

Len McInnes

Corrected by K. Hueneke
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LEN MCINNES

Interviewed by Klaus Hueneke

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Tape 1 of 2

Tape 1, Side 1

This is an interview by Klaus Hueneke with Len McInnes of Flynn in Canberra, on 20 November 1986. Len worked for Parks and Gardens at the Snowy Mountains Authority from about 1955 until the 1970s, and is now retired in Canberra. He still does some show judging. He knew Dr Müller and Dr Marie Phillips who worked on the soil conservation and *plant ecology* side for the SMA, and *studied* horticulture, and suggested that I and others see the film 'Gardens of the Snowy Mountains', a film made by the Snowy Mountains Authority, largely to do with their plantings and soil stabilisation. Len is related to the Oldfields on his *mother's* side, the Oldfields who had grazing leases on the western side of the Brindabellas, near today's Oldfield *but*. Len knew Jack Feeny and Jack Maxwell.

LM: I worked with Parks and Gardens. I was also in charge of Soil Conservation. What actually happened, when I started with the Snowy, there was two sections; there was Parks and Gardens and Soil Conservation. Parks and Gardens was in charge of a chap, before I went there, by the name of Plumbridge. I don't know what happened to him, whether he got the sack or what, I never bothered going into it. Soil Conservation had been run by Dr Müller and he had left just before I got there, and there was Dr. *Raeder Roitzsch* and Betty Phillips, who had the Soil Conservation section.

KH: Yes. Just while I think of it, is Dr Betty Phillips still in Canberra, is she still alive?

LM: I think she is still alive. I am not sure whether - she would probably be retired, I would say.

KH: She worked for the Botanical Gardens?

LM: She was, yes. When she came from Cooma down here, she went to the Botanical Gardens. I think it was about 1957. But Parks and Gardens and Soil Conservation were combined. I took over the two. At that time they had separate nurseries; there was a nursery at - - -

KH: A separate nursery?

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LM: There was a nursery down at Back Creek and there was also the one up at North Cooma. Then I closed the one at Back Creek and transferred everything to North Cooma because we couldn't see the sense, economical wise and everything, of trying to run two nurseries when one would do the job for both. Actually I didn't take anybody - well, one chap for a very short period that was in the Soil Conservation section over at all.

KH: You were alone?

LM: Well, I recruited other people, but I was alone. I don't want this for publication, but it caused a bit of a stink with the Soil Conservation because Raeder-Roitzsch was a pure scientist and Betty Phillips was a scientist - again, this is not for publication. How it came about, they had been five years and things weren't going as they should be on soil conservation because they were carrying out experiments, but they were only carrying out experiments in small plot lots which wasn't - - -

KH: At the nursery or in the field?

LM: Well, at the nursery and in the field, but it wasn't ^{proving} very successful.

KH: ^{These} are not the arboreta?

LM: Well, some of the arboreta that was put in as well, up around Happy Jacks and various places, they were put in. My direct boss got talking about soil conservation and, first of all, they were amazed that I knew so much about the mountains, didn't realize that as a young fellow I had been around mountains, chased brumbies in the mountains, done all sorts of things, relations there. Though with it, as I said - and I made several suggestions and a submission went to the Commissioner that I take over Soil Conservation. Well, this caused a bit of a ^{furor} in Parks and Gardens, because at that time they were saying Soil Conservation was such a highly technical thing and all that, that it came over. So, more or less in the introduction you could say, as well, Parks and Gardens and Soil Conservation from the mid '50s.

KH: Was there anything else in the introduction that you want to add to.

LM: The other one - you had my wife's family, it was my mother's family?

KH: Your mother's family, sorry.

LM: because she comes from Wales. No, it was my mother's family, through there, that I got to know the mountains.

KH: And what was your mother's maiden name?

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LM: Oldfield, she was an Oldfield, yes.

KH: And then she married - - -?

LM: Into the Mc Innes family.

KH: But they were from Queanbeyan?

LM: There was some of them on the land but most of them were shearing contractors, contract shearing all over Australia, well at least in Australia.

KH: Those Oldfields, on your mother's side, they did have leases in the - - -

LM: Oh yes, yes.

KH: Where today's Oldfields hut is, or Murray Creek hut?

LM: Yes. That was a cousin of mine that built that hut, Bill Oldfield.

KH: The one that's left there now?

LM: Yes.

KH: Because there was an old hut there too?

LM: Yes. Yeah, well the old huts - they put up the old hut too, because they were some of the earliest graziers through there.

KH: And they used to come across from the upper Cotter, is that right?

LM: Yes, upper ^{Nags}., upper Cotter. Yes, right up through there and then through them there was other - in the old days everybody was related to one another somewhere or other, through marriage. Families and that, the Brooks and Wests around Adaminaby, through Kiandra there - Tom Taylor, the Hunts and ^{the} Days, who used to be at Kiandra.

KH: Yes, I've done an interview with Tom Taylor and George Day - George Day is over near Wagga now. So what was your - - -

LM: I know the Cochrans at ^{Yook}, they were one of the older families there.

KH: Yes, I've talked to Audrey Cochran - Audrey Maxwell now. What is your full name, Len?

LM: Leonard Joseph McInnes.

KH: And when were you born?

LM: 28 April 1914.

KH: Where were you born?

LM: Queanbeyan, Tharwa Road in Queanbeyan.

KH: I think you've given me your mother's name; what was your father's name?

LM: Robert Blair McInnes.

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- KH: And so you went to school in Queanbeyan?
- LM: Yes.
- KH: And what level did you reach, what year did you go to?
- LM: What was it - just before intermediate high. You had to leave school in those days and go to work.
- KH: 14?
- LM: I was 14 when I left school and I started off as a junior in the Architects Department with the Federal Capital Commission in 1928. In 1930 the Federal Capital Commission ^{went} broke, practically everybody was sacked. I was kept on for an extra three months with the Works Department over in where the Jolimont Centre is now. Then they decided that they still didn't have any work and we were all sacked then. A new lot of Works Department people came from Melbourne to take over the various jobs. A few, but very few of the original ones stayed. There was a few that stayed on but the rest of us didn't.
- KH: Did you learn a trade at that stage?
- LM: No. I was going to do, eventually, as a junior, trainee architect, but in those times they didn't have apprentices or anything. You sort of come in and hope ^q later on to go through a course, but the Depression changed all that.
- KH: What did you do during the Depression?
- LM: Well, when I didn't have a job I went on the dole for two weeks and got vouchers for 5/2d a week for food. My mother couldn't keep us, they had other family, so I decided that I'd go bush.
- KH: Like a lot of other people, I suppose?
- LM: Two or three others. Start off with ^{the} relations in the mountains and on the land and that. Went out there, worked the time just for your tucker.
- KH: Where did you work in the mountains at that time?
- LM: Well, around ^{Naas}, right up through the mountains, where Oldfields hut is, Murray Creek, ^{Yaouk}, right through there. I did a lot of work through ^{Yaouk} after that, contract fencing, ring-barking. Then three of us decided we would see Australia, a working holiday around Australia, which we did. I came back, in between, to Canberra in 1936 and did odd things then. I went ^{to} Forestry for a while, then Parks and Gardens, then back to Forestry.
- KH: Here in Canberra?
- LM: Yes, here in Canberra.

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- KH: Was that with Charles. ^{Lane Book?}
- LM: Yes, ^{Lane Book} was here then. At Parks and Gardens there was Bruce - that's the director of Parks and Gardens.
- KH: Did you ever get into making skis? Apparently Charles ^{Lane Book} was into this, or with some of the students at the old forestry school?
- LM: No, I didn't do it. When I was working on the pine plantations they were starting, at the time, quite a lot there. Then, for a while, I went into the mill at Kingston. They had their own mill at Kingston. I ^{chopped} around, I went with the family, shearing contractors, and they wanted me to do too much work. I left then and just went on my own. I became a jack of all trades then and the last two years before the war I was with Parks and Gardens here in Canberra. During the war I was taken a prisoner and we decided to study horticulture full time.
- KH: Where were you a prisoner?
- LM: In Germany.
- KH: So you studied horticulture in Germany?
- LM: Yes.
- KH: So you learned German?
- LM: No, unfortunately. We made up our minds that if the Germans wanted to talk to us, they'd talk to us in English. I have regretted it ever since. But the camp that I was in was an NCO camp, 6000 NCOs there, we would have somebody from every walk of life. Nobody worked, so it became the show camp of Germany. The Red Cross came a week later. We even finished up one of the class of all sorts, sport, and we even had a house of Oxford University. And all the organisations, in England, through the Red Cross, you could do the theory of any ^{exam.} that you liked.
- KH: So they would provide you with books?
- LM: Yes, the Red Cross provided us with books, everything. It was full time, the same as university. You had your class times and everything and lectures, the whole lot. Actually, in 1944, they had the highest pass of any house of Oxford University.
- KH: That is absolutely amazing. Yours is one of the best prisoner-of-war stories I have ever heard, I think.

LM: There was quite a lot, a few things about it. There was a book printed called 'Barbed Wire' and it went on sale the day the camp was released, *all the* literature sketches and everything. It had gone to England, been edited, printed and was just waiting the day the camp was released; went on sale for the first time. I bought a Spitfire from the camp.

KH: Bought one?

LM: A full plane with - in the war, apparently they had an appeal in England for people to subscribe - provide Spitfires and planes for the war effort. Through the Red Cross we got it. Hitler was a great one for welfare - you probably know in Germany they got big wages, but by the time he took everything out for welfare you got nothing. So some people got the bright idea *the Duncan Sandries(?)* welfare fund. Through the Red Cross this was all negotiated and the transmitters, that we had in the camp, etc. - submitted to the Germans - "Oh yes, these prisoners are getting very good, they *are thinking of* welfare". This was the time he was going to win the war. Of course, he agreed to it. I authorized the paymaster to pay 'x' amount into the *Duncan Sandries(?)* welfare fund, and the plane came over the camp three days before we were released.

KH: So how many years did you study, how many years were you a prisoner of war?

LM: I was four years a prisoner of war, but 3½ years I studied.

KH: So there was plenty of time to complete a certificate? What did you get at the end of *that*?

LM: The horticulture certificate. I came back and I went straight to Parks and Gardens after the war, here in Canberra, with Professor Pryor. Then I decided to go back overseas, more or less for experience, a working holiday. I could have gone with the government, but I had to sign, at that time, five years that I would stay with them when I came back. I went and had a word with Pryor and said, "Well, when I'm ready to come back will there be anything?" He said, "Write to me, there could be." So instead of stopping three years I stopped nearly six.

KH: Where did you go?

LM: Mainly England. I finished up in Coventry for quite a long time, getting experience and then when I wanted to come back I wrote to Pryor and he said, "Oh yes, I think there will be something here." So I came back. I was only with them six months and I got the Snowy job. That came up and I put in

for that. They were just Parks and Gardens then. Then in 12 months I got the Soil Conservation as well and then finished up with Pest Control on top of that.

KH: You got all three?

LM: Yes.

KH: I see. They were separate sections?

LM: Well, Pest Control was done by - one branch would deal with that bit and somebody else would - then got the coordination that it would all come under one. Because I was tripping around the mountains all the time and knew where everything was. It was sort of a rather unique set up, in a way.

KH: Your set up?

LM: Yes. My set up with the Snowy because I didn't have a deputy.

KH: Who was your boss then, who were you directly responsible to?

LM: *The field.* construction engineer.

KH: Who was that at that time?

LM: Munro, Jack Munro.

KH: Yes, I've seen his name on things. Is he still around?

LM: Yes, he's still alive. He retired in ill health. He's got a place up at Surfers Paradise. No, it was the set up - I lived in Cooma, and the headquarters was Cooma, but I had the whole of the Snowy *area*, right through. So what I did in each region - the Snowy was cut up into regions. I had a supervisor, or a foreman, in each region. I had somebody in Parks and Gardens, then somebody different in Soil Conservation; I split the two up there.

KH: What were the regions, I am not *clear* *the* on *close* regions?

LM: There was Cooma, Cabramurra, Khancoban and *close* down: Island Bend. Cooma were then coordinated; Cabramurra covered the Tumut area, Tumut, Tumut 1 and Tumut 2. Island Bend overlapped a little bit, it covered Guthega and then later Island Bend, in through there. Eucumbene more or less come under Cooma.

KH: Did Tantangara too?

LM: Tantangara come more or less under Cooma. Then Khancoban covered the Murray side.

KH: Geehi dam?

LM: Geehi dam.

KH: *Cooma?*

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LM: No, ~~Tooma~~ was done by Cabramurra region. The two power stations, Murray 1 and 2, the Geehi aqua duct, through there, and then at a later date, Talbingo.came in as the last one. Besides the camp the main townships was - well, first of all Cooma, then Eucumbene, Island Bend, Cabramurra, then Khancoban and then Talbingo. Married quarters came in then, but mainly that was for all single camps. Ogilvey's at Tumut Pond camp was before Cabramurra. ~~It~~ went in down at the head^{quarters} of the dam - Tumut Pond.

KH: Right, that one went in before Cabramurra?

LM: Yes. You actually went down - there was no road in where Cabramurra is now, at that time. You went in, just from what they call Kings Cross - or Mt Selwyn now. You went down the spur there, right down onto the river.

KH: Towards 15 mile spur?

LM: Yes.

KH: Yes, the old bullock tracks went there, I think?

LM: Yes, they had a camp down there. Tooma, that was another small township while construction was on. Then Yellow Bog was another camp.

KH: Did you ride a lot on horseback, early on, or was this mostly with landrovers?

LM: No, when I got there it was mostly landrovers, mainly get around in a landrover. The earlier ones had done it on horseback. But, again, when I went there I knew a lot of the tracks. When I first went there, which amazed them, ~~I'd probably be~~ ^{with Munro} and I'd say, "There's a track going up there, through there." Of course everybody went, "How do you know?" They all thought I was a stranger, and a lot thought I was English at the time because I must have had a partly English accent.

KH: Just to mop up one thing, what year did you get married?

LM: 1946.

KH: After you came out, after you came back.

LM: When I came back. The wife came over and we were married, married at St Johns.

KH: And what is your wife's name?

LM: Phyllis.

KH: And have you got any children?

LM: Two, one daughter and one son.

KH: And the job you got on the Snowy Scheme, you just applied for that?

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LM: Yes. It was advertised: foreman for Parks and Gardens. Initially it was Cooma, but again, they sort of wanted to get the place looking a bit tidy and the people had been there apparently hadn't been doing the job they wanted to. I got the job and just started off, and that's where I first started. Then the first job that I did outside Cooma was the landscaping for Adaminaby, the removal ~~of~~ ^{of} ~~Old~~ ^{of} Adaminaby.

KH: The landscaping of the new township?

LM: - - - of Adaminaby to the new township.

KH: You did some landscaping first in Cooma?

LM: Yes. Cooma north and Cooma east. There was a little bit done in Cooma east, practically nothing at Cooma north. Also, I say, the first one outside Eucumbene - I had to do some at Eucumbene.

KH: Eucumbene dam?

LM: Well, the township, it was quite a big township. I had to do that. Then when the commissioner brought in, with ^{his} public relations, ~~viewing~~ ^{viewing} of construction works, they put the lookout at Eucumbene dam, so I was landscaping around that.

KH: What year did they start, those tours? Did they start soon after you started? - -

LM: Fairly soon after I started. I would say probably about '57. They were special ones but the main tours sort of started then, when the Snowy took over the construction of Eucumbene dam from the NSW government. The NSW government was originally going to ^{build} Eucumbene as part of the scheme. But they were getting that far behind their schedule, apparently, that - well that was the first time the commissioners decided to bring in international contracting for works.

KH: This was a massive job shifting dirt, wasn't it?

LM: Yes.

KH: I've seen photos of it, it is incredible. So the quarry sites must have been pretty big, I mean the quarries that they excavated?

LM: They were. At Eucumbene they were exceptionally big. It got out of hand a bit, they were sort of here there and everywhere. That became a major ~~problem~~ ^{problem}.

KH: One of the biggest quarries is now under water, isn't it, it is on the upstream side?

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LM: Well, that was some of the material, but the majority of the material, no. It was scattered to the south, more or less to the south of the dam.

KH: Down the valley there ^{are} some big quarries?

LM: Down the valley, there was areas there. A lot of it now you wouldn't realise. But it was that way and the country was very subject to erosion, though it had to be a lot of mechanical work go into with contour banks and drainage and pondage, all those sorts of things, and working out what would grow there. That was the biggest problem with the restoration and conservation of the whole scheme, that nobody had any experience of plant growth in those areas. We knew what would grow there in the native stuff but, again, the thing was how quick could you regenerate that native stuff, how much material could you get for propagation for that native stuff, which all came into it. What did you have to do with some of that native stuff to get it to germinate? This was all the stuff which Betty Phillips, ^{and Müller} ~~Raeder~~ ^{Raeder, Roitzsch} had done a lot but they hadn't got that far with it. But the ^Scheme was going on, construction was going ^{on} everywhere - ^{there was mess} everywhere - with the result that park people, everybody else, was starting to get onto the authority that, "In your agreement areas had to be restored at the shortest possible time." They were saying with the results that streams were becoming polluted, mud, silt, all that sort of thing, so nobody had any idea of what to use. When I went there - it was probably one of the reasons why I got it - I had several ideas which luckily proved fairly successful.

KH: What were they?

LM: Well, the main one was - your first thing in anything like that is that you had to get ground cover, the initial ground cover. So I knew that you couldn't get snow grass or the amount of seed that you wanted to do that or any of the grasses that was growing up there, so it was a matter that you had to get trials of seeds from comparable areas. So my suggestion was that we look overseas for species and various - although some of the species were available in Australia and available commercially, but they were produced in Australia in the hotter and warmer areas - a lot in Victoria, some in the Hunter River, through there, which was absolutely useless in the mountains. So we finished up - the suggestion was that we get it from Canada, Oregon in the USA, Tasmania and New Zealand, and some eventually from Holland, So with the results I was getting seed - but then little complications that come in with that - who was going to supply it to us. It was a matter, as soon as you

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started talking to seed firms and first of all, "I don't know, we will have to see. How much would you want?" "Oh, I could want five ton of that, 20 ton of that." Of course, everybody became very interested. With the first trial that I done and the mixture I evolved - I will admit that we had a beautiful season - but it was an outstanding success.

KH: What was the mixture in that? ^{alsite ?}

LM: There was USA highland bent from Oregon, there was alsike clover from Canada, there was white clover from Tasmania - which we couldn't get very much of a supply. But from the higher areas of New Zealand which we could specify, we could get that. There was rye grass from Tasmania and there was fescue from the USA again. Then, eventually, I did get some other species from Holland.

KH: They were all grasses, all ^{those}.

LM: Well, except the alsike and white clover, they were the two clovers. But, again, I had seen ^{a small} amount of some of the other species that Betty Phillips and ~~Raeder~~ ^{Raeder-Roitzsch} had put in, but again, you couldn't draw very much conclusion because they had a property the size of this house, it wouldn't be as big as this yard, so it was very hard to tell from there. So the first experiment that I done was from Jindabyne - well, around about Pendergast ^{route} there, through to Pilot Lookout.

KH: You mean along the Alpine Way?

LM: Along the Alpine Way because that was becoming one of the critical things because there was a road there that politicians and everybody could get along and they started to complain. Of course, it was going down - silt and stuff into Thredbo and the fishermen were complaining and the parks people were complaining. So I done that and - - -

KH: Have you got any newspaper cuttings and things from that time?

LM: No.

KH: Anything you kept yourself?

LM: No, no, I never bothered. I don't know why I didn't have some. I ^{always} was ^{too} busy, I think, to keep them.

KH: So you sowed this particular mixture on the ^{road} batters and disturbed areas along the Alpine Way?

LM: Right along the Alpine Way. Then it led from that to Eucumbene ^{Borrow} areas, which was a big one. And then it ^{meant with} some of the areas - I incorporated probably Parks and Gardens landscaping in with conservation

measures; to incorporate the two. Probably to explain it better than anything, is Eucumbene dam. Now with the Borrow areas when ^{you} see it ^{cause} you can't see it now - was great cliffs, benches 50 foot apart with a roadway running along it and all torn down ^{right} completely in the subsoil. Then the dam, with the size of it, it looked a complete mess. So besides the grass cover there I decided to use radiata pine and build a picture frame so that from the Lookout, where you come down to the dam now, that you look through there and you've got the green pine coming up and you have just got the dam - say as if you were looking at that ^{picture}, which involved - people said, "Oh that would be easy enough, just plant on both side." One side you can come right up to the wall, but the other side, I am a quarter a mile nearly away from the wall, to get it, because I had taken it right up to the wall to the other side, all you would have seen was a mass of pines because they would come across. There was things like that and then the willows we used extensively. But I will say that Dr Müller, ^{Roder Ritzel} and Betty Phillips had brought a lot in and was doing a lot of experiment, but again, they didn't do - and some of the planting, they weren't selective enough. They were using - well it grew to quite large trees, rather than getting on to the floor which you had a complete mass of fibrous roots going down deep, which was going to hold, with little top on it, particularly in ^{fels} where they were used extensively. If you are getting them too high, later on with the wind and snow, tipping them out.

KH: So where did you get your willows?

LM: Well, that is where I started propagating. The material was imported to Australia, went through quarantine and then it was a matter of propagation.

KH: So you chose provinces - provinces, is that ^{the} word, from particular other parts of the world?

LM: Yes. You got material from wherever you could get it, for the species that you wanted.

KH: But to get a dwarf species, for instance, where did you go for those?

LM: A lot of them come from the US originally, higher areas. Some of them are used in the - they are very versatile - willow, ^{these} being deciduous which makes trees much more versatile for use than what evergreen species are. So then it was a matter of getting the species which was most suitable. Again you have got some species that will grow in one area and not another. Then,

of course, you had to keep in mind that they were not going to become a menace and spread everywhere. That was another thing that you had to keep in mind.

KH: How did you know about that though?

LM: Through literature and that. You found ^{their} ^{habitat} growth and what they did right through and you could ascertain that. Generally I had a fairly good idea of what was going to happen. I know at times you ^{could}, ^{luckily} in the mountains we didn't. The only thing that could become a real menace there is from gardens, that is the lupins, which I reckon are beautiful around ^[the mts] ^{I couldn't see its} doing any harm much and the one that is a bit of a menace is the broom.

KH: The broom really is getting away in lots of places, isn't it?

LM: Yes. But again, I put that down to bad park management.

KH: Especially at Island Bend. Apparently they have had spraying programmes to kill it but it still comes through.

LM: It still comes through. But instead of follow-up spray, the next year when it is that high - they let it get that high again - and then spray again. Again, they have got the same problem again.

KH: Wouldn't you almost have to dig it out with a maddock when it is small?

LM: Not necessarily. You can do that. Spraying can control it.

KH: It will kill it?

LM: It will kill it, but, again, you have got to follow up. You have got to get a programme - you've probably got to do it over three years, or even four years. The initial spraying is when your plants are like that, well, the next year, you come through in the spring - which will be a matter of hand spraying ^{with a knapsack, going along anywhere he sees one} a seedling or a tiny ^{comes} through, you do another one in the autumn and you do that over three years period and then you've ^{rid} ^{of} it. But once you let it get up that high, again, you ^{he} starting off back to ^{the} same problem.

KH: Well, they certainly haven't got rid of it at Island Bend?

LM: Well, they want the programme. It is the same with blackberries. The spread of blackberries since they have taken in there. Down at Tom Groggin, where they used to have the camp there - the Snowy camp - and the old cattle trail across into Victoria, across the river there, you can't even get into the river now. Well, again, they are on the wrong programme there. They

will come down and they'll get in the middle of the ^{clump} and they spray there and that. No, blackberries is one you have got to go on the perimeter and eventually try to work it in.

KH: They seemed to have reduced them at the old Geehi landing strip?

LM: Yes.

KH: They have cut them back there pretty well. I think that is partly because they can get at it with vehicles. But a lot of those other areas are really hard to get at.

LM: A lot of them are hard to get at and a lot of them you would have to use ^{granular} form. But some of them areas, I think you have got to create an initial problem to get rid of that problem and then you can come back. ^{See} what they are endeavouring to do ^{is to be selective,} particularly along the rivers - well, I would be inclined in those areas, like Geehi, where you've got ideal climate to take them out, take everything out and then in two years, then come in with a programme of regeneration.

KH: You mean take it all out by spraying, by poisoning, and then coming in and planting something else?

LM: Coming in and planting something else.

KH: Yes because if you leave the ground open - - -

LM: Yes, well, you are only subject to reinfestation. But, again, you could come back - though with blackberries it is not too bad because once you get ^{them dead you can burn} providing it is the right time of the year, then come the following spring with your regeneration - restoration at least.

KH: The problem the park has now, I suppose, is they can say to the Snowy, "Okay, we want you to remove these introduced species, because you brought them in there in your early townships." Even if they are successfully removed they then still have the problem of what to put there in their place. So the park really have to look at native species now.

LM: They have got to look at native species, they want that. From information that has been gained from that, that is not a big problem, particularly around Geehi area, that western side, the low areas. I don't think there is any problem in there at all.

KH: But the Snowy wouldn't have introduced any blackberry, would they?

LM: No. The blackberry was there. The St John's wort was there, the briars where they are, they were there.

KH: The ones with the little orange fruit?

LM: Yes. They were all there. They ^{escaped} as garden plants originally. They were brought over by the earlier settlers, the old dog rose, or they have probably brought another rose and its been grafted onto that and it has eventually got away. But no, the lupins, you can put that down to the Snowy and the broom, I would say you could put that down because they were garden plants probably planted around camps, or somebody had gardens. The odd one that you get, even at Happy Jacks' township, which was under the control of the Snowy, but nothing to do with it, it was built by the contractors.

KH: Where was Happy Jacks' township, how far up? There is Junction Shaft isn't there - - -?

LM: Yes.

KH: - - - down on the Tumut. How far back onto Happy Jacks Plain was Happy Jacks township?

LM: It would be about two to three mile. You know where you come - you sort of come across Happy Jacks Plains, the plateau, and then you come in and you start to drop down into - across the river where the Junction Shaft was - well just on the top of the plateau.

KH: As you go through part of the ^{Far. Bald.} mountain ridge?

LM: Yes.

KH: There is a power line that crosses the road there somewhere and there is an old hut on the northern side?

LM: Yes. Well, where the old hut was.

KH: Just near there?

LM: Yes.

KH: I must have a good look at it some time because - - -

LM: You can't miss it though. The main road goes through and there was houses both sides. Mainly the workshops and all that was on the top side - or the south-western side and the township, the majority of it was on the lower side, on the north-eastern side.

KH: And there were a few things planted there too?

LM: Well, lupins and there was a few broom planted there, but lupins seemed to be the main problem.

KH: And they were mainly planted in people's gardens?

LM: They were planted in people's gardens.

KH: Not officially - - -?

LM: No. Some of the broom was probably supplied to some of the householders from the nurseries, but, again, it was one that - I don't think - well, I certainly didn't think it would spread the way it did through the area.

KH: There are places where the willow has spread too. I notice at Island Bend, sometimes from a road batter where you get a soak in a bit of a valley, which is fairly moist, below the road batter, ^{the willow} seems to be spreading into those areas.

LM: It will to a degree that could be quite easily controlled.

KH: How would you - - -

LM: Chemical spray. They are susceptible to chemical spraying. But that will happen and where it happens probably more than anything, that you get the problem, you get a piece broken off and the willow strikes so readily, that it breaks down and you get a bit of silt coming over it and then you've got a plant coming up there. But those areas can be controlled.

KH: I suppose that might happen down most of the rivers, like Crackenback and down the Snowy?

LM: Not to any degree. It is not like, say, the seed of willow is not carried at all, whereas you have got the broom and the briar ^{with} birds feed off it and - the seed is carried by birds all over the place, droppings, one coming up here and another one over there. Before anybody realises ^{its there} there's a ^{mature} plant and it produces seed and spreading around again everywhere.

KH: Whereas willows - they do flower don't they?

LM: Yes, they flower but it is a minute seed.

KH: It doesn't fly away?

LM: It doesn't fly away to any degree. And again there is a very low germination rate with willows.

KH: So when you imported them, you actually imported cuttings, did you?

LM: Well, yes, there was cut-off plants. Most of the species - well, they were imported before I took over the soil conservation. So I had the supply and then it was working from there, what species I wanted to propagate.

End Side 1, Tape 1

Side 2, Tape 1.

KH: So once you had a few going you could just cut them up, as it were, and stick them in the ground?

LM: Oh yes. At the height of soil conservation we were producing over a million plants a year.

KH: What year was that?

LM: Probably be in the mid to late '60s. That was about the peak of all the work going on. You had some of the areas just finishing, others coming on, but you were still coming into other problems there, areas where you didn't use willows, or avoided using ^{them} and tried to get something else. You got some of the creeping willows, in the ^{very} sensitive areas - when I say " ^{very} sensitive areas", the Geehi aqueduct, ^{that} was a very sensitive area.

KH: Below the main tops?

LM: Yes, through into Lady Northcote ^{canyon}; through the tunnel there. That had to be special thought go into what was going ⁱⁿ there. Again, that created a lot of problems, not only conservation wise but engineering wise. There was one area ^{that} we discovered ^{it} was moving, the whole thing was moving, that sort of thing. There was ^{other} areas where the sheer bench went down - when they cut into the rock there you could see that from a hundred mile away nearly and particularly ^{the} plain, that had to be camouflaged - not so much camouflaged as probably blended so as that it would come in. That was one of the areas where I just used bitumen with some additives and I sprayed the rocks to try and blend them down, to get some - - -

KH: ^{Didn't put any} seed in?

LM: Well, you couldn't, it was just sheer rock, 20 or 30 feet or something. ^{Other} areas you had fills of probably 200 to 300 feet, more or less straight down. They certainly had to be grass, get something onto them. But again, part of that area was much kinder and there was a lot of the native stuff that you could get. What I did, after initially starting, with all the mixtures and seed, I used to collect native seed wherever I could from particular areas and I would incorporate that in the seed that I had. Another one you would get branches.

KH: What sort of native species?

LM: Well, whatever was growing in that particular area. You would get those species and incorporate ^{them} with the introduced seed that you are planting out. In other areas you would probably get a branch with a seed just about mature on it and you cut a bit off and throw it down over a bank, probably just *pin it*. there ^{so that you have them you} ~~some of the seed~~ and get germination.

KH: One of the stipulations was, I think, when they were about to work in an area they had to take off the top layer of the mother earth, as it were and put that aside and that was to be spread out again once the construction was over. Now, I presume that there would still be some seeds in that, that might germinate afterwards?

LM: There were seeds in that that would germinate, that was one of the things. But it was one of these things that was not possible. It was possible in theory, but in practice it wasn't.

KH: *I see.*

LM: For instance, coming back to the Geehi aqueducts. You took the top soil off, where were you going to store it because you were working on the minimum of disturbance, so if you have had to clear an area to put topsoil there, then the access in to bring it back ^{after}. So where it was possible and practicable it was done, but a lot of areas it wasn't possible.

KH: So the area was narrow and steep and you just had to bulldoze through and forget about the top layer?

LM: Yes, you just went through. It was there just wide enough for the trench for the pipes to go in and an access along to there. *So* you had nowhere to try and store stuff or put it over because as soon as you went down, it disappeared down the bottom into the gullies.

KH: And it wouldn't have been worthwhile to truck it out, I suppose, to another site because that would be expensive?

LM: Well, it would have been expensive and how far you had to - and again, I have always found with top soil that if you take the top soil off somewhere you have got to incorporate it with the other soil you have there, whatever it is. If you just try to put a layer on top of there, well, the first big storm of rain you get, it has disappeared, it just slides off, whereas if it is incorporated you do get it there.

KH: So you ^{ve got} to spread it and deep ^{rip} afterwards, or something like that?

LM: Well, yes, to try and get it. But I found with trial and ^{error}, with the various mulches and that type of thing, was just as good or probably better than trying to bring the top soil back in. So when we originally started off with the mulching, we had them spreading hay by hand and then pumping bitumen out of a 44 gallon drum with the hand pump - the blokes completely covered in bitumen everywhere, head to foot - and then eventually we got the machine imported, which proved very successful. But in the early stages there were many methods tried. There was what they called brush over it, poles over it, all sorts of things. Poles were used in places to stop flow off to get them around. But, again, poles rot and again you ^{have} left hazard there with nothing growing on it. That was one of the reasons why I used willows extensively and I used them on what they called horizontal planting. I put *bundles* of willows along like that and put them in various patterns so instead of the water running straight down, it ^{ran} down the fills, through living growth. And then as the growth come up it was collecting the silt, leaves, rubbish and everything, which was eventually building up ^{the} humus and soil on top of those areas. You still got some problems with water coming through, movements. There was a couple of tragedies on the Geehi aqueduct with pipes breaking.

KH: Tragedies in terms of people actually ^{being} injured?

LM: No, from the conservationists side. You get a pipe broken and by the time they get up there you have got a great gorge and half a mountain missing, washed away, and what are you going to do with that. I had a few of them. Then you have got things, through bad drainage and that. I had one with Khancoban dam, we thought it was leaking, bad seepage at the bottom and everything, everybody worried. In the finish we worked it out that the way it would be finished off down stream, they were getting the water back in - and we cured that with rubble drainage.

KH: Khancoban?

LM: Yes.

KH: That is below Murray 2, is it?

LM: Yes, the one right at the township, near the ^{air strip}, the wide one.

KH: I see.

LM: As soon as you come in there is water everywhere below the dam. That caused a little bit of a panic, eventually we found that out. I had problems like ^{that} Another problem area was Talbingo dam where the core material came out the mountain there which had originally been a slide, a mountain slide. If you looked back it's sheer down and *this-hill is back*.

KH: Which one was this?

LM: Talbingo, Tumut 3. That was very steep. Well, we had to do that with 50 foot benches, slopes and benches, for access along. We were about half way along that and ^{it} that started to move, the whole mountain, which became quite a problem because we thought if the mountain went there would be no more *Tounama* dam or there would be no more Blowering Dam because the amount there would go in ^{it}. Eventually by, again, rubble *drains*. and various methods of drainage, we did stop it. That was a ^{very} eye sore. We couldn't plant trees or anything upon the slopes, not only because they were too steep, but because it was an unstable area. What we had to do was to plant trees along the benches, those 50 foot benches. They would go up and camouflage the other area with low shrubs and the grass - - -

KH: What sort of trees did you plant on those?

LM: Local area, mainly eucalypts, the ^{er} low type of eucalypt. Some of the tea trees, the *leptospermums*, we used some of ^{them}, whatever I could get around the area.

KH: Could one say that as the Scheme went on the percentage of natives used became greater, in your time?

LM: Not particularly because we were still going on, we had to restore the area in the shortest possible time. Now, there wasn't anything that you could get - the amount of material or anything - and get that quick result, initial quick result that you were going to use the natives. You incorporated natives wherever you could and, as I said, probably I was getting more seed. If I went around in my vehicle and I'd see something in seed, I would get - I usually had a couple of containers - I would get a couple of containers of seed and I'd be driving along and I'd get out somewhere to have a look at something, I would just get a hand full of seed and scatter it through the area there. Well, I probably didn't have enough seed initially and, again, eventually you could see it from the earlier work, you could see where the native vegetation is gradually creeping back in, coming back in.

KH: What were the species that were best at that, ^{can} you remember? Like which were the native species - after your initial stabilisation with introduced species - - -

LM: Well, what I endeavoured to do all the time was to get the species that was growing in the particular area. I didn't, at any stage, sort of say, "Well, I will introduce something else in there" because the agreement was to restore the area as near as possible back to its natural state. So if you were going to introduce species, say, from the eastern side onto the western side, well, in my opinion, you just might as well use *exotics*. ^{because} *You were using* something else. So I endeavoured all the time to try and keep the species that were there and in collecting seed that is what I did, most of the time.

KH: Did you have other people doing that too?

LM: Oh yes, I had ^{a foreman and} workmen at the scene, and particularly when you were clearing a new area, if there was any seed, or anything with seed available, get some of it and scatter it around and a certain amount of seed collection with it. Then you would come into problem areas with that as well. Now, I said initially, the initial one that I did was the Alpine Way. Now there was one area where I just couldn't get in. It was from what they used to call the Siberia camp around to Pilot Lookout and Dead Horse Gap, going around there, which was very severe, cold, bleak. I planted in the autumn, got no results, the frost ^{got} it off or ice lifted it up. If you planted it in the spring, well, it got like a furnace ^{(in the summer) you got} and nothing. So eventually, from some information I read somewhere, I decided I would plant ^{on about eight foot} around ^{of}

snow, on top of the snow, and got excellent results, which in theory was that the weight of a seed will go through the snow, right through to the ground. As soon as your thaw begins to start, with needle ice and the thaw itself, it lifts the soil just slightly. As it comes down, the thaw comes, the soil settles back down with your seed under your soil and your germination as soon as that has disappeared, and remarkably your ground is not excessively cold, where you have got heavy snow underneath. *There is a*

certain : warmth in the soil, with the result ^{that} by the time the thaw went you had your germination and by the time you got that hotter weather, you had good root growth and you have a nice top growth coming on it with the result I got very good successes with that, which was another ^{thing} that was adopted by people in many different places. Of course, the other thing that was a big problem when I went there, was to get a soil analysis. That was to see what was missing in

the soil because you were dealing with subsoils all the time, you weren't dealing with top soils, you were dealing with subsoils. So nobody knew - and as remarkable as it might seem, at that time you could not get a complete soil analysis in Australia, so I had to send it to New Zealand. Well, it didn't create any problems, it worked out, but eventually Dalgety's did open a laboratory in Melbourne.

KH: No university could do it?

LM: No. Well, the first one said, "CSR will be able to do that for us." "Very sorry, we can't do it, we haven't got it." Well, that was all right, you got that, so you found out that you may have a shortage of nitrogen or phosphate, potassium, certain trace elements of something. Well, once you got that, the initial thing, people would say, "All right, you put that in the soil." But ^{it's} not quite as simple as that. You probably find that you've got a shortage, say, of potassium, you have got an excess or more, a surplus, of potash. But to see whether that is available you also have to have a complete herbage analysis. This is treated through and then burnt and from the ash and that, to see what you have got in the soil and what is available to the plant, is it in an available form. As I say, if you have an excess of phosphorus and then when you get your plant analysis, you've got a shortage of phosphorus, you realise that ^{it's} not available, I've got to do something to get that in an available form to the plant. So this come along. This involved sending all this to New Zealand, wait ^{ing} for it to come back. Then, the problem came up, where were you going to go and get these mixtures that you want. Now you may have 7 lb of boron to the acre, you may have 3 lb of magnesium to the acre. Now what was you going to do, how was you going to spread that over an acre. So, again, you had to have them in mixtures. Well, again, this came to the thing, where are we going to get it? So it was matter of going around to the suppliers to see who could do it, in what form. Then I came to the conclusion - clovers were all right, we were inoculating and pelleting them - then I got the idea of pelleting grass seeds, again, in these areas, to get an immediate availability of plant nutrient as soon as that seed germinated, which I knew in some areas it wasn't happening. So then it was a matter of experimentation that you had to get somebody to mix these. Well, not so much mix them but, again, to process these fertilisers or ingredients that you wanted, chemicals that ^{you} wanted, in to a fine powder form that you could coat your seed with. So that involved quite a lot more *people*.

KH: This is very innovative stuff, isn't it?

LM: ICI and most of the firms, Australian Fertiliser, were a great help. It was the same with the seed firms. Once they realised what was happening and they could be involved in it - with that, other Conservation Services in Victoria and New South Wales, were getting a little bit more involved and they were wanting to know the methods we had. I had a policy of getting to know all them and seeing what they were doing in various areas ^f I could adopt any of it in the Snowy Mountains area, and again, it was vice versa, so it became a very close liaison between the various organisations to cooperate with one another and try and pass on because, again, we had no knowledge. We had theory that you could root from somewhere, but again, you had to have the knowledge, and the area was so diversified, as you realise yourself. You come from Cooma with a very low rainfall, you get up around Jindabyne and that eastern side where it is dark and bleak, you get in around Thredbo, Perisher, those areas - Thredbo particularly - then you get down on the western side where you come into the rain forests, high rainfall areas, parts of Geehi area, where you've got a 90 inch rainfall, which is all creating problems one way or the other and you had to try to counter those - not only counter them but get the results. That is one of the things that

not clear → [Hudson]. . used to say, "Well, all right, try it. You've got that, you're in it, but you know what will happen if it's not successful." So that was it.

or commissioner KH: Were there other parts of Australia at that time that also required - that had similar problems - that also required solution in terms of soil conservation?

LM: Oh yes, there was areas all over Australia. Even in Victoria there was a big problem at the - you've probably read about it - the Epallock Dam, where they had tunnel erosion. The first dam that was built silted up in a very short period, where they had to build a second dam.

KH: Which was that?

LM: Epallock?

KH: Is that near Melbourne, is it?

LM: Where it was tunnel erosion.

KH: You mean under the ground, under the surface?

LM: Under the ground. You could be walking along and you'd disappear down through the ground, it was decomposed ^{granite} area and it was just disappearing and they couldn't work out where the silt was coming from.

[They topped]. a few gutters and then realised the extent in the *Catchment* of these tunnel areas. They had problems like that.

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KH: How big was that dam that silted up?
 LM: It was quite a large dam.
 KH: As big as the old Cotter Dam?
 LM: It would be bigger than the Cotter Dam, I think.
 KH: Bigger?
 LM: Yes. The Victorian people and the New South Wales people had problems with the sand dune. Well, they were doing a lot of experimental work of various types, using various mulches, and all that. We were keeping in touch with them, on inspections. There was a close liaison all the time. They brought in this cotton seed, in the ^{coastal area} sand dune, which was really handsome, but now its a noxious weed.
 KH: The *one from South Africa?*
 LM: Yes.
 KH: *Bitou . . . bush, I'll say.*
 LM: This is what can happen in conservation. You think, well, the first trial you put in you think, that's all right, that's ideal, that's good and then the next thing you realise it is a menace.
 KH: What is the worst thing that you think, the one that was your biggest mistake, as it were, in terms of introduced species?
 LM: Probably the only one now that I would say, would be the broom. The other species, I could control everything that was used. Probably in hindsight, do a few things a little bit different, but not - - -
 KH: What would you do different? With today's knowledge, especially the way natives have come back into people's minds and are being used and propagated and so on, with today's knowledge - assuming you have kept up with some of these developments - how would you tackle - ? -
 LM: With the initial treatment I don't think you could have done anything different.
 KH: You would still have a mixture of grasses?
 LM: Yes, mixtures of grasses and all would have been still the same. There is one or two grasses, I think, that they have got in at the soil conservation area that is coming, but initially you could not. It would be more or less mechanical means that you would probably do a few things, but not that much, because you couldn't do it that much different. With your mulching there was areas you could get in with a mulch ^{er}, there was other areas that you couldn't get in. Again, in hindsight, ^{well} you could have done a

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lot of areas quicker because, for instance, instead of all the early trial that we had with brush matting and all that type of thing, we would have probably used mulch straight out.
 KH: *Oh* would you?
 LM: Yes. Well, we didn't have - the mulch hadn't come - that was the first thing we thought of, doing this, it would be good. But, again, it created certain problems after, maintenance problems. But, again, there would be some areas you could probably use aircraft more so than what we did, or what we used to.
 KH: Aerial seeding?
 LM: Aerial seeding does agree, but more or less fertilising, maintenance fertilising. As I say there was techniques that we developed which have been adopted all over the place now, and some of the machines are more efficient, that type of thing. One of the things that I had to decide, that you've got to fill 100, 200, 300 foot down, nearly like that, you couldn't walk up or down it hardly, how was you going to get seed down there. If you had a man, well, you had to tie him onto a rope and swing him along. So I invented a blowing machine - a *Heath-Robinson* type of thing. That has been modified now, somebody has taken it on.
 KH: The big blower thing that I've seen photos of?
 LM: There is the mulcher and then there is the seed one.
 KH: One that they use with the hay and tar?
 LM: *I invented* Then [^] another one for seed and fertiliser.
 KH: Which had a finer nozzle?
 LM: A finer nozzle and it was lower down, it wasn't a big machine. You had a hopper in it, a little engine there, and a blower fan blowing it out of the hopper. You could tilt it up or down and you'd just run along the edge and down and blow it. It would depend how fast you had your engine running, how far you would blow the seed.
 KH: That would blow quite a long way?
 LM: Yes.
 KH: It did get to these areas that were very steep and inaccessible?
 LM: Yes. That's been improved. There were several improvements I did myself over the years ^{that} I was there. The first one - and this was the sort of thing - to go along and say "Oh, I want something to blow seed there." Engineering firms would look at you - "What are you talking about?" You just couldn't get them interested so you had to come back to your own workshops and

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? try and decide. It was the same with the inoculation of seed. You had to get some of the firms started to, but you couldn't buy a machine anywhere. You had to go back to your workshop, take your workshop foreman down to this firm where they were using one and say, "That's what I want built" because with inoculation and coating the seed, with freight and that, it would cost you a fortune. At that time the only place you could get it ^{done} was in Sydney. So you had to get your seed from one place, send it down to the firm that was doing it - well, you'd get some done - then back to the railway again and back on again.

KH: What does the inoculation do?

LM: The inoculation with bacteria, with your clover seed and *rhizomous* plants, you've got a bacteria which extracts nitrogen from the atmosphere into the soil. This helps to build up your soil nitrogen and your bacteria. But, again, if there is no bacteria, or a limited amount of bacteria in the soil, well you can introduce it on the seed and then as the seed develops you get the bacterial nodules coming on with it. Then you've got to seal that bacteria in around your seed which is done with lime and you've got a special machine to do with that.

KH: They are tiny seeds, aren't they, clover seeds?

LM: Some of them, yes. If it is done properly each seed is coated individually, there's not a clump of it to get, they are sort of individual seeds.

KH: How do they make sure they get that done?

LM: Well, it's just the operation, the technique that you use and the operator that is doing it in the right technique and the right way and that your barrel is revolving at the correct speed, things like that.

KH: Otherwise they would easily coagulate into balls, I would think.

LM: Then you come in with - mechanical wise you've got to think of. If you've got 500 or 600 thousand willow trees to dig every year, it takes a lot of digging if you've got to go round to think of some kind of machine that could do that, so we evolved a tree digger there - *improved* them all now, but at that time there was nothing available, so we had one *on* the back of a tractor that went along. It was just a loop, like a big *U*. Put that on the back of your tractor, went straight along, then all a fellow had to do with the spade, just get down between each plant and pull it *out*.

KH: This is from in the nursery?

LM: Yes. Then they went from there, re-pruned into the field.

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KH: How innovative. You must have had so many inventions up your sleeve. Did you take patents out for these things too?

LM: No. Well, it was all the Snowy you just thought. I think it was - I could say it was wonderful years of our lives. You had to use your brain and you had ^{to} evolve these things and there was great satisfaction when you seen the results.

KH: How many years do you think it took for you to get on top of it? You know, things weren't going too well in '55 when you started.

LM: I would say by '60, I know there was problem areas. But I was quite confident that any area that was coming up, that we more or less had the answer. We had the answer, generally, I would say that, but we still had problem areas within that area that needed specialist treatment. Well, not so much specialist treatment as special treatment. You would find an area where you could do - say this floor - that you would get an area there - *chemical* - *or* water - so many physical things that could be wrong so you've got to go in and do some special treatment in that area. But, generally, that was it. I felt confident with the species that we were using, the amount, and certainly the staff that I had, became very efficient.

KH: What size did your staff grow to?

LM: It varied. At one time, I suppose, I had about 300. They had various jobs all over the place. Then, in between doing that work we also had conservation *on* the power lines and the fire trails. So every power line in the Snowy scheme had to be inspected, at least, three or four times a year, every fire trail had to be inspected at least twice a year, and then you had whatever work was necessary, or *maintenance*, or whatever had to be done on those trails. They were quite a big job because the conditions then, as you realise, if you come from Cabramurra following the power line here to Canberra, down this side of the Brindabellas, or to Yass, going Cabramurra to Corryong, to Cooma, you had all these right through and then you had all the various fire trails.

KH: And they had to be inspected?

LM: They had to be inspected because, again, we had to be careful of fire and, again, it is in the agreement - well, the transmission lines we had to maintain, but the fire trails I often wondered ^{whether} they just pushed a little bit more onto the Snowy than was necessary. But, again, in case of fire, to protect the Scheme, they just had to be done.

KH: They were put in by the *Hume Fire Prevention*. *People weren't they?*

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LM: A lot them was originally the old bridle tracks, or stockmen that was there. They'd have an area ^{where they'd gone down} they would have an old bridle track or something near them and that become a fire track. But they were a problem but as far as changing anything, I don't think ^{there} would be a great lot. I must admit I had wonderful cooperation, not only from the Snowy engineers but from many private firms, not only their executives but their scientists. Everywhere, it didn't matter where I went that I got full cooperation right through. Probably we introduced a lot of methods which are now prominent throughout Australia, you see them used. Some of the things were unusual. One funny one, we had big problems with cutting lawns - coming back on the Parks and Gardens side - in Cooma. I happened to be in Sydney and I ^{an} seen a big forest harvester that had been imported, with 11 foot cut. You can imagine what that was like, a forest harvester firm. Apparently he imported it for a farmer and when he seen it he reckoned it was too big, wouldn't do anything. Eventually I bought it off him for the authority to cut the lawns in front of the head office there. There's this 11 foot forest harvester with a big trailer behind it. The Commissioner one day rang up and wanted to know that there was some old farmer up cutting grass in front of the head office, I had better come up and see. He hadn't realised that I'd bought this to cut lawns, and it cut lawns very efficiently with the result I was keeping all the lawn clippings, which gave me a very good source of mulch and compost for using in the nursery where I was planting the trees. So I was utilising from there. There was a lot of innovations like that that came through.

KH: It sounds like you worked more than eight hours a day?

LM: Well, that's the thing. With hours - I think I was supposed to start at 8 o'clock and knock off at 4.12. But as I said, if I was out at the back of Cabramurra or Perisher at 12 minutes past 4, what do I sit there until 8 o'clock next morning or do I carry on and do that. There was a certain amount of give and take with the Authority, that if you wanted a day off, or again, if you were inspecting a transmission line and you got to the top of the Brindabellas out here and you lived in Cooma, what were you going to do, stop there or was you just going to come straight down and drive to Cooma. In another couple of hours you would probably get home at 7 o'clock.

KH: Did you camp out at times, or did you - - -

LM: In the regions, but - - -

KH: The camps in the regions, there was always - - -

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LM: There was always camps there.

KH: There was always a bed available somewhere.

LM: Yes, there was always a bed available. You knew, for instance, take the Geehi aqueducts. If I was going there and I had to inspect the aqueducts, well, a lot of the areas you had to ^{walk} and go along. You couldn't drive from Cooma and expect to do your job and inspect the whole area and come back that day, so you'd stay there that night. You would have discussions with whoever was in charge, the engineer in charge, passing on to the workman, the foreman, the supervisor, that you had there, what you wanted done, or what should be done, or what he'd done wrong. It would happen that day. You would spend quite a bit of time in the regions at the various places. I did use aircraft extensively.

KH: For yourself, to fly around.

LM: Well, had the pilot flying around. If you wanted to ^{do} inspections and that, it was an excellent way of inspecting an area. You could pinpoint something and put it in your note book. Then you'd just come back and say, "All right, I've got to go out to such and such a point." Instead of driving around the whole area, you might be driving over and you see a transmission line, or a fire trail, or an aqueduct or something somewhere where something had happened that you didn't notice. So instead of going along the whole lot you could just drive to that spot and see what was happening there.

KH: Did you use helicopters at all?

LM: No, we didn't have any helicopters. Towards the end the park had one, they hired it. They did hire them a couple of times at the Geehi aqueduct ^{Canyon} Lady Northcote, to get some of the stuff in there. But as far as any of our work was concerned, they didn't. In the end the soil conservation was using a helicopter to take straw and mulch and that to the higher areas around Carruthers, Townsend, through there, they were using them, but we didn't at all. Most of the areas we did have access roads in to do whatever the job was, so it meant they weren't necessary.

KH: The high tops were done by the Soil Conservation Service, weren't they?

LM: Yes.

KH: Like Twynham and Carruthers, that was quite separate in a way, wasn't it?

LM: Yes.

Len McInnes

KH: Although I imagine some of the things that they discovered were of benefit to you elsewhere?

LM: No, it would be more or less the reverse. What we were doing was beneficial to them, because again, there was nobody - that was one of the things - there was nobody in the Conservation Service that had any knowledge. Then the officers that they brought there, eventually, they picked up a bit. Well, again, there was very close cooperation between the Snowy and the Soil Conservation, so what one was doing the other was doing, there was intermingling and discussion, fully, before it started. This come with the parks as well. There was a quarterly inspection of the whole area which consisted of representatives of the authority, National Parks, and the Soil Conservation Service. These were usually a week conference. You would go and inspect (a), (b), (c) areas. Then you'd stop at various places in the region and each night, or evening after that day, you would have a conference on what had happened then and then the last day of the week ^{there} would be a general conference of what had happened and what had been discussed. Then the representative from each organisation, there would be a general report written, sent to them for their comments, and that would go to the Parks, Soil Conservation and the Authority. Then the Parks may say there is an area there, we would like something done. Well, you would know by the time the next conference is on that would have to be done because the Parks would have that on their agenda.

KH: You would have that once a year or something?

LM: No, about four meetings a year. Yes, there was very close cooperation right through. But, again, the thing happened with the Parks, they had nobody that had much experience. You see, the first director was only about the time - or after the Snowy - the first superintendent, at least, was Neville ^{Gare}. You see, before then there was a few old stockmen and that, rangers that did a bit here and there and just the Lands Department - they had a Lands inspector here and there that went out and had a bit of a look and have a chat to the old lessees. and the graziers. Tom Taylor was one of those.

KH: And Frank West, I think?

LM: Yes, Frank West. Frank West's sister married an uncle of mine, so I knew Frank well, and through that area. Then there was a chap in Cooma who died, Bob Ross, he was one.

KH: He was a ranger, was he, with the Lands Department?

LM: Yes, for the Lands Department.

Len McInnes

KH: Did you have anything to do with Sam Clayton?

LM: Oh, I had a terrific lot of work to do with Sam, right from the time that I took over. Sam was retained as consultant for the authority and I did a terrific lot of work with Sam.

KH: Do you have his address in Sydney at all. I am assuming he is still alive, because he got a special award some time ago?

LM: Yes. It's Mosman, but I can't think of his address, I lost it somewhere. I've asked two or three in the Soil Conservation to get it for me, and I've asked a couple in the Snowy, but they've changed now, I don't know. There's a very good little pamphlet of his - I don't know whether you've seen that one on the Snowy Mountains that he put out.

KH: Just recently?

LM: No, a few years ago. The other thing, we also had close cooperation with CSIRO down here, with Frank Healy on clover inoculation, Alec Costin, another one. A very close liaison on a lot of work out at - quite a *few* trials with Frank Healy on clover inoculation in the high country. In fact, there is a couple of pamphlets out on it. That one was one that Sam done in '67. I did quite a bit with Sam on that, when he was doing that.

End Side 2, Tape 1.

Tape 2, Side 1

LM: That was one I did in Burma.
 KH: Did you work with SMEC for a while?
 LM: Yes, as a consultant.
 KH: Right, just very recently?
 LM: Yes.
 KH: So you have been over to Burma?
 LM: Yes.
 KH: I was going to say, the ^{Kiewa} River Scheme was on pretty early, wasn't it? It just occurred to me, they must have had to solve some problems there? They were earlier than the Snowy Scheme, weren't they?
 LM: They were earlier. Well, it wouldn't be that much. But, again, it was a kind^{er} climate where that was on.
 KH: A bit lower?
 LM: Yes. It was the same, the Hume where you came on. Tallangatta - when they increased the Hume Weir, Tallangatta had been shifted. It was a much kinder area. You see, nobody had ever got right up into the high country where the Snowy scheme evolved and that was where different techniques had to be adopted. Otherwise, if it had been in those lower areas, well, there probably wouldn't have been the problems. Although there was still problems with technique and methods and that, they were always evolving. But, again, you had a general idea what would grow in those areas. You see, the Hume, right through there, through Tallangatta and that, was all cropping areas and improved areas, they knew what they could use. Again, the same with ^{Kiewa} to a degree, that you wasn't getting right up into the high country and the exposed country. You see, the western side of the range is actually, although steeper, is much kinder than what the eastern side is.
 KH: Because it's wetter?
 LM: Yes, more moisture. Certainly steeper, you've got problems there as well. But, again, you can get more done, and again, although it is higher, where you've got certain expanse of your snowline on the eastern side, it drops very sheer on the western side so you're coming into a much better climate there than what you are otherwise.
 KH: Did you ever come across Baldur Byles?
 LM: Yes.
 KH: Did you have much to do with him?

LM: Oh, a reasonable amount.
 KH: He was a forester, wasn't he?
 LM: Yes, he was a forester. He had very strong ideas himself but he would listen to what you had to say and he would pass comments. I always found that we got on very well. Another one that had a very big interest in the park and wanted to know what was going on was Sir Garfield Barwick. He was a great friend of Sam Clayton's. I always got on well with him. Tom Mitchell over ^{at} Corryong was another one. I found that all these - a lot of people said some of them were against this and some were against that and some were terrors, but I always found that I got on well with practically the whole lot of them. I put my point of view and what I thought and I would listen to what they had to say. A lot of the times I would think I had the answer and if I thought they were wrong to convince them that they were wrong. And if I felt that they had something that was worth trying, well, I certainly did it and I acknowledged that it was successful, which I think was the whole success of the work that I did in the Scheme. I know that I probably did the work but there was a terrific lot of people that assisted me, advice and criticism - I had a lot of criticism but mainly it was all constructive, which was quite good.
 KH: You must have been very dedicated, it sounds like you were?
 LM: Well, I suppose all my life - my ^{grandfather} used to have a saying, if you're getting a fair day's pay, you do a fair day's work, and that has always been my attitude and still is to that degree.
 KH: What year did you retire, did you retire from the Snowy?
 LM: I retired when the scheme finished in 1971, as the Scheme finished. I took over the Snowy nursery for three years and then I sold it and retired - well, I won't say retired completely.
 KH: You ran the nursery commercially then, for three years?
 LM: Yes.
 KH: For people in Cooma and so on?
 LM: Yes. Well, I was making up my mind what I was going to do. I was still retained - well, I still am to a degree - retained as a consultant to SMEC. I still give a lot of talks and lectures, some ^{on} conservation and a lot on landscaping.
 KH: Around Canberra?
 LM: Well, around Canberra and away. And judging is one of my hobbies, I do that all over the place.

KH: Judging of gardens?

LM: Gardens, flower shows, talks and lectures. I was at Cootamundra last Saturday to give a talk to garden clubs of the south west. Then I'm tied up here with the Horticultural Society, and the last edition of the Canberra Gardener, I got involved with the rewriting of a lot of that. I'm still keeping my mind occupied.

KH: And you mainly ^{lived} in Cooma?

LM: I did, in Cooma.

KH: Do you think in the camps, out in the hills, not in Cooma so much, camps like Island Bend and so on, do you think there were many pets, like cats or dogs?

LM: No, not excessively, I don't think. There was a few around but I don't think they caused that much problem. They probably increased a little more from the ones that was around there for as long as you can remember. I remember when I was boy you would go out trapping and that and you'd get the cats in the traps.

KH: You would?

LM: Oh yes, right through the mountains there. They went through there - the same with the dogs. I know they call them dingoes but half of them are half bred dogs and dogs that had eventually gone astray through the areas there. No, I don't think you could say to any degree as far as pests. But there wasn't that many with dogs when you come to think of it. The townships there was a few but not a great lot. I would say you've got a bigger dog problem here in Canberra than you ever had anywhere in the Snowy Mountains.

KH: I am particularly interested in pets getting away and becoming wild or kittens being left.

LM: This thing probably happened, but as I say, as long as I can remember trapping in that area you would get wild cats caught in - a cat will get around probably more than the dog and they seem to breed more than the dog. You've probably got more of them through the mountains than what you have dogs. Again, there was control, to a degree, on dogs because they caused stock losses and probably where the cat was hurting much that you could see, I know they were certainly doing damage to native species and things and birds and that, but not to stock that they used in the mountains.

KH: What are you earliest memories of the condition of the mountains?

Like I am trying to get a comparison of what the mountains were like when you first went there and what your most recent visits were like?

LM: Well, initially - - -

KH: Like the condition of the catchments, for instance?

LM: Some of the catchments were very bad, particularly in the high country, above the tree line, or up about ⁴⁵⁰⁰ feet - I can't think what it is in metres now. Some of that area was bad. I know it's all been put down to stock. I don't think that the stock were entirely to blame, probably to start it was to a degree. But then the weather conditions, in conjunction with the stock, I think, caused it. Those areas I always felt - and I was one of the ones that was always for them - that stock should be excluded from those areas and restoration carried out, which the Soil Conservation has done a wonderful job on restoring that area. Because if you had seen and had a look at some of the photographs, or seen one of the early Snowy Soil Conservation films, you would realise what that was. But, some of the other areas, and the lower areas, in my opinion, the areas are deteriorating.

KH: Now?

LM: Now. And deteriorating very quickly. And I do feel that in another 20 to 25 year - we can call them national parks, but I'd call them national noxious animal and weed reserves because we haven't got the resources, we are never likely to have the resources in that relation to manage them, and I think, I feel certain, that the national parks have the wrong policy altogether. I am not against them, I am all for national parks and wilderness areas and very sensitive areas, yes, to keep them, but other areas - and this applies to Kosciusko National Park - I think there should be a complete management scheme drawn up of stock in certain areas, there could ever be logging in certain areas, providing that it is strictly controlled and monitored before, during and after operations. Otherwise the spread of these noxious weeds and noxious animals - particularly the pig - is absolutely frightening in my opinion, when you go around and see and realise the damage that has been, and is being done. It is getting completely out of control. Now, I think in the early '60s, we did a survey with the Department of Agriculture for New South Wales, their weed section, for control of weeds, noxious weeds, in the Kosciusko National Park. Now, that was just before they took all the area on the western side, which includes Blowering Dam, all up through there, the main park. And the estimate at that time, which was too much, was £280,000, initial treatment of noxious weeds in the park. That was

a very conservative estimate, but it was taken up with the Department and it was far too much for them. Of course, the authority wouldn't contribute to that because any areas that were under the authority control we also did control noxious plants and animals in those areas while the scheme was in progress. But, it is absolutely frightening and I think that if some people went around - and I'm not talking about these ^{splinter} groups who say, "We should have a park and nobody should be in it" but somebody with sound thinking would realise that we are creating one of the greatest tragedies - they can talk about logging and chipping and that - that is going to be nothing to what noxious animals and noxious weeds are going to be in our national parks in the next 20 to 25 years.

KH: So would you consider areas like some of the plains around Coolamine, Long Plain, as high as that, as areas that might be problematic, or would you mainly consider areas like the Blowering Dam foreshores?

LM: Well, the Blowering Dam foreshores, Happy Jack Plains, which is quite all right. ^{You} restrict the area, you restrict the number of stock that goes on. They have got to have strict inspections and it has got to be done, no mucking around with it, and get a complete plan of management. I know they figured they've got it, this and that and something else, but we have got to bring somebody else in to assist in the management of these areas and until such times as we do get the finances, that it can be managed by the park themselves.

KH: You don't think there ^{will} be adequate regeneration of native species which will turn some of those areas back into forested country with an understorey of shrubs and so on?

LM: Not with the spread of the noxious weeds.

KH: You think the noxious weeds will spread and won't allow - - -

LM: I don't only think they will, they are spreading, they are that thick in places. Probably the two main ones in the park is blackberries and St Johns Wort. They are down through Lobbs Holes and through there. You can't drop a pin in the ground through St John's Wort. The western side the blackberries are there and are taking on, and the pig menace. Well, anything that is coming up the pigs are rooting it up. In fact, areas go out through the ^{Blue} waterhole and ^{Nungar}. . . down through there, you would think they had taken the area for cropping, the way it is - not a few acres but hundreds of acres completely - - -

KH: What would you suggest about getting rid of pigs?

LM: Well, it's going to be one of the hardest problems that they've ever had. Actually it was on Countrywide last night, the pig menace and trying to get rid of them. The programme was on exotic diseases and what would happen if foot and mouth got in. The biggest problem that they've got - and the one that they are really worried about - is the pig. It becomes a very cunning animal, more so than the dingo, I think, or the wild dog. To get him - and in the mountains, it is probably no so bad out in the open country where you can go over with the helicopter and shoot them that way - but you've got to be on foot or horseback or something like that in the mountains ^{for} shoot ^{ing}. From a helicopter it would just be completely impossible - poisoning. There are so many habitats and that and they hear a noise and a pig ^{can} hide himself very effectively. It is going to be a real problem.

KH: They've done some trapping I think?

LM: Well, you can try traps and that, you only get a certain few and pigs breed nearly as well as rabbit. The rabbit, in a lot of places, is becoming a menace too.

KH: Yes, it's coming back in, it seems to have overcome the myxomatosis - - -

LM: Yes, it ^{is} coming in to - myxomatosis in a lot of areas. In a lot of areas the rabbit is coming back in. There is a problem. This is where I feel that the parks people should be looking at a plan of management with somebody else and say, "Well, you take that. If it's grazing you can put 'x' amount of sheep on, you can graze to there and you can graze to there and if ^{[you exceed} the conditions] you are out straight away and a heavy penalty."

KH: Those people would also be in charge of keeping the noxious weeds out?

LM: Yes, that would be a part of their - the noxious weeds and animals - it would be a part of their management, or their lease. You could make the fees reasonably low so that it would be covered. But, again, this would do it. The same, say, for timber or eucalypt logs or something, say that an area that - that successfully this could be logged, but only certain trees. Parks goes along - "That tree, that tree, that tree, can come out, that can't. You have got that area there that cannot be touched, no traffic or anything in it" which could be a sensitive area along a creek, or swamps or peat bog, or something else like that, that is excluded. It is similar to what they should be doing with the wood chip. I just gave a couple of lectures down the coast on that and instead of going through and saying, "Well, there's a thousand

acres there, you go through and take the whole lot", but the sensitive areas, go through and say, "That area cannot be touched, that area you can *take* the lot." Probably when you've taken that area, get regeneration there, you can move back into that area then and get complete control of management, which is basically what happens when you are doing soil conservation, you have to have a plan of management, it is not just a matter of going along and put the seed in - "yes, it's ^{growing}", you have to manage it for a certain time. This was one of the things that I did pick up fairly quick. While you are applying fertilisers, etc., to your introduced grasses and species, you are getting excellent growth, but one you decrease that, gradually you're getting the native stuff coming back in and the other diminishing, to a degree. And eventually some of them will disappear, but others will remain. The clovers, no doubt, will remain because there were clovers in the mountains before the Snowy ever went there, although we used clover extensively, the same with some of the other weeds and things that you get through there. But, again, you've got to worry about the ones that could become a menace. I don't think the authority ever introduced any at all. As far as conservation was concerned the authority never ever used Broom - well, I say never ever, I don't know whether Betty Phillips did any in trial plots anywhere, trial plants around anywhere, but most of those came from gardens. There has been an improvement in the area of the native species where the authority has ever done any work. You could see that. One thing we did learn was that there was response of native to fertilisers over a period of time. If you go along some of the roads and higher areas, you have a look, and you go down and walk below, you'll see an area, a marginal area, where that is treated - with the amount of the growth in the native species there and then you go a little bit further down where you get out of that fertiliser band again, you see what has naturally happened over the period and there has been a response to it.

KH: Was there much burning in your first years?

LM: With graziers?

KH: Yes. Did you see much evidence of burning in the country?

LM: There was quite a bit of burning going on, but again, it was completely controlled burning. An odd time it might have got away, but most of your burning took place around about April, just before, because they moved out then, just about when the first snows was coming, occasionally they got caught. The only areas they burnt was the open areas which generally were improved, except if they got right up on the very high treeless areas, right

up on the tops above, about 5000 feet. But the other areas, they only burnt the grass areas ^{where} the snow ^{comes}, and you had a snow cover for the winter and immediately you got your thaw - which I said about planting seed in snow - you got your growth coming there and you got a lush growth coming back over.

KH: You don't think there is a combination of grazing and over-grazing in some cases, in some leases, a combination of grazing and burning every year wouldn't not have reduced - - -

LM: Some leases, yes, some. But this is where I say under controlled grazing and ^{burning}. Now, I noticed an article in the paper a few weeks ago, the park has realised that now, instead of just controlled burning here, there and everywhere, that area should be control burned. They are getting a plan of management. Now, I have always been against burning in heavy timbered country, particularly here. In Western Australia where you have got your big trees and just grass or low shrub cover underneath, yes, you can. But here where you have got growth from the ground right up, with two or three layers of different types of growth, you cannot control burn. Now, every time you burn you are making the area drier. You've got nothing on it, you've got bare ground, it dries out, you have got dead scorched leaves that is ^{coming} down onto the ground, which ^{are} dry. Eventually, in all that area you've got a very, very minute area of soil on top. As soon as you burn the first rain storm comes down, there is so much blown away, so you're finishing up, you're down onto a subsoil with completely no top soil at all, a burnt barren area with very little regeneration - you're getting a few trees, but you are completely changing the ecology of the whole forest to what it was before. Now, the more that you can get there and the wetter it can get and the damper it can get, you can through there. Now, I know that they say the '39 fire went through the mountains, but one thing we forget about the '39 fire - actually I was with Forestry then and we were fighting it for a week - was that that fire was burning in Victoria for ages, there was no access roads through the mountains at all. The only road that you had went through Cooma, Kiandra, down through Yarrangobilly to Tumut. You had a road that run from Cooma, Jindabyne to Kosciusko, Chalet Pass, a dead end, that was your road system. Now, you've got a complete road system everywhere through it. You've got fire trails, serviceable fire trails, you've got everything. We've got aircraft, we got so many things that are advanced. I hope that we never will, but if you get the conditions and the day bad enough, there is nothing, it don't matter what you do, control burning or anything, it won't stop it.

Although that '68 fire, that started down on the Tumut River and come right through nearly to Adaminaby and through Kiandra, Kiandra Plains, there was absolutely no hope of stopping that. It was just madness to try and even go near it. You just had to get back near Adaminaby and try and get breaks burnt back. The one Christmas before last - - -

KH: Near Tumut Gorge?

LM: Tumut Gorge and Blowering, there wasn't a thing you could do about that. It was the same here, the ones that went through here, and went through Queanbeyan. I know that wasn't up into eucalypts. You see, the trouble is eucalypts ^{are so} ~~volatile~~, it explodes and it's going ahead of itself all the time, and there is no matter what control burning you do. And areas that have been consistently controlled burned, well the ecology has changed complete, even more so than what it did with grazing. But, as I say, with your grazing it has to be controlled. All right, you can run 'x' amount of sheep, cattle, horses, whatever may be. You can have from so and so controlled weeds, you do this. If an area has been burnt, area so and so can be burnt at such and such a time, otherwise it can't. That is where your management is going to come in ^{on} it.

KH: What do you think, in terms of the country, the mountains now and what you knew 30 or 40 years ago, does it look better to you now?

LM: The higher areas?

KH: Yes.

LM: Yes.

KH: It seems to me as though the regeneration has been prolific?

LM: Oh it has, it has been. Many people would never realise what areas were logged, going through it now. They would see some little area but they would never realise the deterioration that went on in certain areas. The same thing applies to the Snowy Scheme. The people went along and seen some of these areas during construction which had said, "How are you ever going to restore that?" You wouldn't know where some of the works went on now, and the same thing with the park. But, again, as I said, there is a deterioration in my opinion in certain areas, and areas which I feel are under lessership, or something, under different type of management, could be improved. But they are higher areas, they are wilderness areas and that, have certainly been a big improvement, and I will agree with that. The whole thing, the parks have got too big for our - - -

KH: The park system, you mean, in terms of acreage?

LM: In terms of acreage. Not for reserving - I will agree with that. But, again, we should bring in a management scheme that are - management uses of the park, I think, would be the best way to explain it.

KH: You see, you are suggesting more of a multiple use ^{approach} ~~for~~ certain areas.

LM: Well, this would happen. As we get resources, well, if we want to take a certain area back again, out of that system, well, we take it back providing that we can manage it under the park's system. I think if we manage our wilderness areas and sensitive areas and the other, back under some form of lease or use, management use, by the private public, that we are going to get a much better system than what we have now.

KH: Did you go fishing at all? What did you do when you weren't working or sleeping or eating?

LM: I seemed to be working most of the time and, again, I always liked gardening as a hobby as well as a work, and I did give a lot - oh, I stayed up on community things. In Cooma I was on the committee of the club, I was on the committee of the P & A Association.

KH: What is the P & A?

LM: Pastoral and Agricultural - or, in other words the show society, the Ex-Services Old Peoples Home, I was ^{fed} up in that.

KH: You didn't go rabbit shooting or anything like that?

LM: No.

KH: Didn't go fishing?

LM: Only if I wanted a fish to eat.

KH: Do you think - I mean the fishing, once the dams were built and the water started to rise, the fishing seemed to have been very good whilst the water rose over new areas - - -

LM: Over new areas, yes, well they - - -

KH: Do you think there was a decline after that?

LM: A certain decline after that, which I think you will always get. But, again, with native forests, with your run-off and that, you are certainly of getting a certain amount of feed and that coming down into it and again I think it may be - a decline could be a little bit which they went down - the bird population went down with construction and all that through. But I think they are starting to build up again now.

KH: The bird population?

LM: I feel that they are. The times I drive through the mountains I think you see more birds now than probably what you used to.

KH: And these areas around the foreshores, especially of Lake Eucumbene, seem to be the most difficult to solve in terms of soil erosion. Were there any attempts made when you got a very difficult situation of rising and falling water levels?

LM: Yes. But the main the areas that you concentrate on are above high water mark. Now, this is the problem, to try and ascertain what is going to be, say, a reasonably stable high water mark. And whether it is going to be 80 per cent of the capacity, 90 per cent of the capacity, 95 per cent, and then above that you do something about it, but below that - well, you have got your mean line, say, for instance, the majority of time the lake is going to be 85 per cent of its capacity, so above that you do. Below that 85 per cent, well, you just more or less forget it unless there is something really serious. Now, I don't think - they don't expect Eucumbene, very seldom, to ever be full capacity. I think it is once in 100 or 200 years that they feel that. But they do feel that it will come up to around about 80 or 85. So I think anything above that - in the Snowy days we did, we had to do that, but what has happened since, I do not know.

KH: Someone, at some stage, suggested a species called Garrison Creeping Foxtail. I don't know what it is like, but did you try different things with those areas?

LM: Yes. No, the Creepy Foxtail is not very satisfactory, not that. I got another, they were some of the ^{bent. grass} - I can't think of them now - that we imported from Sweden and Holland. We thought they ^{would} be ideal on road batters because they - if mowing - you had them for a lawn - they would only need mowing once a year. The minimum growth was about 3½ to 4 inches. I thought, well, this is going to be ideal. But the trouble was a fluctuation in temperature, not only in the winter but summer. It was too much for it, it just wouldn't take it, it went patchy. I did quite a large area from Kiandra towards Yarrangobilly with that. It went all right for a couple of years then it started to deteriorate. We thought it would be ideal along roads and if it is nice and low like that, instead of something that is coming up higher, with the fire hazard. But it wasn't successful. And, of course, for lawns it would have been ideal.

KH: Yes, especially if it is slow growing. The tree arboretum that were established by the Forestry Commission - I think it was a man called Ken Shepherd, who is now in the Forestry Department at ANU - were they very successful?

LM: Some of them were. But, again, you see, these were all wiped out of the park.

KH: In recent years?

LM: Yes.

KH: Yes, I think they are going to eliminate most of them.

LM: They have.

KH: But did you learn something from them during the time and apply it elsewhere?

LM: Certain species, yes, which I felt that should have remained. I reckon it was a complete tragedy that the park insisted that they should go out. It was the same thing with Island Bend. I think Island Bend should have stayed as it was and they made a beautiful caravan park or something like that within the park. But from the gardens and that that had been done there, it would have been a wonderful memorial to the Snowy, to the work in there. It could have been maintained - well, it would have paid for itself because they realise now the amount of people we had. You had bitumen roads, you had ^{Sewerage} water, you had everything there and all the tree growth and everything. I know they were introduced species, they were all there, but it was beautiful ^{monument} and could have give a public facility which could have been profitable to the park. No, a lot of the trees I think - I know they were in the high areas and at the back of Happy Jacks and that ^{there} were some that Betty Phillips put in. There was some very good growth and that there, but again, they were mainly conifers, ^{and birches and that} they were all wiped out. In fact, after I bought the nursery I had - well, I'm still a consultant for the Authority and also SMEC - I had the agency for Rentokil, pest control, and they got the contract of wiping out all their exotic trees, as they said. There was another ^{clump}, which I always thought was a very nice little ^{clump}, which is at Kiandra just before you cross the Eucumbene River, on the lower side of it. The last time I was through I saw that has been cut down. Well, they are the sort of things that I feel, in the area that you have got, are probably more beneficial to leave them for future generations to see.

KH: Some of them were spreading, I think. Like the one on Happy Jacks Plain, I noticed seedlings some distance away from the main plantation.

LM: Yes. But, again, I still say with proper management you can control them. They are not like the blackberry or something, just ram through. It is only an odd one. If your rangers are doing their job and going around and see one, they have only got to have a bit of spray - well, with ^{Conifers} you ^{we} only got to cut it off, just have a tomahawk and just chop it off. The main ones that were spreading was the radiata, the Monterey pine.

KH: Yes, it is spreading around the Cotter areas. ^{Townsville}

LM: Yes, well that is it. It was spreading around ^{Townsville} and Yarrangobilly where they had that plantation in there. I see they are harvesting that one now, but then there is already people, in the paper the other day, they are talking about putting pine in there.

KH: No, I think they are going to revegetate with eucalypts.

LM: There was one article - there was one suggestion that be considered. No, I think something like that, commercial, I don't agree with that. But say like Island Bend or the bigger plantation at Happy Jacks, put ^{them} down and put why they were put there.

KH: I think that has been recognised in some areas, like around the Kosciusko Hotel, Spennars Lakeside Inn and at Yarrangobilly, where ^{is} sort of historic site - it depends on the age of the place. But at Yarrangobilly it is accepted that the deciduous trees and the exotic trees will stay and I think at the Kosciusko Hotel also.

LM: But again, I still think that with such a young country, that we have still got to make history for the future generations and, no doubt, the Snowy project was one of the greatest projects in the world in the modern times, not only for the feats of engineering but to do a scheme like that within a time limit and within an estimate over 25 years. And like some of the things that happened there, like that Eucumbene/Tumut tunnel, 14 mile tunnel, excavated from both ways and finish ^{within} up $\frac{3}{4}$ of an inch in height and $\frac{5}{8}$ of an inch in direction. You see, they are the sort of things I feel is history for the future. We might say it is modern, we have seen that, but again, after all ^{our} history is only 200 years old.

KH: And you think it was worth the number of people who died on the scheme. Apparently there is about 120 that died all together.

LM: Well, this will always happen anywhere. I don't think you can blame the Scheme. I suppose you shouldn't say, some was probably through carelessness, some through lack of knowledge, some purely - well, fate of God.

KH: Did you know any of the people who died?

LM: Oh, yes.

KH: Did you know any of them personally?

LM: Oh, yes, I knew several of them personally.

KH: What happened? Who were they and what happened to them?

LM: Well, one fellow off a dozer. One chap - it was mist and rain and one of the big dumpers - he stood under the wheel, under the mudguard and the driver couldn't even see him, didn't know he was there. Started up and the bloke was still there standing and went over him. A couple of them went over banks, trucks went over.

KH: Yes, I think there were quite a few who died in road accidents?

LM: Yes, there was a few road accidents, but a lot of them didn't. The mining ones - well, mining is always hazardous. Safety methods, well, I think probably at times. There was also some accidents. But they say accidents shouldn't happen but accidents are caused. But that was another thing with the Snowy. I think for the number of people, the conditions and work, their safety record was second to none. And some of the things they introduced - seat belts - well, the first place in Australia where they became compulsory, things like that. Safety was always to the fore. They employed safety officers, which they are talking about now, safety officers - driving skills were the same. If you went to the Snowy - well, you can have a licence but that was no good to the Snowy, you had to go through their test as well and you had to go through a test of conventional vehicle or a four wheel drive. They were all things that - innovation from the Snowy. I think all the pluses, besides the Scheme, were things, as I say, Sir William Hudson was one of the greatest men that Australia has ever had.

KH: In terms of the scheme in general - I mean, one of the purposes of the scheme - was to divert water inland for irrigation purposes. Now, apparently, some areas are having salt problems where salt has come to the surface out in the Riverina and it is not so suitable now for cropping? And, in general, I think the salinity of the Murray and some of the rivers has increased.

LM: That, again, in my opinion, is lack of management, lack of skill, that for so long we took so much for granted. There was nothing came up where we had to get in with the Snowy Scheme, we had to get in and devise something. How were we going to do it, how are we going to do this? But a lot of these other things that is happening - "Oh yes, that's all right, that's all right" - we don't realise what is happening. We should have realised because we are

using excessive salts in the form of fertilisers, but we were calling them fertiliser, nobody was calling them salts, with the result that you got an accumulation. What we should have done - was our drainage adequate in these areas? should we endeavour to put in salt siltation ponds somewhere along the line to have to stop them going in? These are all things, that in hindsight you can think of them, they have been done? should But the necessity wasn't there for us to do them. This is where we are learning. Again, we have created terrific problems, terrific problems of how we are going to solve them now. Through that we have taken too much for granted. This comes back on to National Parks, where we are just saying now, "Oh take that for a National Park, take that for a National Park, take that." Everything is excluded. But what problems are we creating for another 20 or 25 years or 50 years. This is what happened, we said, "Murrumbidgee irrigation is ideal, Cobram is ideal, irrigation", but we didn't go into all the thoughts of what was going to happen, what we should have done first. And this is the problems we have got to think of in the future.

KH: But you still think it was worthwhile, I mean, the whole idea of diverting ^{the} waters westwards - - -

LM: The whole idea. And I think the greatest mistake Australia ever made, and ever likely to make and it will be in the future in this history, is they let that Snowy Scheme disband. It should have become a water conservation service of Australia and diverted - oh, a lot them, the Clarence. There is more water in the Clarence than is in the Snowy Scheme. But the whole problem was our States. Our States wanted it done, but they wanted to do it, not the Federal Government, however. I think if they had kept that and the water resources - I know there was a scheme done by Professor Leech - who is dead now - to bring all the water from the Gulf of Carpentaria right through central Australia to Adelaide, and irrigation areas right through. And he was going to do that all with atomic blasts, all underground reservoirs and everything. People after him said ~~oh~~ - - -

KH: It sounds like an amazing scheme.

LM: That same man, at university, him and another chap developed a plane, a war plane, and the fuselage is still hanging up in one of the hangers at Mascot. They didn't have enough money, they couldn't get anybody to give them the money to buy an engine for it. It is a complete replica of

the Phantom that was built in World War II, in England. The specifications and everything was the Phantom. He was a brilliant man. I don't know whether you ever met him at all on the Snowy.

KH: No.

LM: He was in charge of scientific services.

KH: I've seen his name on documents and that. But apparently part of the problem is when you inundate large areas with water for a long period of time, just the amount of salt within the soil, within the subsoil and within the rock, rises to the ^{surface}. That seems to be very difficult to overcome. ^{It's} not just the application of fertilisers - - -

LM: That is difficult to overcome, but there is not that many areas that have got that problem in Australia.

KH: And they are getting bigger.

LM: There are bigger problems in South Australia, but our indiscriminate uses of fertilizers, and one of the things that is possibly a contributant to this a lot, and again they are finding problems, not only with the salting, but the use of superphosphate. I won't say indiscriminate but somebody will come along - all right you use two hundredweight to the acre every year, putting it on. Not only the salting are they creating a problem, they are also creating a problem with soil ^{acidity}. At certain times they should have been using lime and it is to counter the salts and keep the balance that is going. ... the other way. These are the things that - they are problems. In the natural areas they are appearing, such as parts of South Australia and that, it is a real problem and nobody is sure of the answer yet, to that. But, again, with irrigation and that it is generally the excessive use of chemicals and the lack of drainage.

Tape 2, Side 2

LM: But that is always going to be our problem in Australia, is water.

KH: Yes, when you think about it, the great mythical inland sea that all the explorers were looking for turned out to be a big salt pan in a way.

LM: Yes, this is the thing. But again, we have still got so much - forgetting that - so much fertile land if we can get the water. Even if you take the eastern area and diverted the water that is just going into the sea from the rainfalls that we have got, and the gulf country But again, there is a lot of things, you are going to come into so many problems, and it is what you are going to grow and wondering what is going to happen.

KH: In the tropics, apparently, if you have dams, you also increase the problems of malaria, bringing mosquitoes.

LM: Things like that. You are creating other diseases, pests to your crops and all these things. The more ideal conditions you develop for anything, well, you are also going to have the hazards as well that are associated with it.

KH: Yes, apparently that is happening in irrigation areas, the pests have increased because it is such a ^{fertile} place now.

LM: You go through the northwest and the west, say, ^{up} through Moree, you get in a drought and you get a little shower, the kangaroos that you see along the road because the little bit of moisture that has fallen there has gone off the bitumen to the side and you get a nice little ^{green pick} right along the edge, ^{so} they come in there. So you are creating a hazard in that way.

KH: But apparently it seems as though it would be better in some ways to irrigate through pipes, through enclosed pipes, so you lose less through evaporation and you bring that water specifically through drip irrigation to each plant, like they have done in Israel.

LM: Yes, this would be a much better system. These things happen and this was the idea of Professor Leach's, bringing the water through there, he was going to do it with underground reservoirs with practically a very small ^{aperture} Then he is connecting channels from one to the other - they were going to be more or less all piped underneath. Then he was also going to incorporate that ^{white} pump - he could bring in an electricity scheme with it as well.

(?)

KH: Was he the guy who suggested an alternative channel to the Murray, to take away the drainage waters from the irrigation areas?

LM: Yes. You see there are so many things of these that we create problems for ourselves before we learn and then - well, I think we are learning, but we are very slow.

KH: Do you remember any fights between nationalities on the Scheme?

LM: No, they were very few. There was an odd one or two, but very few.

KH: I mean, it is amazing that you had all these nationalities coming together in the one place.

LM: Well, again, that can be put down to Sir William Hudson, I think. He said there had to be complete assimilation, they were not to be put in groups. When you are in a town, well, you had Yugoslav here and Italian there, and Englishmen there, a Scotsman there, but there wasn't two or three of this one together or that one. They all had to learn English and anything that went on, well, everybody was incorporated in it. It was just an assimilation of - or again, the ^y become the Snowy workforce of the Snowy scheme, and that was it. If there was any trouble or anything, well, somebody had to go and see what was the trouble and sort it out. I know what you had - one fellow fighting with the other, something come on, you would go and blast hell out of them and tell them to get on with the job.

KH: But on the whole it seems as though most people were very loyal to the scheme.

LM: They were. What I will say about the scheme, providing you did your job and did a fair day's work, a fair job, and providing that whatever your trade or profession might be, that you are efficient in that, you got on well in the Snowy. There is no good us saying, "I'm a bricklayer" and they put you lay bricks and you're a carpenter and didn't know anything about bricks, you wouldn't last very long. It was a case. And then there was assimilation. The same with the schools in the areas, that all came into it and you tried to get people interested, the children interested. I know with all the schools I instituted, that we would give each child a tree or a shrub to plant in each school, that would be their tree or shrub while they were at the school.

KH: Did that work?

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LM: It worked very well and the teachers looked after them and they looked after them, in that area. They became very proud of them and some of them put their names on them and others didn't. But they all generally looked after them and became interested in them. Even the people in the town with Parks and Gardens, they became very interested and assisted ^{with} watering and looking after the areas. ^{That} innovation made headlines in the Melbourne Age. In Khancoban I planted the main street with fruit trees - fruit and trees right through. All the householders looked after them, even pruned them, sprayed them.

KH: That was certainly one of the great things about - I came from Germany as a child and I have distinct memories of the country roads being lined with apple trees and cherry trees and everybody going out there and having a good feed *when they were all ripe*.

LM: That is where I got the idea, just out. *of Graz (in Austria)* these rows of apple trees, more or less coming right over the road. I thought one day I might try that somewhere. Then when I was doing the landscape for Khancoban I thought I will do that. It made the headlines of the Melbourne Age.

KH: You didn't do that in Talbingo or - - -

LM: No, no. I used flowering ones there. I tried to do every township different, something different. ^{So} people wouldn't say that is a Snowy township by the landscaping. There would have to be something else, connected with the Snowy. They would be individual towns.

KH: Do you think the scheme made a big contribution to post-war recovery and became, in a sense, one of the foundation stones of a new Australia?, *a multi-cultural Australia?*

LM: It was one of the things and I think if the record of the Snowy, with the multicultural community was carried on throughout Australia today, we would be a lot happier and there wouldn't be arguments over *S.P.S.* stations, multicultural committees and ethnic communities and all this, they were all assimilated. You would have festivals there, they would come out in their native costume, they would do their native dance. You would have parties that would completely assimilated. I think we had the - benefited there but unfortunately it wasn't carried on far enough throughout Australia. And *as far as* engineering and that, well, it certainly put Australia to the forefront in the world. I know we had - a lot of our engineers went to America, but, again, people were coming all over the place and it don't matter where you go through the world now, people will still talk about the Snowy

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Mountain ^s Scheme, and ^{our} engineers ^{are} world renowned. So it was a wonderful benefit but unfortunately the government of the day thought it fit to let it slip away.

KH: It is incredible when I read about the scheme, the extent to which Hudson had a public relations programme, in terms of the number of pamphlets produced, the number of little plastic moulds, things on the Snowy Mountains and where the tunnels went, all these tours and so on. Why do you think there was such a need for communicating?

LM: Well, his attitude was that it was possibly the biggest single scheme and the biggest single amount of money allocated to anything in Australia's history, for development. And Sir William's attitude was that he was spending the public's money, and if you are spending somebody's money you should let them see what you are spending it on, not just go and spend it and say, "Oh, we've done ^{that}", but let them see and let them see the progress. And I don't think you ever heard one person - well, I know I never did - when the budget came out each year, so many million, a hundred million, to the Snowy Mountains scheme. Everybody said, "Well, isn't that good." They came there in thousands, they seen it, they seen what was going on - "Oh, isn't this wonderful, we're doing it in Australia." Everybody became ^{proud} of that scheme. You didn't hear everybody, "Oh, what are you wasting that money on now." If you walk around Canberra, you'd ^{see} something going on - "Oh, what are they wasting money on that for", "What are they doing that for?" But you never heard that ^{of} the scheme. But I think if nobody had been allowed in, which used to be the thing with construction, that you would have done and when the budget came out and so much allocated that people would be screaming But he got that idea, well, it's the people's money we are spending, let them see where we are spending and what we are doing.

KH: Do you think the scheme could be built today if someone put the proposal forward today, *in today's climate?*

LM: I am very, very doubtful. Now, the reason, construction-wise, technically, engineers, staff and everything, yes. Our greatest problem today would be *splinter groups* - say I'm an environmentalist, I'm a conservationist, or I'm this or that, and you took them out the back door there and turned them loose, they wouldn't know what to do, they would be lost in five minutes. And as far as knowing anything about conservation or the ecology of the country or the areas, they know practically nothing, but they are getting the whole benefit of the media and everything else, which is out

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of all proportion. They don't go into the scheme at all or anything. The benefits, disadvantages and that. It is just a block, that we are this, we have got to kick up a hell of a lot of noise and do nothing. I don't think the scheme - they would have that many committees investigating this and environmental - project this, and something else and something else - study, that you would never get it off the ground, which is unfortunate. I think a lot of things happening is this. I have met some of them, in fact, I met one lot - I am not saying where they came from, Australians, conservationists - and they started telling me what should be done in Kosciusko National Park and wasn't it wonderful they had done all this. The only ^{part they'd} seen a National Park - they ^{had been} to Thredbo twice and they had a wonderful time there one night, they had a big party on all night. They did feel that the conservationists were right and the environment ^{alist} - and everything they have said that should be done and nobody, except in those places, should be allowed in the park. And immediately they came back they joined the Australian Conservation Foundation, and they also belonged to another environmental society that was fighting to stop all these things happening in the park. Now, all they knew about the park was the hotel at Thredbo. And this is happening so much. You get it here in Canberra. I know people here in Canberra, environmental and conservation groups and that, they don't know a thing of what is happening in half these places.

KH: Although in some ways, people like ^{Bill} Byles and Alec Costin, were early conservationists.

LM: Wait a minute.

KH: You think they are different, do you?

LM: This is getting to the truth. They would listen to argument and they would put up arguments why, but they would still agree to things that they thought was right. There was things that Byles and Costin were against with the Snowy, but when we explained they agreed with it. I am talking about these that get in, get in a group and they get down in Garema Place or somewhere on the corner somewhere, going off and kicking up all around getting photographs, and graffiti, writing their placards and everything. Chaps like Costin and Byles and that, I have got a lot of respect for them. They are - do something, or you have got to have that.

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KH: You see, they and a group of others from the Academy of Science, stopped that dam on Spencers Creek. That was the highest dam because they said, "Right, enough is enough so we are going to have these high tops preserved."

LM: You can take it that they stopped it, they did to a degree. But the whole facet of the scheme was completely changed after that. You see, the Snowy scheme now is not the original scheme.

KH: But if there had not been opposition then it would have gone ahead, wouldn't it?

LM: If there hadn't been opposition the scheme wouldn't have been as efficient as what it is now.

KH: But that dam would have still been built?

LM: That would have been still built, yes. You see, initially, there was two schemes. There was the Tumut scheme and Murray scheme. Eucumbene was the storage for the Tumut scheme and then Geehi dam was to go in on the western side which was going to be the storage for that side, which came down on the Swampy Plain creek. Up where old Geehi camp and township was, that was to be all under water.

KH: Oh, in there the dam was going to be?

LM: Yes. And there was a dam nearly as big as Eucumbene dam.

KH: In that valley?

LM: Yes. Now that valley would have all - under the original scheme. Then they got - - -

KH: The dam would have been down near the Commissioner's - that last river stone hut, the Commissioners hut, or whatever it is called, the old Geehi camp.

LM: Yes, down below that. That was built by a chap by the name ^{of} England who was to be the original Commissioner of the Snowy scheme and he died just before the scheme got off the ground and then they called in Bill Hudson.

KH: That hut?

LM: That hut was built by him.

KH: I thought it was Benson?

LM: No. Benson built it, but for England. England was a very keen fisherman and he used to come up through there.

KH: What was his Christian name?

LM: Viv, Viv England.

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KH: Yes, because it was one of the Bensons that ^{heard} I got all the expertise on stone huts.

LM: But it was Viv England used to come up there fishing. He wanted to come - he was another one who was a great friend of Sam Clayton's. He was also CO of the unit I was in in the army, the 2nd/3rd battalion.

KH: But that dam would have been Geehi Walls, where the Geehi Walls are in that V there?

LM: Yes.

KH: I see. It would have flooded all the ~~Swampy~~ Plains.

LM: Then they decided - that is when they increased the capacity of Eucumbene, put the Coffey dam over at the back of Old Adaminaby and put the spillway in Eucumbene. You see, originally in Eucumbene, the spillway was to come back through Adaminaby, the new township of Adaminaby and down the creek there into the Murrumbidgee near Bolero. Then when they decided to put the Island Bend/Geehi tunnel through, that they were bringing the water both ways, either to the Murray or there and increased Eucumbene. That is when the Geehi dam was cut out, Spencer Creek dam was cut out.

KH: It seems to me as though the only controversial part of the scheme, the only opposition, the only questioning, was this business with the dam on Spencers Creek; would that be right?

LM: No. There was other parts at times.

KH: Yes. Early on I think there was some reports in the media about the soil erosion, the siltation of the rivers and so on?

LM: That was right through - - -

KH: It was '53/'54, I think, very early on.

LM: Yes. Although that was the one and that is how I come to take over soil conservation because I said I had a plan that would get something done on a wider scale ^{than} just experimental work. It was becoming very political then with the conservation and soil erosion.

KH: That's right. There seemed to be very little spent on soil conservation in the very early years, from what I have seen. It really got going in the mid '50s.

LM: Yes. Well, the thing was that there was nothing, or very little, going on in the field; they were still trying to carry out these experiments and that. They had glasshouses down at Back Creek and all the equipment ⁱⁿ and ponds and all this sort of things. And doing these little plots right throughout the mountains but they weren't getting down basically. And then

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when I come in, when I said about this first one, the idea was - "Well, let's do a big area, we know that we are not going to get the whole lot, but at least we get a part of that and then we are getting down to what we call our problem areas", which happened. As I said that one down through Siberia ~~and~~ ^{Dear}
 [interruption]

KH: You see, it seems as though, in a general sense, one could say that the Snowy Scheme became the lever for the removal of grazing because the Snowy - I mean all the reports I have seen there is considerable concern about the state of the catchments, the fact that, the grazing was causing erosion and very against the burning. There was a lot of reservations about the burning combined with the grazing, and slowly over a period of time they got more and more grazing leases eliminated and changed things in that way.

LM: It happened in several ways, I think. One, they employed a superintendent of the park, which was Nev Gare, so they were doing something about ^{it} it wasn't just grazing area uncontrolled or anything, ^{parts} were uncontrolled, but you got the unscrupulous which you will always get somewhere or other, ^{causing damage} The erosion in the higher areas above the tree line were gradually increasing and becoming a real problem. Two things, one with the Snowy, they realised immediately that this was a problem because any Scheme where you are building dams your greatest problem is siltation, so something had to be done about that. So, again, through negotiations it became that it would involve the Soil Conservation Service of New South Wales, it would involve the National Park, although it was a catchment area, probably, for the Snowy, but again, there wasn't very much because at that time there was no Island Bend dam, that was another one that went in afterwards with the change of the Scheme. Jindabyne was to be a lot bigger than what it was. This had to be done. The parks people then started on the graziers, the graziers started to complain, they didn't want to be kicked out. The other thing with the authority which came into it, that you couldn't have grazing stock in construction areas where there is heavy construction going on, so something had to be done about that. So then they got a policy, and from consultation and everything, it decided that all stock should be excluded above ^{4,500} feet, which was very controversial. It did cause quite a lot. Now, Sam ^{Clayton} and the Snowy was reasonably happy with that. Myself, I was reasonably happy with it but I still felt that there was certain areas, probably not below 4500 feet, which should be excluded. So discussion come on that and then the park got the idea that grazing should be excluded

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completely, which come on. Now, the Authority, as far as it worked out, didn't want grazing in construction areas. Now, they had done certain areas where they had a township, well, that had to be excluded from the grazing rights and that, but the park - they didn't take a real active part in the full exclusion of grazing from all the park completely. They did ^{above} 4500 feet, as I say, and I always had the reservation that there should be other - certain areas, the sensitive areas, should be excluded as well. But then when the parks come in on this other, well, it got then right to the top level and government. That is where the final decision was made.

KH: While you are talking about silt, are there any figures on the rate of silt accumulation in the dams? ^{who} would I see to find out, I mean, do they take measurements of the - - -

LM: They should do because after any fire and that we used to take it.

KH: I mean in the dams themselves, in the bottom against the wall, do they have records of - - -

LM: I should think they would, I am not sure. That used to be done by scientific services, which was at Back Creek. Well, they are out now all together. But there should be somebody in the authority, in the operational staff, that can give you that answer.

KH: Are there now, in modern dams, flushing ^{systems} where they open a valve at the bottom to flush the silt out?

LM: No.

KH: It just accumulates, any that there is?

LM: It just accumulates.

KH: So the better the condition the catchment is in ~~the less~~ silt!

LM: Although that was the reason that the catchment had to - it was one of the reasons why I was always against controlled burning in the catchment areas because it don't matter how careful you are or how much control the burning is, you have still got to get a certain amount of sediment and siltation coming down.

KH: That would mean excluding fire from very large areas, wouldn't it, because most of the ^{mountains} ^{now} are a catchment in a sense?

LM: In my opinion, yes.

KH: Except you would still accept these wild fires occasionally?

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LM: Well, there is nothing you can do about it, there is not a thing you can do about them, it is just a part of nature. I would even accept, in some of these grazing areas, say like Happy Jack's Plain, Kiandra Plain, Long Plain, through there, grazing and burning on those at the right time of the year.

KH: I think Molly and Tom Taylor would too.

LM: Yes. But I still think then if you are going to allow that, that you have got to ^{monitor} and look and you may have to put in some cofferdams on some of the catchment creeks and streams if you are going to allow that yearly burning. But you would have to monitor what was happening from siltation from that.

KH: Otherwise you get siltation of Tantangara Dam, wouldn't you?

LM: Yes. Well, it depends where you are doing the burning. Say if you come on the Blowering side, well you have got Blowering Dam, ^{Touhama}, you have got to think of those. So it is a matter of - it would have to be monitored. This is what I say in park management, this all has to come into it and things that you have to think of. So if you found ^{out} all right, ^{by} burning every year, the successive siltation coming in to 'x', 'y' and 'z'

stream, we will monitor it over a two year period. If you find in two years you are still getting nearly as much, well then you turn around and say, "This area will have to be excluded." You can graze with 'x' number of stock but burning is completely out. If it's minimum and practically nothing, well you say that is good management. But this has to be monitored the whole time.

KH: Just to finish up, a couple of questions. What was your best experience, your best time in the mountains, ^{what are} the highlights. I mean I am going to ask you what your highlight were and what your lowlights were?

LM: I don't think I can say there was any particular highlights. I think probably the most satisfactory and the most challenging jobs was the conservation of the Geehi aqueduct and particularly the restoration - well we had a couple of breaks there in the line - and then also the main ^{borrow} area for the core material for Talbingo Dam when the mountains started the whole mountain started to move on you. I think probably as far as gaining satisfaction from a job, the whole Scheme - I always feel very satisfying when people talk about the Scheme and I can talk about it myself and when I drove back through and say to my son and my grandson, "Well, you should have seen that 10, 15, 20 years ago and see it now.

KH: And what was the worst ^{of} time?

Len McInnes

LM: I don't know that there was any. Probably when you growl the most when you had to go out and ⁱⁿ snow and ice and things and you got on a track and there was nothing there and you got bogged in snow or mud and there was no tree or nothing around to hook a winch on to and probably had to dig yourself out and ^{go a yard at a} time after three or four hours, cold, wet and that. You think what the hell ^{am I} doing this job for, there's something better than that. But as soon as you got home and got warm you felt - out next morning - you thought, oh well, it is just one of the hazards, it's been enjoyable.

KH: Okay, that ^s good, thank you very much.

LM: It is a pleasure.

[Discussing photographs - not transcribed]

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