some
say in what fire protection measures are taken within the Board's area with the way they conduct their forestry. Mr. Kelso was dealing in theory—

THE COMMISSIONER: He has already said that a Forest Commission should have such control, Mr. Barber.

MR. BARBER: He was rather shaken out of it by Mr. Kelso.

THE COMMISSIONER: I do not think he was.

MR. BARBER: I want to get his opinion of the facts as they are.

THE COMMISSIONER: There are lots of other facts in Victoria which may affect his mind, and which have not been put, and I think it is undesirable to put that.

MR. BARBER: I was assuming that both the Forest Commission and the Board, or the two authorities, whatever they were, were normal intelligent and efficient bodies. I am not taking into account any question of inefficiency.

THE COMMISSIONER: If you proceed on that assumption, it is all right. You got your answer earlier this morning. He said the Forest Commission should control everything in the forest.

MR. BARBER: You agree, do you, that in the circumstances I have outlined, assuming both authorities to be sensible and knowledgeable in their own sphere, the forest people should have some control?—

—I think the forest people should have complete control over all these areas.

This is the position where a catchment area is reserved exclusively for water service, and where the authority in control of it will do nothing inside of it. It relies exclusively on fire breaks outside of it, and men to put out fires as soon as they occur.

MR. KELSO: I do not know that that is quite a fair question.

THE COMMISSIONER: I think that all those questions have been answered by the witness. You are sort of ringing the changes now, Mr. Barber, on an old tune.

MR. KELSO: After all, the witness has not heard all that has been said about those catchments, and it would be only fair that I should get up again and worry the witness.
THE COMMISSIONER: I do not think Mr. Lane-Poole could be persuaded to express a definite opinion or give definite advice on fires as they exist in Victoria, because being of a scientific mind he knows that he does not all the facts. (To witness) Is that so?—That is so.

MR. BARBER: Perhaps I might put this more definite question to you—-

THE COMMISSIONER: I do not want to stop you in any way, but it seems a pity to be doing it needlessly at this hour of the day if I might bring in that topic also.

MR. BARBER: You discussed at one stage the theory that we have heard about the desirability of preserving the canopy of the forest in order to prevent ultimately destroying the under-growth. I do not think you said this, but could you say whether selection working would create very severe gaps in that canopy, or how large would be the gaps created by selection logging?

THE COMMISSIONER: It would depend on your forest, for a start, and how you did your selection work.

THE WITNESS: The condition of uneven age of a forest worked on a selection system is such that we will assume the forest reaches its physical maturity at 100 years. That is merely to get a figure to work on. It means that instead of cutting one hundredth of the forest every year in one place, you are scattering that one-hundredth over the whole area. Therefore, you are opening up the whole of your canopy by one per cent. Obviously, if you are working the forest in a catchment area, where the rotation would be nearer 200 years, you are working it on a half of one per cent. Those are the holes that you would open in your forest on a selection system. That is the amount of break that you would give to the canopy, which is of course entirely insignificant.

MR. BARBER: There was one other matter that was not quite clear to me. You would agree, I take it, that although burning may or does ultimately destroy the forest, there are circumstances
in which it is proper to burn and continually burn a strip of country in order to provide an effective fire break for the balance of the forest. It seems fairly obvious, but I do not think you said that in so many words?—Yes, I say that.

(CONTINUED ON PAGE 2435-B.)
Therefore— you would be in disagreement with Mr. Paton who would not have any fire in the forests at all in any circumstances?

**THE COMMISSIONER:** You need not worry about that.

**MR. BARBER:** Did you give an estimate as to the length of time that it would take for the forest to come back to its natural state, taking a forest that has been burnt over fairly often? Take your experimental lot at Canberra?— I did answer that. I said I had not been there long enough.

Would you estimate that 10 to 15 years would be sufficient?— Do you mean 15 years for the restoration of virgin conditions?

It has been put by witnesses in this Commission that 15 years would be sufficient?— No, it would be a very long period of time before we could expect to get back anything like the forest which was here originally in the matter of ground cover and openings.

I do not know whether it is 100 years or how long it is. We do know, as I said earlier, that in 4 or 5 years the balance between leaf fall and leaf destruction is completely established.

**MR. KEILSC:** When Mr. Barber was asking you about selective cutting, he asked you to what extent it would protect the canopy — I presume that that is on the basis that no destructive fires occur through mills?— Yes.

If cuttings occurred then that menace associated with mills would result in burnings?— Yes, but the fire would only be used in isolated cases where an old tree that had been cut out would have to be burnt on the spot for regeneration purposes. Otherwise fire would be excluded from an area of that sort.

And operations of that sort are associated with an added fire risk due to the presence of the workmen and the class of work they are carrying out?— Yes, there is an added fire risk.

**MR. HARDY:** As to your statement that no controlling body or authority could be interfered with without reducing its responsibility, I take it that that would apply, say, to the forests authority, which does not control its own staff, but where there is a dual control of the staff. Would not that militate against
Are you sure of the fact that the Forest Authority in Victoria does not control its whole staff?---No.

We have heard a good deal about a long range policy on the part of the Forest Authority and all that would apply to any other body having a long range policy, like the Melbourne and Metropolitan Board of Works which controls water supply, but what is likely to happen here is that the policy of the Forest Authority may be interfered with because its members may have only short periods of service, and there might be half a dozen changes in the personnel of the Authority before a crop of eucalypts reached maturity. Do you not think it a disadvantage that the members of the controlling authority should lack permanent employment and should not see the result of their work?---I thought that the Forestry Commission was a body corporate with perpetual succession.

THE COMMISSIONER: What Mr. Hardy means is that the persons constituting the Forest Commission may be changed—the they do not of necessity have a long tenure of office.

MR. HARDY: The Act provides for a period of 5 years and then for a renewal of the appointments for 3 years, 2 years and 1 year.

THE COMMISSIONER: Is not this your question: Would it not be better to have security of tenure for these officers than quick changes?

(To the witness): Would you not agree with that?---Yes, I think life tenure would be better.

THE COMMISSIONER: I wish to tender to you, Mr. Lane-Poole, the thanks of the Commission for having attended here today at such personal discomfort and inconvenience to advise and assist us. We are indeed grateful to you.
Author/s: Victoria. Parliament

Title: Transcript of evidence and Report of the Royal Commission to inquire into the causes of and measures taken to prevent the bush fires of January, 1939, and to protect life and property and the measures to be taken to prevent bush fires in Victoria and to protect life and property in the event of future bush fires.

Date: 1939

Citation: Victoria. Parliament. (1939). Transcript of evidence and Report of the Royal Commission to inquire into the causes of and measures taken to prevent the bush fires of January, 1939, and to protect life and property and the measures to be taken to prevent bush fires in Victoria and to protect life and property in the event of future bush fires. Melbourne: Govt. Printer.

Persistent Link: http://hdl.handle.net/11343/21344

File Description: Day 32-Melbourne 01_04_1939