Transcription of interview with Ian Crabtree

Tape 1 Side 1 STARTS 00.02

Tony Silke: Right. Well, we're recording again, and the idea is to forget that the recorder exists. The idea is just to talk to me, sip on your cup of tea. We'll be as laid back as possible.

There's just something I want to do for a start. It's a bit like a book that you need to actually say, well, this is Ian Crabtree, and we're going to talk about Ian's work in the electrical industry. We're at Ian's house in Karori, and the date is the 24th of October 2001.

This is aimed to be a very laid-back discussion. It'll be more of a discussion than a formal interview, that's for sure, cos either of us are capable of drifting away on our own quite nicely.

My name's Tony Silk, and Ian and I have worked together for quite some time. So, we'll start into it. If you want to stop at any time, just put up your hand and wave and we'll just stop whenever you feel you've had a gutsful of it.

Ian Crabtree: Okay, and from my point of view, you interrupt any time you think you want me to say more or less.

Tony Silke: Okay.

Ian Crabtree: Yeah. I thought about this, and I thought the best thing was to go briefly through secondary school and then start going through my career with the state hydro and the organisations that follow on from that.

I went to Auckland Grammar. I went through the A forms. Actually I came top of 3A in the first term. I thought it was a bit undignified to go down to 3B, so I thought I better do a bit of work. [laughs] So I did a bit of work and, bar/apart [?1.40] from going down, I came top. I thought, I'm working too hard. That was the beginning of my decline in form.

Tony Silke: Were you one of these naturally gifted students or did... ?

Ian Crabtree: No, I wasn't gifted at all!

Tony Silke: ... you work like hell, did you?

Ian Crabtree: I worked and then I stopped working. I always stayed about third in the class, but I did well at science.

Tony Silke: Yeah. Things you're interested in.

Ian Crabtree: English I liked. I did quite reasonably when I did English. Anyway, I was fascinated by science. I was fascinated by particularly both chemistry and electricity, and I think ultimately, as you're aware, I left Auckland Grammar and went and finished up at Auckland University. I did think of being a doctor, but it was pretty hard to be a doctor in those days. This was just after the war, about ’49, ‘47 and the rehabs were getting a salary of about - servicemen were getting preference in the medical schools and I didn't think I could get in. Well, that was one of the reasons. Be that as it may, I decided to do an Electrical Engineering degree at Auckland.

Tony Silke: Did you actually choose electrical engineering?

Ian Crabtree: Mm.

Tony Silke: That was the…?

Ian Crabtree: That was the choice.

Tony Silke: What attracted you, Ian?

Ian Crabtree: Well, I just found electricity fascinating as a sort of phenomenon, and the things that went with it. I made a little motor. [laughs]. It just fascinates me.

Tony Silke: Have you still got it?

Ian Crabtree: Oh, no. [laughs]

Tony Silke: I've got some of the things I made when I was a...

Ian Crabtree: Have you?

Tony Silke: ... very lowly apprentice or something. Yeah. [laughs]

Ian Crabtree: I liked doing things. I was a lab boy at Auckland Grammar for a couple of years there, which was rather fun. While I was at Auckland Grammar, I wanted to be A form and then finish up, let's say, going to Auckland University doing electrical engineering. At that time, the Auckland University School of Engineering was alongside the university in town – it was a series of tin sheds.

One of these British institutions inspected the place and said they weren't going to recognise Auckland University degrees in Engineering if they didn't do something about their facilities. [laughter] The net result was at the end of my first term, I think in my first professional interview it was, we moved out to Ardmore Aerodrome. It was pretty spacious, a disused aerodrome, and they set the School of Engineering

up there at great expense. It was unfortunate thing to do in some ways cos all this money got spent on that site. Ardmore was about, I think, 20 miles out from Auckland. Eventually they built a new School of Engineering and everybody moved back to the central town again.

In the vacations… for an engineering degree you have to do nine months, or I had to do nine months' practical experience. You didn't get very well paid in practical jobs - it gave you engineering experience. So I tended to work in wool stores. I liked working in wool stores - it was good fun.

Tony Silke: Did it not have to be electrical work or anything or just work?

Ian Crabtree: Well, that's purely for the money. Sometimes I'd work in long vacations. I worked in one or two long vacations in wool stores and sometimes in short vacations. But I did do one practical training vocation at the Ministry of Works, Northern Plant Zone. The Northern Plant Zone was where they repaired all their bulldozers and tractors and things like that and made up mechanical bits and pieces. That was out in Otahuhu, and that was interesting. We overhauled a grader there [laughs]; they gave me this grader. After the grader, somebody wanted a cricket pitch made, so they decided they'd make a cricket pitch on some land they had nearby. [laughter] That was alright, they made the cricket pitch. As we were driving back, all of a sudden, the grader gave an almighty shudder and there was an almighty bang. What had happened was there was some railway lines there. Not me - the guy driving [laughter], the grader, hadn't lifted the blade high enough. The end of the blade caught [laughs] on the railway line - broke the end of the blade. However, that's life in the Northern Plant Zone.

I did get some practical work at Mt Roskill Substation and that was quite interesting cos we were repainting transformers and putting some more installation into some transformers. I learnt a bit about what New Zealand electricity was all about. I remember Graham Warburton, who was another engineer, a bit older than me, he was over at Penrose coming across and holding fort how he'd been in the structure at Penrose. He suddenly heard this hissing sort of sound, sss. [laughs] He suddenly realised there was live stuff alongside. That was a good old life.

Tony Silke: Bloody good thing he did run.

Ian Crabtree: [laughs] That's right. [indistinct 6.24] Anyway, I was well looked after there. Then the best vacation job that I got was the Auckland Farmers' Freezing Company. This was at the Kings Wharf cold store. What this was, they took butter and they just chilled it from ordinary temperature down to the temperature that it had to be held in the ship. There's quite a lot of heat to be removed from butter to get it down. So they had this big cold store and the most efficient way of getting the heat out is to do it in the cold store [indistinct 6.51]. They had electricians floating around. I worked with the electricians there, but I was signed on as a labourer, which gave me a good rate of pay. [laughter] I signed on as a labourer

and worked with the electricians unless they were short of labourers, in which case I had to labour. Labourers couldn't be working in the cold stores themselves. I remember once they/I [?7.11] had been shovelling coal because they still had coal-fired steam-driven compressors mainly for the cold stores.

When I was there, they were in the process of changing over from these very slow speed, enormous machines, steam-driven compressors to modern electric motor-driven compressors. Yeah, that's right, once or twice, in the process of switching from one to the other, occasionally they got liquid in the system where they shouldn't have done [laughs] – and it all went bang, bang, bang as it started to, I assume, compress solid, mainly liquid.

Anyway, it was an interesting place, and at the end of my… I applied for a job at the state hydro. I didn't apply for a scholarship early. I just thought, oh well, I'll wait and see what I want to do. But when the time came, I didn't see there was much option.

Tony Silke: What year was that?

Ian Crabtree: Forty-two to ‘51. I took up my job at state hydro in '51.

Tony Silke: It would've been the state hydro then.

Ian Crabtree: Yeah, it would've been.

Tony Silke: Cos it was the Public Works Electricity something or other. It was the Public Works probably then, wasn't it? Yeah.

Ian Crabtree: Yeah. I joined in '51, so I must've applied in '50 for a job. Perhaps I should've said that in those days you couldn’t complete an Electric Engineering degree in Auckland. We were the last year then went down to Canterbury.

Tony Silke: I didn't know that.

Ian Crabtree: So I spent one year at Canterbury. Then the results came out and I had failed hydraulics. There were eight of us went down from Auckland, and six of us all failed hydraulics.

Tony Silke: Really? Was it a jack-up or did you play up too much?

Ian Crabtree: I never understood why we all failed in hydraulics. I think it was just what the Auckland people had taught in hydro wasn't what the man in Christchurch thought was important. We'd had a bit of hydraulics the previous year. What the man in Christchurch thought was important in hydraulics, I think we didn't think it was. That's how we had to go back. Anyway, I had to go back for another year in Christchurch.

Tony Silke: Bloody hell.

Ian Crabtree: They'd appointed me to Palmerston North. But then when I failed that subject I had to go to Christchurch, which I wasn't sorry about. I quite like Christchurch. In fact, as it turned out, I'm glad I went down for that year. Christchurch seemed to have a lot of systems engineers in the same boat [laughs]: they needed one subject to get through. Derek Olsen was there, I remember, at the same time.

Anyway, Christchurch looked after its assistant engineers and they arranged for us to have a trip. So we went up to Highbank, went over to Tekapo, round to Coleridge. You name it, we seemed to get out to these places to see them.

Tony Silke: Was that Christchurch, the state hydro part of it?

Ian Crabtree: That's right. Yeah. So we got out there and we had the odd job to do. I got a job at Hororata. There was an occasion and I finished up at Hororata and almost dropped a transformer off a pad that…

Tony Silke: You wouldn't be the only one to do that. [laughs]

Ian Crabtree: The real problem was that as soon as the transformer went under the track, the track went down about two inches, so you had to jack the nose of the pad such that the pad didn't tip too much. But you had to be able to get the wedges out. If you jacked the nose right up to the logical place, you could never get the wedges out, and it was dark anyway.

Tony Silke: Yes. There were some rather bad designs in traverser trucks [?10.43] and traverser [?10.45] tracks, weren't there?

Ian Crabtree: Yeah. It was interesting at Hororata there. I spent a bit of time up there, and also, I got a bit of time down in Ashburton. They were doing some substation construction there, so they shot me down there for a while. I think this was during holiday time I must have gone down there. That was good.

Tony Silke: This would've been pre-dating any 220kV. This would've been all of the growth of the 110kV system, wouldn't it?

Ian Crabtree: It was all 110 as far as I was concerned, but there was 220 in Auckland at that time.

That was my year in Christchurch. Brian/Bryan [?11.26] Grant was an engineer, who looked after the young engineers, and he was really a very concerned sort of guy. They were very protective, sort of fatherly. He was a fatherly sort of guy.

Tim Lusk's father was the substation construction engineer - Alan Lusk.

Anyway, after I'd done my year down there and passed that final subject, I was then moved up to Auckland, which suited me cos that's where I came from, and moved out to Otahuhu on transmission line construction. That was extraordinarily interesting. The 220 was being built.

Tony Silke: This was obviously steel tower stuff.

Ian Crabtree: Again, they just used the assistant engineers as sort of foremen really. Part of the problem in what you did was you were stuck setting these grillages. You had to get the grillages in the right place.

Tony Silke: Yeah, I've done a bit of transmission line work. [laughs]

Ian Crabtree: If you didn't get grillages in the right place, when you came to build the tower, it wouldn't build.

Tony Silke: It would cock-up, yeah.

Ian Crabtree: Yeah, that's right, and there was a bit of sagging. There was peat near Auckland and peat right up to the surface near Hunua and we had these great 50-foot square slabs that we had to build. They were quite a big job.

Tony Silke: Fifty-foot square?

Ian Crabtree: I found out later, peat has got no strength at all. The theory was that, oh, well, if it hasn't got much strength at all, if you build a big enough slab, you're probably okay – so it was done on that sort of basis. I don't think the slabs have ever moved.

We built those slabs and then near Otahuhu itself, the peat was about eight feet down. The problem was if you set a grillage in peat at that level, obviously it would move, but there was solid ground between eight feet down and the surface, so around each leg they cast a kind of a pad about eight-foot square. The idea was the downthrust from the tower went on to the surface.

Tony Silke: Hold it in.

Ian Crabtree: Yeah. We worked on that. Those were the things that we did close to camp.

Tony Silke: That was working from a construction camp, was it?

Ian Crabtree: A construction camp, yeah.

Tony Silke: Mobile camp.

Ian Crabtree: Yeah, pretty primitive too.

Tony Silke: Actually I had reason to recall a while ago, that I went to a construction camp in Upper Tākaka. They were still sleeping on, at that stage, straw palliasses. That would've been in the early '50s. I don't know if that was normal or not, but it certainly was the case there.

Ian Crabtree: Yeah. All I know was it was pretty rough. I can't remember if palliasses were there.

Tony Silke: From line construction to….

Ian Crabtree: Then I went for about six months on substation construction at Otahuhu. They were putting in synchronous condensers I think there, yeah, and running cables, terminating cables. All the odd jobs were in the substations. We went around substations. I mucked around there for about six months, then went to the Auckland office and I forget what I did there. I had various odd jobs in the Auckland office, some of it to do with our new substation, though what it was, I can't for the life of me think now. What with nine months and six months and another nine months, which gave me two years and then after that, head office called. Head office would call these assistant engineers in from the district.

Tony Silke: It was very much head office, wasn't it? It wasn't bureaucracy as such, wasn't it?

Ian Crabtree: [Ian requests tape turned off 15.17; resumes 15.19] We were just about to go down to Wellington, I think.

Tony Silke: Yeah. We were talking about Wellington head office and all the bureaucracy and that. We were just about to move from Auckland down there.

Ian Crabtree: Okay. I moved into the Transmission Line Design section. I think I was particularly fortunate, from my perspective, cos I'd done quite a bit of work on transmission lines, but a lot of the assistant [indistinct 15.41] variety. It was a good section. Basil Montgomery was the transmission line engineer. Under him came Tom Logan, Rob Logan's father. Then John Kovet [?15.57] [indistinct 15.59]. We had Alfred Freed [?sp] who was a draughtsman.

Somehow, in conjunction with the districts, all transmission lines being constructed were specified. Each transmission line had its own set of towers and its own hardware, its own everything. They were all looked at individually. There was no standardisation in those days.

Tony Silke: Tell me about when you went to Wellington. Whereabouts in Wellington was it and what sort of place was it that you worked in?

Ian Crabtree: I worked on the corner of Museum Street. Is it still called Museum Street?

Tony Silke: Yeah.

Ian Crabtree: Just behind Parliament there. It was a prefab building that I was in, and the prefab building, there was - was that up in Bowen Street? On the other side were the foundations of the Broadcasting House. There had been a vision, with the Labour Government, to build a great Broadcasting House, and the foundations had been built and then they filled up with water. Some mosquitos came there and so they put goldfish in to keep the mosquitos down. The little boys used to come along and fish for goldfish [laughter] in the foundations. That was the life. [?17.09]

Trevor Pugh, one of the engineers, actually he'd caught one or two of the goldfish and were over [?17.14] at his place I believe. [laughter] In this particular building, we were called/on the corner [?17.20] the Transmission Line section, within one corner of the building. Opposite us was the Protection section with Trevor Pugh. Along a bit was Technical Purchasing, and then at the end of the building was the Stores branch. The Stores branch and Technical Purchasing traditionally worked fairly closely together, although I think they sparred with one another a bit. The rest of the organisation was directly behind Parliament in a building that I think is still there – a two-storey, stucco building.

Anyway, that's where I… In this room, if I went through the staff, there was myself, Alfred, Bob, Tom - John Cayford, Tom Logan and Monty. That was our gang. We got into immense detail. We did all the SAG charts for all the lines; we did all the equipment for the lines. Everything just seemed to just funnel, for transmission lines, through that office, and even to tower testing in those days.

I don't know the full history of the 220, but certainly William Cable moved into making 220kV galvanised steel towers at a place called Steel Fabs [?18.48] in Gracefield. I know that one of my jobs when the steel inspector wasn't there, I had to go out and inspect the galvanised steel work at Steel Fabs.

Tony Silke: Inspecting for what, Ian?

Ian Crabtree: Inspecting the thickness of galvanising basically and see that the galvanising was applied satisfactorily - quality control of galvanising. That there weren't ungalvanised patches. I expect that's what it was. That the galvanise was at adequate thickness. That's what it was really all about.

The towers that have to be tested.. Traditionally, most authorities don't design the towers; they call for a tower of particular strength that will take such and such a load in such and such a direction and such and such [indistinct 19.35]. Then the tower manufacturer has to have a testing site where he applies these tests. In fact, the site that was chosen by Steel Fabricators was in a little ravine on the road over from Gracefield to Wainuiomata. It was quite an occasion, when a new design was done, to go up there. The advantage of being in ravine is that, in a sense, at the bottom of this little ravine gully, you had a place where you had the tower foundations and then partway up the ravine you had places where you could start hauling on the tower, and you had dynamometers to see what loading you were applying. Anyway, so that was a great day out.

Tony Silke: That would've been good fun.

Ian Crabtree: We had a great day out. We had a particularly great day out – we had one tower that should be alright, and then all of a sudden, the main leg failed and 'oh'. So they strengthened up the main leg, applied the load and the thing failed again. It did this about three times and the main leg was enormous by the time they finished. I don't know why that happened cos it almost got to the strength that it should've failed at - it almost got there. It only needed a tiny little bit of additional strength, but in practice it needed a mighty lot of steel to get it through its test.

Anyway, Steel Fab stopped making towers because the Italian, Salvi, the boss, came in. Salvi? Italians came in anyway, and they were quoting tower prices for completed towers that were about the same price as William Cable's were paying for the steel. It drove Steel Fabs out of business. There was a big fuss about it, political fuss, but the Government stuck with it and so Steel Fabs didn't get any more contracts.

That was one aspect of the life. One of my jobs was designing the [indistinct 21.31] line. Really, the question is what loading do you put in the conductors cos that's kind of the starting point for the design of a line. Having decided that, a lot of things follow on. So we spent some time working on that, looking at that and considering it because at the time it was the highest transmission line in New Zealand, and therefore the isolating would be greater. Anyway, it was my baby; I didn't really have the final decision. Certainly, I was always very satisfied. Other lines fell over around the country, but my line never fell.

Tony Silke: [indistinct 22.06]. In fact it had a remarkably small amount of trouble.

Ian Crabtree: [laughs] I know. What happened later on - as you probably know, it's a long story; probably too long to get in here - they cut the strengths down of towers. The Government wanted to save money. Bruce McKenzie and Basil Montgomery put together a paper showing how they could save money, or how it was logical to reduce the strength of transmission lines. They put together this

paper on the reduced strength of transmission lines, and it wasn't long before they all started to fall over.

Tony Silke: Yes.

Ian Crabtree: As you may have known...

Tony Silke: I remember them.

Ian Crabtree: Then they had to go round and strengthen them all and change the design. What they did was they swung from fairly weak towers to extraordinarily strong towers. It cost the country a lot of money. Cos nobody knows now how strong a tower is by looking at them or what level of risk is taken. But the people said, 'No, we're not gonna take any more risks.' And didn't. I think eventually they cut the strengths down a bit to get a more realistic design.

Tony Silke: I remember one of the early series of failures on that line used to be the compression joints. Do you remember they had trouble with those?

Ian Crabtree: Yeah. Now, compression joints were another problem. That's right. Now, that was not so much bad specification, but it was bad control.

Tony Silke: Bad engineering. Bad workmanship.

Ian Crabtree: It was bad workmanship in the field. I don't think the people who made the joints really appreciated what they were doing when they made a joint badly. What you have to do is you have two sleeves: you have an inner steel sleeve that joins the steel core conductors or a steel core. They are conductors. They basically had to be conductors. Then you have an outer sleeve to join the aluminium. I think some of them thought as long as they got the aluminium poked into the outer sleeve and you couldn't see it, it would be alright, but it wasn't. You have to get the aluminium well in, right in so it's thoroughly compressed, or you have trouble. Well, they didn't do it and we had trouble.

Tony Silke: Yes. They had a lot of trouble, didn't they? They had outages every night for months to actually redo the joints. You're right, it was entirely bad workmanship.

Ian Crabtree: It was very sad really because it cost so much to fix up. One of the things was they started to say, 'Each crew shall put their initials on the joint.' That was the first approach, and they were putting like AED, which is AE Davenport, the general manager, on them. [laughs]

Tony Silke: Or Jesus Christ.

Ian Crabtree: That's right. [laughs] I think it was the days of… Rough and readiness gets you a fair distance on transmission line construction, but there's a stage at which it doesn't, and that's if you don't make the joints properly, you're in for awful trouble.

Tony Silke: Yes. Yes, of course, the conditions that they made them under, and they did the joining and the heavy presses. It's a hell of a job in the field as well. It was a bugger of a job.

Ian Crabtree: Yeah, it was a difficult job but ultimately...

Tony Silke: It wasn't done.

Ian Crabtree: ... by proper supervision you can ensure that it is done cos it's so critical.

Tony Silke: What was your position when you were there? Were you just an ordinary...?

Ian Crabtree: I was an assistant engineer. The tradition was that the crewing of the transmission line maintenance section had an assistant engineer. We worked out SAG charts and things like that. Yes, you worked out SAG charts for new conductors and there were jobs like that.

There was trouble with the sockets. Traditionally we'd use American hardware and then we switched across to British cos it was cheaper. But the balls and socket joints in the British stuff were not quite the same as American stuff. What you've gotta have is freedom to move in a ball socket joint. There's always some vibration in an overhead line and that vibration, if they jam, eventually fatigues through the hardware. The pins break off. I can remember trying to sort some of those awkward things out. I was fully occupied there.

Tony Silke: You stayed in?

Ian Crabtree: I was there for only two and a half years, but it was interesting. One day an aeroplane crashed into the Tararuas, and they had a search party out to find it. There were two pilots were killed up there so then they decided that they were gonna have to carry the bodies out at that stage. They were looking for people to carry the bodies out and somehow, I got volunteered, or volunteered to go in and carry the bodies out of the Tararuas. It wasn't much of a picnic.

Tony Silke: No, I'll bet it wasn't.

Ian Crabtree: We got right up to the top of the Tararuas, just alongside the plane. This was the days before helicopters. They decided, fortunately, they were going to bury the bodies in there and not carry them out, so that was great. We just

watched. They didn't have spades and shovels, so the fixed wing plane came in and dropped the shovels and spades. Right at the crest is where the plane came in, and I can still remember there must have been this strong wind and the little plane going over a ridge of the Tararuas, coming down low and sort of getting into the wind and going whhhhhht! [laughter] That was an interesting excursion. John Kovet had had contact with all the tramping clubs around the place. It was an interesting day instead of working with a calculating machine.

Anyway, I enjoyed my time there. I thought to myself, I read this article about: transmission lines are gonna be replaced. They'll have these new devices which will transmit power over distances without conductors.

Tony Silke: Yeah, we're still hearing it, aren't we?

Ian Crabtree: [laughs] I know. I thought, oh, that's no good. I thoroughly enjoy being in transmission. I like this job. But we're still looking for a replacement.

Tony Silke: Yes, I think they're safe for another week or two yet.

Ian Crabtree: Then I moved along to the Protection section. Now, the Protection section in those days was headed by Trevor Pugh and was kind of *the* technical section in the organisation. The substation people just took bits and put them together - put a transformer in a circuit breaker and connected them all up. But Protection looked at fault levels in the power system. Any unusual technical job came along there. I was in there for a while and I got quite a variety of work, including earthing work, which I'm still mucking around in.

Tony Silke: What year roughly was that?

Ian Crabtree: I moved to Wellington in '54, and I was in '54, '55 and half of '56 in transmission line design. I was also an auxiliary fireman at the same time. I thought, you know, pottering around the office all the time was a bit boring and Ces Gallett [indistinct 28.50] who'd come out from Auckland with me, he'd got a job in Miramar Fire Station as an auxiliary fireman. You got your accommodation provided there and you got five shillings when you did drill. You got paid five shillings for that. If you ever went out on a fire, you got paid five shillings an hour for going out on a fire. Of the auxiliary complement, there had always to be half the auxiliary complement on duty at any one time, at night. The theory was they needed more men to fight fires at night than in the daytime. I think basically that was the arrangement, and they got those people by offering this cheap accommodation to auxiliaries.

Tony Silke: That sounds a fair arrangement.

Ian Crabtree: It was a bloody good arrangement, you know. It was good in some ways. If I ever left that fire station to go out to Zed [?29.38] or to a film, see

something like that, invariably if I went out, there'd been a fire and they'll all be sitting around talking about how this fire needed what. Anything I'd ever been to paled into insignificance, and I thought what an idiot I was to leave this fire station. [laughter] Even if you went out, if you'd go out on a Sunday afternoon, you'd see smoke rising. [laughter] 'My God, you know, [laughs] I could be at that fire.'

Tony Silke: They'd chain you to the bloody fire station.

Ian Crabtree: It was too frustrating. Anyway, I was there for something like a year and a half, but I got involved in other things around town and finally left. But I enjoyed it. It aroused my interest in firefighting and fires. In fact, one of the last things I did in the old organisation was, because the organisation didn't have an integrated approach to fire protection, I'd picked it up and ran with it. I mean in my job as the principal supply engineer, I did what I liked, in addition to what my main line was, so I thought fire protection. So I picked that up and we wrote a document. I wanted it to get accepted right across the organisation. I knew if the operations put it forward and sign and were powerful and the construction was powerful. [?30.45] So I put this document together and then I got a committee set up with John Malcolmson, whose funeral I went to today. He was the chairman and he agreed to chair it. We put that draft document up and it got through. It was in the dying days of the old organisation, but it was a worthwhile document. It integrated and ensured what we were doing was consistent right across the various aspects of the work we were doing. It was a big organisation, you know: thermal stations, hydro stations, substations. We had a go at everything that old organisation.

Tony Silke: It was actually going through a stage about then that the growth was just phenomenal, wasn't it?

Ian Crabtree: That's right.

Tony Silke: With lines, substations, and a variety of different forms of generation. We've side-tracked a wee bit. We got into the enjoyable fire stuff. We ducked away from the Protection section.

Ian Crabtree: Yeah, I was just telling you about my life, cos I missed that out. One more thing about fire. I have ducked around too, but I'll finish off on fire protection. The interesting thing: the organisation in those days - this is before the end of the old organisation - it was setting itself up so it could do everything. No consultants. It had people who could do everything. So different to today's world.

Tony Silke: It had mechanics and everything, didn't it? Yeah, [indistinct 32.01], motor service...

Ian Crabtree: Everything. Completely independent of anybody.

Tony Silke: Yeah.

Ian Crabtree: Going back to where I was. After I'd been in Protection section for a while… I'd never been to England and the Confederation of British Industry offered scholarships. I decided to apply for one and I applied for one that gave me nine months' experience over in the UK, and I got it. Other Government departments, if their employees got these scholarships, they made up their salary and paid them a salary and paid them all sorts of things. But not so, the old state hydro. It wasn't just cos it was me; it was Gerald Colley [?32.34]. Have you ever heard of Gerald Colley?

Tony Silke: Yes, I know.

Ian Crabtree: Gerald Colley went in the first one over and they didn't give him a penny. Gerald Colley was very highly regarded. They established a precedent of giving him nothing, so I got nothing. It was a bit miserable really. It was a hard department, that old state one. Hard department, and I've been a lot of places - not everywhere. [?32.53]

Anyway, I went over to England and pottered around. I worked at Manchester for a few months and I came down to London and pottered around the Central Electricity Generating Board for a few months, all of which was fascinating. Then pottered round on the continent and I found a friend who wanted to hitch down in Europe, so we hitched together down in Europe. We wanted to find what they called a work camp. These were voluntary things they had going in those days, where you worked on community projects. We worked in Italy on a project called Agape, inland in the mountains near Turin. We actually thought it was a suburb of Turin. I didn't really check it out properly beforehand, so when we hitched down to Turin, we thought you just wandered up to the suburbs and there it would be. It was way back into the mountains where we'd come from!

Tony Silke: Oh, no. [laughs]

Ian Crabtree: It was terrible. But it was very interesting working on this construction site. I'd better stop talking on this now cos I could talk on this for a long time. This has really nothing to do with New Zealand electricity.

Tony Silke: We might come back to that later on.

Ian Crabtree: Okay, okay. Then having pottered around there I came back to New Zealand. The only thing I'd say is I worked my passage to and from, at a shilling a month, on motor vessels. New Zealand Shipping, the Anakura, the Hurunui and that was interesting. But once again they're things I could talk about at some later stage.
I came back. I was away for about 14 months, and I can still remember, as the ship left Liverpool, I thought to myself, when I looked back to England, 'I shouldn't be leaving this place. I should be staying.'

Tony Silke: Really?

Ian Crabtree: I liked it there.

Tony Silke: Is that right? Why?

Ian Crabtree: It was so interesting. Such a wide variety of things to do and see. I'd seen so much and done so much.

Tony Silke: Course it was at its peak then too, wasn't it?

Ian Crabtree: Yes.

Tony Silke: World leader.

Ian Crabtree: That's right, it was. I came back. Where did I go? I went back into Protection for a while, and then I got moved to System Control. [pause to check battery of recorder 35.14 to 35.21] System Control was a great place. There were only two people in it. There was the system control engineer, who would be Harry Patterson, I think, and there was his offsider who, for a while, was me. We used to plot what the lakes were doing and look at the water storage situation, all those sorts of things. I used to have to… each week you'd do an analysis of water flows on the various catchments and how things were going. That was my job.

Tony Silke: Fascinating, isn't it?

Ian Crabtree: Yeah. The best part was occasionally the system control engineer would go on leave, and then I was the [laughs] system control engineer.

Tony Silke: You had the helm.

Ian Crabtree: I had the whole country in my hands. [laughter] So to speak. Oh, no, it was good fun [indistinct 36.04]. I can't remember who the man up north was, but it was such a different world where basically decisions were all sort of basically hunch made decisions. We got by.

Tony Silke: It's a bit like racehorse betting really, isn't it? It's hard to see the way forward sometimes.

Ian Crabtree: Some of the more interesting times was questioning whether we turned on Evans Bay or not. Will we run Evans Bay? Evans Bay was gas turbines and a coal fire, although I think they'd stopped using the coal fire units at that time. They still had a few MVA of gas turbines they could turn on, so that was one of the decisions we would get, on turning it on. I was there for an enjoyable probably couple of years.

Then when Gavin Wilson had his little section he called the Maintenance section, I got asked if I'd like to go to the Maintenance section. So off to the Maintenance section I went. Now, the Maintenance section was really what later evolved into Operations. Originally, head office was really just the head office of a construction organisation, and there was nobody really concerned, as a special function, with running the place, apart from the System Control people. The general looking after the assets wasn't really an identified function.

Gavin Wilson set this Maintenance section up in that role, and the responsibility for running things tended to be with the district managers. I expect that's really what I should've said. They were responsible for it, but it couldn't all be done in that way. As the systems got bigger and bigger or the complexity got greater, so there was a need for a head office presence. Also, the way the hydro station was looked after, there was expertise. Hydro stations, any problems were looked at by Ministry of Works centrally, so the way that the organisation worked was that if there was a problem in a district, they would tell head office, who would get in touch with the Ministry of Works, 'How are we gonna sort this thing out?' Then we'd go to it. It just happened that I looked after hydro stations for a while. It was a fun job.

I've had some fun jobs in my time. I've been through some fun tunnels [laughs]. One of the questions with the hydro stations: 'Is the tunnel falling in?' A lot of the early ones had tunnels – good for Coleridge and Mangahao. They're two that come to mind. Cobb. They come to mind as the places where the tunnel [indistinct 38.52] worked in the tunnels for 40 years. [?] Of course, Manapouri is on a tunnel, although I've never inspected Manapouri. I don't think anybody has. Well, they have now inspected it, but they probably haven't gone through it. There's another tunnel alongside it. Let's hope he's gone through it. [laughs] Anyway, the Maintenance section looked after everything. There were a lot of problems at Wairakei. The gas exhausters caused problems at Wairakei. There were problems at Meremere. But Wairakei was the place where there really were a lot of problems associated with that.

Tony Silke: It was quite a unique sort of place though, wasn't it? In its day it was a real engineering achievement, Wairakei, wasn't it?

Ian Crabtree: That's right and keeping it going, the blades dropping off the turbine, you know. It was all new stuff and because it was all new stuff, not existing designs, things broke, and it took quite a bit of keeping it going. Gradually it settled down. One minor problem was hydrogen sulphide. They had around the station what they call tundishes. It was just like an open drain, a little cone that goes in an open drain into that cone, just like an ordinary drain outside a house. The way that it used to be. You'd have drainpipes coming in. Where condensation took place, in various bits and pieces of the equipment, the condensation water went into these open tundishes. What they found was that a lot of the condensed water had a high hydrogen sulphide content, so the hydrogen sulphide levels started to rise in the

station. They had to manage that area to ensure that all the hydrogen sulphide was collected together and got rid of - before somebody died from hydrogen sulphide poisoning.

Tony Silke: Yes. Most unpleasant stuff.

Ian Crabtree: That's right. I first got involved in noise there. Not much account had been taken of noise up till that time, but there was quite a bit noise at Wairakei.

Tony Silke: There was, yeah.

Ian Crabtree: There were the gas exhausters.

Tony Silke: Exhausters, yeah, and the station itself: high speed turbines like that, they were bloody noisy as well.

Ian Crabtree: I dealt with DSIR. We brought our own Brüel & Kjær sound level meter to ensure that we were managing noise there. I think at that time there was some interest in asbestos as a hazard. The safety got into this sort of area as well, so the noise could be seen as an aspect of safety. All these interesting technical problems of this sort finished up in the old Maintenance section, which made it an extraordinarily interesting place to be in. When you consider the number of people around there - there was a handful of people looking at these extraordinary range of problems. Anyway, I stayed in that old Maintenance section and it kind of gradually got bigger as a section. Robin McKenzie was there. As time went on, Robin tended to look after the power station stuff and I tended to look after the transmission stuff. Robin had very considerable power station expertise.

Then in about 1968 they decided to have a reorganisation, and that reorganisation identified four divisions: Development, Design and Construction, Operations and Technical Services. Into operations, where I finished up, Operations consisted of System Control, Generation and transmission or Supplies it was called. I finished up in charge of supply; Robin finished up in charge of generation; and I think at some stage Bill Lowry finished up in charge of - I don't know that he was the first man in charge of [indistinct 43.01] Control, or whatever they called it.

Tony Silke: Yeah, there was somebody before that, wasn't there?

Ian Crabtree: Yeah. I can't think who it was.

Tony Silke: Yeah. God, I should.

Ian Crabtree: Yeah, you should.

Tony Silke: Well, I really only came in when Bill was there.

Ian Crabtree: Bill was there when you came in?

Tony Silke: Yeah.

Ian Crabtree: It stayed like that for quite a long time. I looked after the transmission side, and to keep myself interested I built up a team of landscape architects as the years went by. Trevor Pugh, who was the chief engineer operations, was interested in the landscape, so he got it going and I just took over because I was interested and had a bit of spare time. I took over building up to landscape architects. He really hadn't got it going. He had them just helping, working for him. I got it going. I finished up at one stage, as the chair of the Electric Lineman Training Committee, training distribution linemen. There was the statutory body responsible for their training cos their fatal accident rate had been pretty high, and we were trying to get that down.

Tony Silke: Yeah. Cos prior to that it was pretty much a glorified labourer's job, wasn't it?

Ian Crabtree: I know, yeah.

Tony Silke: The job had no status. I couldn't believe, when I started operating in the field, how poorly paid linesmen were and how dedicated and hard-working and skilled these guys were. I always felt they were the dogsbodies of the industry in those days.

Ian Crabtree: They were. I can remember, going back to the Maintenance section, looking at the accidents which occurred at Arapuni. I think one lineman had been killed, possibly two. But it had been a bad accident and two had been involved. They were linemen brought in to do work on the Arapuni structure [indistinct 45.03]. It got me worried. The organisation said they hadn't been through the safety course - that's why the accident occurred. I thought they didn't know what they were doing. That still stays with me as one of the motivating factors. You've gotta make certain your people know what they're doing. You've gotta do *more* than make certain they know what they're doing: you've gotta make certain they do it. [laughs] But the thing is to let them understand what it is. That's getting back a bit.

Tony Silke: It's interesting you say that. I worked with a guy when I first went to Haywards, and he was an attendant who had done switching. He stuck an earth on Haywards 110 bus live and he got the blame for it. I worked with this guy for a couple of years and I'm absolutely certain he had nothing to do with it. He was just a poor bloody victim who was trying to do something with the best of intentions, and he didn't have a clue. He had no idea. He was let loose into this damn structure and yeah, it's quite scary alright.

Ian Crabtree: I know. Well, even the question of when people went out into structures. They went out into structures with no written instruction of what they

had to do when they got out there, and they did complex switching. Sometimes I made them write it on the back of a cigarette pack.

Tony Silke: If you were lucky.

Ian Crabtree: If you were lucky.

Tape 1 Side 1 ENDS: 46.28; Tape 1 Side 2 STARTS: 00.03

Tony Silke: Right. It's the 8th of November 2001. This is side two of the tape of Ian Crabtree and his working time. We've had a break for a couple of weeks. Ian's been busy. He's almost impossible to schedule time with, but we've managed to do it. The tape recorder's going fine and everything's honky dory.

We're going to continue on where we left off two weeks ago with Supply branch in Wellington, and we're just gonna go from there through to Ian's retirement and some of the more interesting times in the more recent. Right. You can take it from there if you wish.

Ian Crabtree: Okay. We got to the stage where there were four divisions in the reorganisation of 1968 to '71. One of those divisions did operations, and within Operations there were three bits. There was Generation, there was System Control and there was Supply, and Supply was looking after the transmission system. The basic responsibility of the Supply - I was the senior supply engineer then - was to have policies and procedures for the transmission system and to solve problems. One slight problem with this was that all the districts had done this stuff themselves, to some extent, prior to the reorganisation and you could say that we had to be a bit careful. They didn't like somebody from on high telling them. All the documents which we drafted, we drafted in consultation with them to get policies into place. Then the other problem was that having policies in place and procedures in place, some people were a bit resentful of this. If there's no policy, no procedure, anybody can do anything they like cos that's what they like doing. But once they had these in place, they were a little bit resentful about that.

Tony Silke: Is that a bit of a Kiwi culture, the number eight fencing wire culture that kind of went with our early...?

Ian Crabtree: Well, you had to do things yourself, so you just did what you thought was appropriate. Of course, long-term it would've been necessary anyway because now when you've got the whole lot farmed out, you've gotta tell the consultants what to do. We took a first cut of writing down what people ought to be doing, and that's developed over the years into all the contract documentation we've got now.

Tony Silke: Was there a bit of a conflict between Wellington and the field?

Ian Crabtree: There was a bit, yeah. It wasn't too bad. I tried to ensure that it was at a low level, but I guess it depended a bit on the districts. It depended on the district leadership as to how much conflict there was. I thought it didn't work too badly. When I think back over the people that I've worked with over the years, the district people.

Tony Silke: There were kind people, weren't there?

Ian Crabtree: Yeah, true. But it did mean this change from nothing much being written down to having to set up an organisation where things did need to be written down. We systematically sort of sorted things out. There were some areas of expertise for the organisation which were concentrated in head office and that, in particular, was the DC. Mike O'Brien was there and Colin Burleigh and there was a fair amount of ex-DC expertise and DC co-ordination, and even things like sorting out the spares. As time went on, other plants were shut down or the schemes were shut down, getting bits from other plants to ensure we could keep the mercury-arc valves going. So there were things where Supply branch clearly had a very well-defined role.

The other thing was the Cook Strait Cables. Looking after those was regarded as a head office function, although the ends of the cables were in Nelson and Palmerston North district. We negotiated repair arrangements with Balfour Kilpatrick as they were, and that was a little bit out of the ordinary.

There were two sorts of problems: the failure of a joint at sea, and then there were other problems with shore joint failures. The Cook Strait Cables had a heavier cross-section on land than they did at sea because the cooling was better at sea than at land. They had joints at beaches at both ends of the cable where the cable cross-section changed. These were particularly troublesome at Fighting Bay.

Tony Silke: Troublesome because of...?

Ian Crabtree: I think the joint was badly designed, fundamentally.

Tony Silke: Oh, the joint itself.

Ian Crabtree: It was the joint itself that failed, yeah. When you make a joint, a paper insulated joint, you have a long taper in the paper joint. I think, listening to them talk, that they had cut the tapers a bit - the longer the taper the bigger the joint and the bigger the joint the more it costs. So, they'd cut the taper down to what they thought they could get away with. But they didn't get away with it.

Tony Silke: They paid the price.

Ian Crabtree: The interesting thing was that the way the DC scheme was set up, when the joint did fail, the current continued to flow through the joint. It's earthed,

but it continues to flow with the earth potential, and that generated heat. So if there was a joint failure and you took the joint apart, all you got was a charred mass of paper in the middle. Then traditionally with a joint you cut back to where you've got good paper and you can see water. When water gets into the paper you can see it - it goes a lighter colour. Anyway, what had happened with the current flowing through the joint, it had generated a lot of heat, and the heat just kept on cooking the insulation. So there were vast quantities of cooked paper. When you cook paper, you finish up with water and carbon.

Tony Silke: Oh, really? [laughs]

Ian Crabtree: [laughs] Quite funny. So you started to cut the cable back to get to dry paper, but when they cut it back, there was still wet paper. This was the first joint at Oteranga Bay, and this great debate went on: do we keep on cutting this thing back until we've got good paper, in which case we'll be in Cook Strait? [laughs] Or do we joint the thing up and hope that she'll be right? So we joined it up on the 'she'll be right' basis, and it seemed to work. I think the idea was if there's not too much moisture there, it'll gradually move in the paper and the level of moisture in the paper will be tolerable. Yes, I remember that. That's the joint, the failures, of which we had a number of these joints' failures on the beach at both ends. Yes, there were joint failures at both ends of the cable.

I don't think they ever really clearly determined what the problem was, but the two cables they came from a ferrule, and they were soldered, sweated into this ferrule. There was some thought that that might've been unsatisfactory, and they did change from a sweated ferrule at the actual conductor joint to actually abrade the joint. But it's a while ago now, I don't think that made much difference. I think the design was fundamentally flawed.

The other problem was that when the cables were laid, a repair joint was put in. Bill Latta had specified the cables be made in continuous lengths, but actually they didn't tell us. At one stage, somebody dropped a hammer or something [laughs] and they had to put a joint in and they never told anybody. So that was one of the problems they had. The other was that when they were laying the cables and when the cable is underway and you lose tension, the cable gets a kink in it. It got a kin in it. Anyway, they had to put a joint in at the time of laying, and that joint later failed too. It was the same sort of joint really, except it was a conductor. It was the same dimension right through it, in the sea joint, as opposed to changing cross-section in the land joint. That was quite an episode.

Tony Silke: What about the early experiences of mercury-arc valves and that? Did you have anything much to do with those?

Ian Crabtree: I wasn't greatly involved in those. I do know that we had a lot of trouble with them in the early days. They were arcing back and arcing through and

there were modifications made. They were really very troublesome times because the lights were flickering around Wellington.

Tony Silke: Yes, Wellington got the short end of it, didn't it?

Ian Crabtree: Yeah. I can still remember they had some modifications done to the way they fixed them up. We wanted to make a statement saying that we were about to fix them up and old Bruce McKenzie wouldn't make [laughs] a statement. Wouldn't say a thing.

Tony Silke: Bloody prove it. [laughs]

Ian Crabtree: Anyway, they gradually overcame the problems and they settled down to be extraordinarily reliable.

Tony Silke: Yeah. Now they're just a non-event, aren't they?

Ian Crabtree: They were very well-maintained by people with a great level of expertise. For the mercury-arc valves, we were getting performance better than the thyristor valves after the war.

Tony Silke: Yes. It's quite amazing.

Ian Crabtree: A tremendously good job was put up by these people. We managed to have the same people staying around and getting to know the valves.

Tony Silke: Yes, they were certainly complicated bloody things, weren't they? Of course, they were leading edge technology in the world in those days, weren't they? The New Zealand intertie was a big deal.

Ian Crabtree: The people who were looking after them had to be very careful with all that mercury around. We had to be very careful to control mercury exposures. At one time, they were almost using the people as monitors for the mercury. God, I got a bit concerned about this, fundamentally. But they didn't have very good vapour monitors, so they would take samples from men and just check. I was, 'Hey, this is terrible using the men to monitor the mercury levels.' [laughs] So we got some good monitors in eventually.

Tony Silke: What do you do when you find it's too high in somebody?

Ian Crabtree: Yeah, well you had to take them off the work. Yeah, that's right. It was bad. I got quite concerned about that. But I think we managed it. Well, it's the care by the men to keep the level, to take meticulous care and cleanliness to ensure that they were never exposed to mercury vapour.

Tony Silke: Actually that's a place that had good procedures right from the beginning, wasn't it?

Ian Crabtree: Mm.

Tony Silke: They developed sound procedures and sound methodology - good systems. Yeah. Okay.

Ian Crabtree: Can I just say a couple of other things? I was nominally in charge of the Supply branch; I also got interested in the landscape and I reckoned Transpower should be looking after the landscape. Trevor Pugh, who was the Chief Engineer Operations, when the Operations Division was set up, he was quite concerned about the landscape. He took on Hedley Evans, the landscape architect, to do some work at Atiamuri. Generally, the Ministry of Works had done the power station work, but Atiamuri was handed over and still needing more work done, and Trevor recruited Hedley Evans. I think he found I was an enthusiast too, and the net result was that when Trevor went, I inherited the landscape architects. We got another one, John Hudson; then we got Julia Adams. We got them appointed in the various divisions, and gradually landscape architect and looking after the landscape became an accepted feature of the Transpower work. Jo Whittle's doing a bit of work on that.

I was just getting the papers out the other day to see how it developed. The other thing I got interested in was the electric linemen training committee. That was a committee that was in charge of training of linemen for distribution work around the streets and the old New Zealand Electricity had to provide a chairman, so I finished up as chairman of that. I had quite a few, what I thought were worthwhile years there and getting some manuals put together there for training of the linemen and ensuring that their training was much better than it had been. Because the fatal accident rate with them had been a bit high and so that was another area that I was interested in.

Tony Silke: Just as an interesting aside, I was reading a Vietnam paper yesterday. They were talking about there were two provinces in Vietnam. In one of them, the annual deaths through electrical accidents were nearly 100 and the other one was about 80-something, and this was just in one particular area. Apparently, what they do is they run the reticulation lines out and people build their huts or whatever they are right close to them, and they grab the free electricity off the lines. They wonder why they kill themselves. [laughs] Yeah, they're a long way away from where we are, by the sound of it. Anything else you want to say about the lines training and that, because that's become quite sophisticated here, hasn't it?

Ian Crabtree: Well, yes, that's right. We got linemen training going. Bert Carpenter was doing quite a bit of work for us. We got a line training school going at Islington. Bert was in the sort of personnel area. Yeah, I forgot about that. That was linemen

within our organisation as opposed to the electric linemen training committee training the distribution linemen. A separate patch.

We did [?14.03] lots of other things. [pause 14.05 to 14.14] Basically, it was effectively just run of the mill writing procedures and policies. We finished up with a fairly well-documented set of document instructions for the transmission system maintenance.

Tony Silke: Quite different from what it was if you go back 30 or 40 years.

Ian Crabtree: There was nothing.

Tony Silke: Nothing at all. From supply to retirement.

Ian Crabtree: Yeah. Well, the reorganisation came along and briefly I finished up in charge of Protection and Communications, or something like that, for a very brief period. Then I retired. They said, 'Stay on - we'll call you a consultant.' I finished up with a collection of things that I'd always been quite interested in. Of those, the one that I think occupied most of my time, or the biggest proportion of my time, was safety. First of all, development of the safety rules in ECNZ. They had sort of been not thoroughly gone over. They'd been worked on quietly, but we did a major revision. There'd been a tendency to say, 'any fool knows what these rules mean', when it wasn't very clear. [laughs] To be quite honest, one person said that. No. But they did need a bit of a going over, so the first thing was to go over the rules. Then the idea was that contractors were going to work both in transmission and distribution. We wanted a common set of safety rules for everybody: the distribution people as well as the transmission people and the generation people.

So, we started to work towards a common set of safety rules for New Zealand. We published them in 1995 actually. I think that's right. But there was a lot of preliminary work, and a lot of persuasion went on, working with people to get a common system that would work both for distribution and for transmission. Then that set of safety rules we revised again last year. We had another go last year and improved them again. The ones in 1995, because the two groups, the distribution and transmission, had been separate, it required a lot of consultation a lot of working through to get a set of rules that would work, but they were accepted actually. The 2000 edition, I think, is a good improvement.

The other thing is that areas where the rules weren't all that precise – there were difficult areas of how to ensure safety. Earthing sounds easy enough, but it's quite complicated actually. One of the interesting things going on at the moment is that there are earthing issues arising even from the 2000 edition which are being worked on and looked at. Even now, we're starting to work towards the next revision. Mike O'Brien's actually doing some work on that for us.

The other thing that's gone on is about two or three years ago, we'd said to the Australians, 'Look, hey, we should have common systems between Australia and New Zealand.' Well, the Australians didn't have common systems within all their states. So about three years ago, I think it would be, we'd quietly muttered when we talked to them, you know, 'Why don't you have common laws?' Eventually they picked it up. I finished up on the steering committee for it and there were a number of aspects of common safety or issues associated with safety that needed work on. So I finished up on the steering committee and I finished up on the committee that was closely related to the safety rules. They called it Safe Access to Equipment. So we worked on those too.

Just at this very moment they've almost got the agreement on the common access to equipment rules. They're not rules that'll apply right across - I think it's a code on which the individual states and authorities will base their rules. The idea at this stage isn't that everybody will work to these centrally imposed rules, but their rules will be consistent with them. It so happens that some of the Australian language is a bit different from ours, and so we've said we will go along with them as far as we reasonably can. Convergence will take place as time goes on.

Tony Silke: They had some words that meant the opposite, didn't they?

Ian Crabtree: Mm.

Tony Silke: Yes, the word 'clearance' somewhere or other meant exactly the opposite to what our clearance meant. Yeah, quite complicated.

Ian Crabtree: In our previous 1995 edition we had dropped the word 'clearance' and went to access permit, which was the Australian language, knowing that eventually we would all be one. The word 'clearance', as you say, had a different meaning, so we didn't want that.

Tony Silke: Yes. Somebody - I don't know if it was Australia or America - but somebody used the word 'clearance' to say that they were finished working on something, where we used the word 'clearance' to say you can work on the bloody thing.

Ian Crabtree: That's exactly it.

Tony Silke: Yeah. It's a bit like in the electricity and gas. In electricity, if you open a switch, you stop the flow. In gas if you open a valve, then you create a flow. So open and close in electricity and fuel mean exactly the opposite. Yeah, that's a bit of a dilemma for some of these places.

Ian Crabtree: Yeah. Safety, I think, is one of the more gratifying areas because the simpler and the more straightforward and the more common you can have

systems, I think the better safety you get. I'm pleased to have, you know, been able to work on that.

Tony Silke: It's interesting. It would seem to me, as an outside observer, that that would be bloody boring, and yet you've obviously got a lot of personal enjoyment out of it.

Ian Crabtree: It's interesting, isn't it? Yes. Well, it's a personal kind of thing. Because men's lives hang on it, the words are critical.

Tony Silke: Yeah. You're also pretty good with words too, though, aren't you?

Ian Crabtree: Well, I don't know about that, but I like playing around with them. [laughs] There are technical things like this earthing business. I can still remember, I grew up in radio and you earthed the radio, you just put a bit of wire and stuck an earth in the ground. I can still remember earthing. This was when I was very young. What the hell's all this complicated stuff about earthing? You just tie it to a bit of metal and stick it in the ground.

Tony Silke: A bit of water pipe.

Ian Crabtree: That's right. [laughs] Then you realise that there's more to it than meets the eye. There were a whole lot of subsidiary issues as far as the rules are concerned. I could keep going on those but that's off the main theme.

Tony Silke: I don't know that it is. [laughs]

Ian Crabtree: No, there isn't time.

Tony Silke: It's just surprising to me.

Ian Crabtree: Yeah. One of the interesting things to me, there are number of things you do and how's the best way of saying clearly what people should do in this situation and looking at other people's rules and seeing how they handle this particular situation. Anyway, safety.

Another thing I worked on was Civil Defence and emergency management. This is the old, centralised government: the Civil Defence Act required quite a lot of work. Transpower or New Zealand Electricity was an advisor to the National Civil Defence. The Civil Defence was set up by ex-army people and it was a very hierarchical centralised sort of thing. There still is an office in the Beehive basement or a Civil Defence area with bugs and people. It envisaged a central command operations centre, and then we had to have documentation in our organisation to enable us to work, our districts to work with that central control and work with the power boards, and so it went on. It was fairly complicated.

It probably would've worked, if you wanted to do things centrally, but doing things centrally isn't necessarily the best way. The whole thing has changed over the years. But going back, if you were going to have a central thing, you had to have people who knew what the central thing was. So we had to do that and put a bit of effort in.

Tony Silke: Were there any particular incidents that the Civil Defence was lit up and you were involved in?

Ian Crabtree: No, never. [laughs] Never any real ones. They tended to be flooding, which didn't involve us much. We did run things; we used our Civil Defence control room. In the Canterbury windstorm, we used our Civil Defence control room - that was about 1967 or something like that. It was a long time back.

Tony Silke: It would be '67, '68. I'd just got to Christchurch about then.

Ian Crabtree: The Canterbury wind storm, we ran the little control room in Rutherford House. Civil Defence did alerts - we just ran it like that to keep management informed and have the information displayed. Then there was another one, the Edgecumbe earthquake when I wasn't here, which they ran a bit like that. I happened to be overseas at the time. Both of those, they didn't have a state of national emergency, but we ran them in that sort of emergency way. The Y2K was a little bit like it, except that nothing happened.

Tony Silke: Yeah, but we were prepared for whatever the hell it was that was gonna happen. [laughs]

Ian Crabtree: But it did mean that we did have to have subsidiary sort of plans of how we were going to cope with things. We did produce contact lists. When the chips are down, contact lists are one of the key things, if an organisation is going to survive an emergency.

Tony Silke: I think it's the most fundamental thing about being prepared for anything is to be able to communicate.

Ian Crabtree: We have put quite a lot of effort into that area and it's a contact list that's still being produced. I don't know whether you're on it [?24.35] or not, but this contact list is still being produced.

Tony Silke: Yeah, I still get a copy.

Ian Crabtree: I remember Russell Stewart saying, 'Yeah, I always carry that contact list with me.' He actually used to say that, because it was such a useful little contact list. Today, I think it's easier for people to find their way around, you know, with the different electronic systems. But anyway, our system still continues

so that all the electrical people, whatever their role, the key players have a contact list. Ian Scott produces that now.

Tony Silke: Yeah, he makes a fine job of it.

Ian Crabtree: He does it very well.

Tony Silke: Yeah, we're just doing kits now for business continuity. I took a kit up to decipher [?25.10] yesterday and it's got a print-out of the Transpower phone list and it lists everybody in Transpower. Then it's got the Transpower emergency contact list; then it's got the industry emergency contact list. This is probably the key of the kit stuff that we're doing. It's probably the most important parts of it. How do you talk to people?

Ian Crabtree: That's right. We got that going a long, long time ago. I always remember I had a reduced size one. I think they'd taken the typeface down too far; old Phil Blackie didn't get it. [laughs] We were saying, 'He couldn't read it.' I thought I'd better take it up a bit. But it's always that you don't want things to be too bulky. As I say, we aimed to make something that was useful to people as well as useful in general - running of the organisation as well as useful in an emergency.

The Civil Defence and Emergency Management, we put a lot of effort into that. That started off when we were with ECNZ. I used to work with Stuart Ashwood [?26.05] because he worked on the generation side, and we had to have something that went right through the organisation. Then we split away and so ECNZ had their orange folder and we kept ours. Then we got the various generating companies. The system, I think, will have to be redone. This very day, there's a new Civil Defence and Emergency, CDEM legislation that's come into play. I think it's in place now.

Tony Silke: Is it, finally?

Ian Crabtree: Well, I think it is. I wouldn't be 100 percent certain. Under that the director had to produce guidelines for the Lifelines utilities and Transpower's a Lifelines utility. Just this very day I got from Hans Brundt [?sp] a first draft that they'd done. I gave a copy to Ian. If you want a copy, I'll give you one. There's a first draft of the director's guidelines for the Lifelines companies, of which we are one. They're going to look at it next week. These things keep developing. They're so much better than they were when we started off on Civil Defence.

Tony Silke: But you never actually quite put them to bed, do you? They're always a living document.

Ian Crabtree: Yeah.

Tony Silke: The world's changing or some damn thing's happening. You never quite get to the stage where I could say, 'This is finished.' [laughs]

Ian Crabtree: Well, no, but I think the other thing is they're so much better now than they were when we started. This is so much better than we started off with this militaristic central command thing.

Tony Silke: That was society in the time as well.

Ian Crabtree: Yeah.

Tony Silke: You know, if you go back to the '40s and '50s I think that that's the way we were. Look at the influence of politicians and that sort of stuff.

Ian Crabtree: Going back to, you asked me whether we used the stuff in anger. Well, we may not have used it in anger - we had lots of exercises [laughs] over at the Beehive there.

Tony Silke: That's something that's not being done now in a lot of areas of emergency stuff.

Ian Crabtree: Mm.

Tony Silke: We hope some of this business continuity stuff that we're doing now might start to do a bit more of that. But to me, if you can't try it, well, the people just will not be prepared, as they have to be.

Ian Crabtree: Yeah. If you ever go down the Beehive basement, there's a logbook there and you'll find my writing up of exercises.

Tony Silke: Yes, I've seen some of your writing. [laughter] What else are you doing at present?

Ian Crabtree: There was Civil Defence and Emergency Management, and that's very interesting. What else am I doing? Electric and magnetic fields.

Tony Silke: Oh, yes. You must be one of the few that would actually know anything about that.

Ian Crabtree: Well, I don't know that I know much about them. I still don't know what the answer is. But certainly I got interested in it when I went over to Canada in the late '70s, I think. The concern then was from the voltage electric field under lines rather than magnetic fields. So I got a meter then and we did a few measurements in New Zealand to know where we were. We've stayed with it over the years. The National Radiation Laboratory has produced a booklet which we distribute. Our policy is we work very closely with the National Radiation

Laboratory. We don't claim to be the experts. Martin Gledhill is the man who works in that particular area and Andrew McEwen is in charge. We've kept very close contact with them over the years. We've had our own industry sources get information on research and things like that they mightn't have got, and we've shot it down to them.

We've had a very helpful relationship with them. They've been very helpful to us, in the sense that they've always been willing to, if there's been a problem, say what they thought the situation was. Very co-operative. Not so much co-operative in giving the right answers, cos I don't think there is a right answer, but co-operative in getting it to public if there was a problem which was beyond our competence.

Tony Silke: It's an interesting area, isn't it, that you hear nothing about it on the media and then suddenly something will sensationalise it. You'll see two parties that are miles apart in their thinking, and yet there seems to be lack of data or the amount of data is so small it's down amongst the noise really, isn't it?

Ian Crabtree: Yeah. Well, the position that I think is a sensible one - all you can do to people - this is what we understand the position to be: you give them the information and go, if you're gonna get worried about it, that's your choice. If you're not gonna get worried, that's your choice. Most people don't get worried when they look at the situation, but there will always be the odd person that will get worried, and that's about where it is. You can't stop people getting worried, that's their choice. That goes on. The National Radiation Laboratory issued the booklet, a revised edition, just a few days ago.

Tony Silke: Yeah, I saw it sitting round there.

Ian Crabtree: I've already sent one copy to Australia cos I told one of my players over there, Tan Doven [?30.52], that if it had been reprinted, I'd send him a copy. I'll send one or two more to other people who are particularly interested in the New Zealand booklet, but I'll tell them all that it's on the website. Cos they have taken some interest in it. In fact, they did distribute copies in Queensland. They liked the booklet and they got quite a stack of copies from us because they thought it was good stuff. We worked very closely with the Australians on that, in ensuring that there was co-ordination. I don't know what else I've done. There must be lots of other things that I can't think of.

Tony Silke: I wanna take you into another area.

Ian Crabtree: Okay.

Tony Silke: People, characters.

Ian Crabtree: Oh, A E Davenport was the general manager.

Tony Silke: A E Davenport, is that right, was he...?

Ian Crabtree: He was the general manager when I was there.

Tony Silke: He was the general manager when I started as an apprentice, but he was God, and one never knew him when one was a lowly Nelson apprentice.

Ian Crabtree: He was a slightly pompous sort of man. He was a nice guy. A fairly pompous man, but he left the technical running of the organisation to his chief engineer, Bill Latta. So there were three people: there was Davenport, general manager. There was Dick Withers, who was the assistant general manager, and there was Bill Latta, who was the chief engineer. I never knew exactly what Withers did except I do know he did quite a lot of work on testing fuses. A lot of these ceramic-type fuses were about at that time.

He seemed to do a lot of work on testing [laughs] - it sounds strange when I say it cos a lot of them had a low rupturing capacity. That's all I knew about him. Davenport was a kind of front man. When the DC scheme was a great success, they gave him some award for contribution to technical improvement or something in Sweden. Davenport had to present this lecture in Sweden. I can still remember he wrote all this up and he was going around - I was in the old Maintenance section - and he was reading out bits of what he'd written. All I can remember is he had all these white-headed horses racing down the river, you know. [laughs] It was purple prose, if you ever heard purple prose – after the power stuff. Everybody said, 'Yes, very good, Mr Davenport, very good.' [laughs] The purplest [sic] prose I'd ever heard. This was consistent with my feeling that he was a little bit pompous. That was his problem.

Tony Silke: So he was a political...

Ian Crabtree: He was a political beast. Then underneath him was Bill Latta. Bill Latta, I found the most interesting man. If you wanted to do something, well, Mr Latta said that or Mr Latta thinks this or Mr Latta wants to do that. They all knew what Mr Latta wanted to do. You sort of imagined this almost, not an ogre but this authoritative man. I hadn't had any occasion to meet Bill Latta. But then eventually I had to go and see Bill Latta over something, and far from this authoritative man, it was this smallish, quietly spoken, extraordinarily pleasant man that I had to deal with. I was so fascinated between this authoritarian figure that I'd imagined I was going to deal with and the courteous and quietly-spoken Mr Latta.

Tony Silke: He’s been a very influential person in the development of New Zealand, hasn't he, of electricity in New Zealand? Bill's name would be on many an important paper and achievement.

Ian Crabtree: Yeah, it fascinates me. I think he was very intelligent, but I think he was very hard-working, and that enabled him to sort of make his mark on the

organisation. Nobody would ever challenge anything from Bill Latta. I went to his retirement. I was so fascinated by this man, and he said two things to me at his retirement. He said, 'I feel exactly the same now as I did when I joined the Department.'

Tony Silke: Yeah, actually I'd have to go along with that.

Ian Crabtree: But he didn't last all that long.

Tony Silke: Oh, did he not?

Ian Crabtree: No. That was where I was a bit sad. My impression he hadn't lasted all that long. He built himself a house somewhere up north. The other thing was that he said, 'I've never found a problem but that if I broke it down into its component parts and solved its component parts, I could solve the problem.' I'm not saying that applied to every problem, but it applied to a lot of problems anyway. It probably applies to a lot of engineering problems.

Tony Silke: Well, I think it applies to a lot of life, if you can actually get down. Somebody reckoned if you can get electricity down to the basic theories, you really can't help but get to the bottom of it all. It's just a matter of making it simple.

Ian Crabtree: Yeah. That's the only farewell speech I can ever remember in my life, and I think it was because I found Mr Latta such a remarkable character. Davenport used to go along and sit in Bill Nicholson, the solicitor's, office. Well, obviously that was [indistinct 36.02]. Poor old Bill Nicholson used to think he could never get any work done cos Dav used to go along and sit there talking to him. [laughter] It's sort of a different world, isn't it? You know, I mean nowadays you can't imagine anything like that. But obviously Dav had spare time.

The other two players that one thinks of were Gavin Wilson, who was more or less on the staffing and operations side. I think he was staff engineer and he moved up to the kind of maintenance engineer or something like that. He was a very bright man. And Bruce McKenzie, who later became the chief engineer. I think Gavin Wilson died while he was still at work. Bruce became general manager.

Tony Silke: Yeah, he was a fairly bright guy too, wasn't he?

Ian Crabtree: Yeah. It threw up some pretty bright guys. I think there wasn't the demand. There are so many jobs in society now that demand very intelligent people that there are a lot of places where you find bright people in society now. But in those days, the society wasn't all that technical. The number of slots for very bright people wasn't all that great, so you got some very, very bright people in the old New Zealand Electricity.

Tony Silke: Yes, but there's a different sort of person now too, isn't there? There's the shift from the engineers to more of the bean-counters, the Roderick Deanes and people like that. Super intelligent people, super person in fact, but with a totally different background.

Ian Crabtree: I always remember the number of accountants they had. The accounting people were just in one little room in the old organisation. They had hardly any machines - they did it all by hand. It was all beyond me.

Tony Silke: Actually that's a thing that intrigued me. One of those papers I dug out the other day was this 1948 annual report on the electricity industry to parliament. In that, they could count the number of trucks that they had and the difficulty they had because they couldn't replace the trucks after the war and all that sort of stuff. Times must've been bloody tough.

Ian Crabtree: Yeah, right. It was a hard organisation. It was tough. The further out you got from the centre, the less tough it got; I think.

Tony Silke: Yes, a bit soft in the centre.

Ian Crabtree: [laughs] They were hard in the centre.

Tony Silke: Like that Cadbury's chocolate.

Ian Crabtree: No, it was hard in the centre, but if you got sufficiently far away you could get away with things.

Tony Silke: Any other characters earlier on?

Ian Crabtree: Well, there was old Basil Montgomery, who was a chief transmission line engineer. I liked old Basil. He went over to the USA after the war and then came back with this idea of a 220-transmission grid, as I understand it. I found him quite a gentlemanly sort of guy. I'll leave it at that. He was a nice fellow. Gavin Wilson had a name for being a hard man, as you may know, I'm not certain. [laughs]

Tony Silke: Whether the word spread to the field or not.

Ian Crabtree: I found him very bright. I liked Gavin. We got on alright, old Gavin and I cos he was bright. If we keep on going, Trevor Pugh, who became the first chief engineer operations, he was a very likeable character and a very charming man. Trevor Pugh was a protection engineer before he got the job of chief engineer operations. But he wasn't a hard enough man, I think. They were pretty tough. People used to get at Trevor a bit because he was too nice. The other guy around the place was Robin McKenzie. I had a tremendous amount of time for Robin McKenzie. Did you know Robin?

Tony Silke: Not really. I knew of him, but I didn't know him personally.

Ian Crabtree: He was the maintenance engineer, and I was the assistant maintenance engineer. Then as the world moved on, he became principal generation engineer and I became principal supply engineer, so we sort of worked together for a long period. He got mesothelioma from asbestos.

Tony Silke: Oh, really?

Ian Crabtree: Yeah, which was a bit sad. He survived with it for quite a while. He was the resident engineer at Wairakei.

Tony Silke: Oh, right, yeah.

Ian Crabtree: He got it when he was up there from being exposed to the asbestos.

Tony Silke: Oh, I remember the case, yeah.

Ian Crabtree: Yeah. I think you would've come across him.

Tony Silke: Yeah. Well, I hadn't actually worked with him, but I remember the legal side of it at the end. Yeah, that was bloody sad, wasn't it?

Ian Crabtree: It was sad. Robin was an extraordinarily fine man. I really admired him; he was a wonderful guy. Extraordinarily bright. He was a bit abrupt, and he didn't suffer fools gladly. [laughs] But he was extraordinarily bright and a very kindly man. I guess out of the people that I know, he is an outstanding character. You sort of think, ‘where would you have finished up if you hadn't gone into this?’ He would've been a very distinguished professor in a university, I thought.

Tony Silke: Yeah, it'd be interesting to know what actually shapes people to go in different directions, doesn't it? Why does a person get into electricity safety, for God's sake?

Ian Crabtree: Yeah.

Tony Silke: It's interesting how one steers into these things, isn't it?

Ian Crabtree: Well, I got into electricity safety quite simply. I always thought the organisation had a responsibility towards its troops and a responsibility towards the environment; it had these external responsibilities. I had to pick up safety cos nobody else was prepared to, you know, really do it. Well, that's not quite true. But it needed somebody who was prepared to stick with it and look after it.

We had some safety officers. I was never the safety officer, but sometimes I had the safety officer working for me. The people they could recruit in those days, as safety officers, in the old days, the calibre wasn't all that high. They didn't pay much for them. There are much better calibre people around now in that area. Healy's [?sp] a good guy. The whole area is a much more recognised area. You go from the stage when people paid kind of lip service to safety, to now where it's an important part of the organisation.

Tony Silke: We're probably going through a similar thing now with risk management.

Ian Crabtree: Yeah, yeah.

Tony Silke: It's probably a similar thing that there's a number of people that are pretty passionate about it, but Transpower doesn't have a risk manager. It's pretty much a re-run of the same play really, isn't it?

Ian Crabtree: Well, I agree with you. I've been interested in these things. There was nothing in the organisation… If it was all well-established, it got a bit boring. But with something like the landscape, with nobody… you had a responsibility to the landscape, therefore you had to get it going. You had a responsibility to the men; you had to get the safety going. Yeah, and the responsibility to the risk. Or you have to ensure that the business can go.

Tony Silke: It's interesting how some of these things stay at the surface. The work that you're doing now, you're passionate about it, but also Kevin's passionate about it, isn't he?

Ian Crabtree: Mm.

Tony Silke: Kevin's been quite a link between a lot of these things over quite a long period of time. A lot of these things get down to somebody's personal passion and wanting to do some bloody thing, didn't it?

Ian Crabtree: Yeah. The interesting thing is I've been working with Kevin for a long, long, long time.

Tony Silke: Yeah. He was one of your disciples at one stage, wasn't he?

Ian Crabtree: That's right. Yeah, he came in, in about 1970, to work for me on transmission lines.

Tony Silke: Whereabouts?

Ian Crabtree: In Wellington, yeah. He came from Nelson. Do you know Brian McGlinchy?

Tony Silke: Yeah.

Ian Crabtree: Brian McGlinchy took some of my good men. In that reorganisation, McGlinchy went down to Dunedin and Ian McKellan [?sp] went down to Dunedin.

Tony Silke: Would that have been the start of the big Dunedin district growth with power station development and all that sort of stuff that was...?

Ian Crabtree: More or less I think it was, looking back. Yeah. McGlinchy knew transmission lines and I had nobody to pick it up, so I said to Mackie, you know, 'You're in charge of transmission lines. You're it.' I mean nowadays transmission lines are quite a big deal.

Tony Silke: Yeah.

Ian Crabtree: And they were quite a big deal then, but we were learning.

Tony Silke: Kevin's been doing that for about 30 years now?

Ian Crabtree: Yeah. He started with transmission lines and then of course he moved to where he is now which is the whole - he's taking the whole shooting match.

Tony Silke: Yes. He's still got a passion for the transmission lines and the assets and things though, hasn't he?

Ian Crabtree: Well, that's right.

Tony Silke: He's still very passionate about it. Is it just our industry or what, but it's the passion that people have I find really interesting.

Ian Crabtree: Yes. Well, he's really been committed.

Tony Silke: Were you involved in any of the early work on the nuclear power development in New Zealand?

Ian Crabtree: No, I wasn't.

Tony Silke: That's put a stop to that, hasn't it?

Ian Crabtree: Sorry about that. The ones I remember were Allen Bloomfield, who's still around, and Hector Jones, who isn't. I think Bloomfield went to Canada and Hector Jones went to England; I think.

Tony Silke: Allen Bloomfield's still in Wellington, isn't he?

Ian Crabtree: He's in Palmerston North.

Tony Silke: Is he?

Ian Crabtree: Yeah. If you wanna talk about nuclear, go and find Allen Bloomfield. He's easy to pick up in the Palmerston North phone book.

Tony Silke: Right. It's not that common a name.

Ian Crabtree: No. It's K A Bloomfield.

Tony Silke: Yeah. K A. I'll do that because you know that we're making some progress with our museum now.

Ian Crabtree: You want a bit of nuclear fuel. [laughs]

Tony Silke: Well, I guess I've got a bit of a passion here. I know nothing about it, but I know that there was a hell of a lot of work done about it on nuclear planning and that. I don't think it's written down anywhere and I'd like to actually even tape it, just to get some of the thoughts of some of these people and where it got to. Cos it's bloody hard to find anything about it in New Zealand now.

Ian Crabtree: Have you got that *People, Power and Politics* book?

Tony Silke: Yes.

Ian Crabtree: Yeah. Is there anything in there?

Tony Silke: I don't think there's much in it, no.

Ian Crabtree: Well, that's one place. The other place you'll find in the annual report.

Tape 1 Side 2 ENDS: 46.28; Tape 2 Side 1 STARTS

Tony Silke: It's Friday, the 16th of November 2001. This is session number three. We've done two 45-minute ones before, a total of 90 minutes, so away we go from there.

We're now sitting in Roger Bailey's/Bayley's [?sp] office on the 9th floor in Transpower and we're going to talk about a few lightweight things, some of industry interest, but some others perhaps a bit more about Ian, the person. We're going to start by talking about Ian going over to England on a scholarship to get some work experience.

Ian Crabtree: Yeah. When you finished your degree at Canterbury, there were graduate apprenticeships available with the big British electrical manufacturing companies like Met-Vic, BTH, English Electric. They were two-years duration and I think they were quite interesting. I didn't want to bind myself for two years over in the UK. I wasn't certain I wanted to stay an engineer - I thought I might become a doctor. So I didn't take one of those up or didn't try to get one of those. But the Confederation of British Industries, or the Federation of British Industries, as it was then, also had scholarships available for engineers who had had a bit of experience, a Type C scholarship, and I applied for one of those and got it. All it provided was an allowance over in the UK and a programme. You decided what programme you wanted to do, and they provided it for you. I wasn't the first to have gone from the organisation. Gerald Colley [?1.43] was the first one but he got absolutely no assistance at all from the state hydro. I was the second one. I think I've said this before in another story, and I had to go and see Davenport, the general manager, before I went. He said, 'Are you satisfied with what you've got?' [laughs] I wasn't, but I didn't say that. I knew if they wouldn't pay anything to Colley, they'd set the precedent: they wouldn't pay anything to me, so I went without saying...

Tony Silke: Of course in those days you wouldn't speak back to your boss. They were on a pedestal, weren't they?

Ian Crabtree: Well, I would've spoken to Latta, but I wouldn't have spoken to Davenport. [laughs]

Tony Silke: Formidable man.

Ian Crabtree: A more formidable man than Latta. Latta was, I've talked about him before, a much more approachable sort of man.

Anyway, the problem was it didn't pay the fares to and from England. I thought, oh, well, people worked their passage and so I'd try and work my passage. Eventually I found the New Zealand Shipping Company had vessels which they would sign people on. Somehow, I managed to find a way of getting on to a New Zealand Shipping Company vessel. I went over to England on, I think it was the Hinakura, and came back on the Hurunui. They were both motor vessels and I was signed on as a supernumerary engineer. What that meant was that you worked; you got a shilling a month. Well, you didn't actually get the shilling, but you nominally got a shilling a month.

Going over I didn't know anybody, and I was put on day work. Most of the engineers were ordinarily on watch - that's eight hours on, four hours off. I was on day work going over but coming back, for some reason or other, I knew the second and the second said, 'No, you'll be on watch like anybody else.' [laughs] [indistinct 3.35] I didn't mind that, or it didn't matter. In fact, I quite liked it because you were more one of the gang if you were on watch than if you weren't.

It was quite interesting. The ship had Doxford Diesels - two engines. *The Economist* once described them as great cathedral-like structures, and they were. They were very slow and of enormous size, the engines. When you got on the engine room floor, they just towered up floor after floor, these great big engines.

Tony Silke: The sound of them, I'll bet.

Ian Crabtree: Yeah, thump, thump, thump, thump.

Tony Silke: Yeah, lovely.

Ian Crabtree: At about that rate they seemed to go.

Tony Silke: With the hot smell, yeah.

Ian Crabtree: Yeah. I didn't know much about ships at all before. What I found out was, the advantage of motor vessels was that they were cooler than steam turbine vessels. There's a lot of heat in a steam turbine - not so much in a motor vessel, but inherently they're more efficient, burn the oil more efficiently. Steam turbine-driven vessels are very clean, and you can't do anything to them when you're at sea anyway. They either go or they don't.

Tony Silke: Oh, really?

Ian Crabtree: Well, there's not much you can do if it doesn't go. If anything goes wrong with it, if it's major, that's the end. But you can actually work on motor vessels if something goes wrong. There were four of these Hornsby engines of about 800 horsepower that drove generators. These four, as well as the main engines, I guess four auxiliary engines, they drove the generators that drove the refrigerating plant, because these were refrigerated vessels. Most of the time they needed two. When they were going through the tropics, they needed three; in fact I think they almost needed the four engines to go through the tropics. When you were going through the tropics you couldn't do any work on them because you had to have them all available. But when you moved away from the tropics to cooler parts of the globe, you could work on them. These engines, the rings got stuck in the pistons, so you had to take them right down and drag the pistons out, free up the rings and, for some reason or other, you worked on the bearings. I don't know why the bearings needed scraping, but I can remember scraping the bearings on these. You'd think they'd be more reliable.

Anyway, that was the job: taking them apart, freeing the rings, and maybe you put new rings on. I can't remember that, but we certainly would free the rings and we certainly scraped the bearings, cos I remember scraping the bearings.

Tony Silke: Was that just a build-up of gunge or something like that, the rings themselves?

Ian Crabtree: I think it was just gunge, yeah.

Tony Silke: Yeah, just contaminant stuff in there.

Ian Crabtree: I think in the old days when people worked on motor cars, you know, the rings, they used to do that sort of thing. I think there are more detergent oils around now.

Tony Silke: Yes. It's interesting in that some of these routine jobs, like in power stations where they used to clean the brushes on the generators - I'm bloody sure they did more damage with brush gear maintenance than what they did if they left the bloody things alone. [laughs]

Ian Crabtree: Well, I remember once when I was in Christchurch district, cutting back the mica between the segments was a job. They'd seen this American article. Ordinarily, you cut back the mica with a very narrow file that you had.

Tony Silke: Yeah, you'd use a hook type thing.

Ian Crabtree: There were various ways of scraping it off. They got sick of that, and they saw this device in a magazine. It was like a mini circular saw, and you ran a mini circular saw along the groove. I don't know how they got on, but I always thought to myself, if they didn't keep a little circular saw I hesitated to think what happened to the poor old comminuted copper, with a little circular saw taking it out of the groove.

Tony Silke: The potential for damage is high.

Ian Crabtree: I don't think they persisted with that thing.

Tony Silke: In fact they're full of rust instead. [?7.40] [laughter] Put two in use and four in use over the tropics.

Ian Crabtree: That's it. That was working on those. Then the other thing, occasionally things went wrong with the main engines. There were two, so you could work on one when one was out of service. The most spectacular thing that went wrong with the main engines was, we'd been down in the engine room, and I heard this clunking sound. I thought somebody had dropped a steel floor plate. There was this clunk that came again. [laughs] I thought, gee they're throwing those floor plates around. [laughs] It kept on and then I realised what it was. The clunk, instead of being people throwing floor plates around, it was coming from inside one of the big engines. What had happened was that these used Oxfords had water-cooled pistons, two pistons per cylinder. They're water-cooled pistons

and to water-cool the top piston, there's a kind of an elbow arrangement. It goes up to the top piston, so this elbow pipe was all the time, theoretically, connected to the top piston. But what happened was that it broke in the middle somehow. [laughs] It's almost as though a person's elbow had broken. The two bits were flailing around inside and the clunk was this cooling pipe flailing around inside the cylinder.

Tony Silke: Bloody hell.

Ian Crabtree: I know.

Tony Silke: Not to mention the fact that the piston wasn't getting any colder.

Ian Crabtree: That's right. They had to turn the engine off. They were five-cylinder engines, I think. They had spares of these pipes, but the boss on the upper piston, that the arm connected to, when the arm was flailing around inside the engine, the thrust – and it hit things - came on to the boss on the piston, so the boss on the piston, instead of sticking horizontally out from the piston, was bent upwards. [laughs] They didn't have a spare boss, so what they did, the aim was to take the piston out of service. Instead of running on five cylinders, they ran on four cylinders and, like, flagged [?9.52] the whole thing off.

Tony Silke: Oh, really?

Ian Crabtree: That's all they did. What they had to do was to take the whole thing out of service, that particular cylinder and piston out of service. I can remember that. The problem with these engines is that you wanna get them back as soon as you can and they're as hot as anything.

Tony Silke: Yes.

Ian Crabtree: That was the second engineer. The first, the chief engineer, he lives on that upper deck. He doesn't go near the engine room. The second is the guy that does all the work.

Tony Silke: Does the toil, yeah.

Ian Crabtree: I can still remember, somebody had to take the bits out of the engine and the second led the way in. It was so hot in there. I felt sorry for the poor guy. The job was successfully done, and the engine got going again. Then we got going again on four cylinders instead of five.

Tony Silke: You'd think they'd run like a dog, wouldn't you?

Ian Crabtree: You'd think, but I think there was so much weight in the things. The fact that there was a bit of weight missing...

Tony Silke: Yeah, once you get the bloody thing started, I suppose it's alright.

Ian Crabtree: Yeah. I think the other interesting thing was that there's a stern gland on the propellor shaft, and there's packing around that. Anyway, as we went over, the chief decided that there was too much leakage there and the packing needed fixing. Instead of going ashore in Panama, nobody could go ashore in Panama until the packing had been fixed up. There was a great deal of concern because the problem, if you went to start taking the packing around a propellor shaft, if you don't do it right, the water pressure...

Tony Silke: The water comes in.

Ian Crabtree: ... [laughs] will blow all the packing out and the ship sinks. [laughs]

Tony Silke: That's probably important.

Ian Crabtree: There was a great deal of concern basically cos they wanted to go ashore in Panama, and the other thing was because the ship might sink while they were doing the job. However, that job went on, amid much swearing and cursing. I think the leakage was improved. But those were two of the incidents that I can remember associated with the main engines.

Tony Silke: How long would the trip each way have been?

Ian Crabtree: About a month or 29 days.

Tony Silke: Twenty-nine days, yeah.

Ian Crabtree: We stopped at Curaçao to take on fuel oil. It seemed to be the standard place for fuelling in those days. I think we stopped briefly at Panama. I don't know why we stopped at Panama.

Tony Silke: You were paid a dollar a day or a shilling?

Ian Crabtree: A shilling a month.

Tony Silke: You weren't paid. You got a free trip.

Ian Crabtree: Yeah, I got a certificate of service which I've got somewhere. Have you ever seen one of these certificates?

Tony Silke: No.

Ian Crabtree: Well, the interesting thing was I got the certificate. It's performance for conduct and something or other, and you got ‘very good…. very good’ stamped

across it. My uncle, whose father was in the Union Steamship Company, we've got his papers, and he did the voyage in about 1923. Amongst his papers is one of these identical certificates, stamped very good, very good, very good, exactly the same way.

Tony Silke: Actually we didn't start by the date on this one. What year would it have been in?

Ian Crabtree: This was about 1957, and the other one was about 1920...

Tony Silke: God, it would've been a big challenge then.

Ian Crabtree: His father worked in the Union Steamship Company, he was signed on as a purser or something like that, so it was just a nice little voyage around the New Zealand coast, whereas I went over to England and back. The other thing that interested me about this ship was the cleanliness. The ship ran on residual oil, which was black. Everything it touched got black. It got into your hands; it got into everywhere. How did you get the oil off? You had sandsoap and a scrubbing brush.

Tony Silke: Oh, God.

Ian Crabtree: I said to them, you know, 'Isn't there anything better than this?' 'No' They said, 'there was some Swarfega. It lasted about three weeks on the voyage out.' After three weeks with Swarfega [laughs] they were down to scrubbing brushes and sandsoap.

Tony Silke: Thank Christ for the detergents later on.

Ian Crabtree: I know. It was terrible. The net result was that if you scrubbed every scrap of oil out of the creases in your hands, they were just raw, so you lived with moderately oily hands. You'd got the worst off, but the conditions were really primitive - a scrubbing brush and sandsoap.

Tony Silke: Yet some people loved that life, didn't they? They loved the nautical engineering life. I wonder if it was the ports that they visited or what the hell it was.

Ian Crabtree: Well, it was a secure world. We used to talk to them about it and they used to say, unless you got off the ship by a certain age, you were done. You were institutionalised basically because it's in a protected environment. You've got your food provided. Most of the time you couldn't do anything cos you were at sea. You couldn't go and get into trouble cos you were at sea. You didn't have any decisions to make. There was company there, people to talk to. Although I did notice, particularly on the way back to New Zealand, towards the second half of the voyage, when people came off watch, they would go to the day room sort of place. They'd just go to the day room and go to sleep cos they got tired. I think that

was because things were going wrong and when something went wrong, you all had to turn out. It did get quite hard work.

Tony Silke: Yeah, I'll bet it would be. Yeah, bloody hard on families and that sort of thing too.

Ian Crabtree: It was, and they realised it. In a sense they were frightened of it.

Tony Silke: Now there's almost nobody on most of those ships now - they're just about fully computerised. Very small staff.

Ian Crabtree: Well, that's right. It's the reliability. You can run the engines from the main deck. I think they're mainly turbines...

Tony Silke: Yes, they are.

Ian Crabtree: ... although I don't know. Turbines, as I said earlier, nothing goes wrong with them.

Tony Silke: Yeah, that's right - they just keep going.

Ian Crabtree: They just keep on going.

Tony Silke: The time will come soon when they'll be running them from some other place on automatic pilot, won't they? Can't be too far.

Ian Crabtree: That's right, like these aircraft that the Americans have got now. It’s an interesting thought, isn’t it?

Tony Silke: Well, it's the biggest change in our industry really, isn't it? You know, you can recall, in the early days, every little substation and power station had staff working, if not round the clock, at least the core hours of the day. The biggest change I can remember anyway, in that area, has been the de-manning of stations and the fact they still keep going, and the extra reliability of them. Centralised control of it.

Ian Crabtree: Yeah, that's right. Things didn't go wrong very often and there was a demand that there'd be somebody there to respond instantly.

In Inangahua, there was a tiny pint-sized sub there. The idea was that there was a gang of linemen there and one of the linemen stayed at the sub each day in case anything went wrong. The district put pressure on. No, we've gotta have this substation properly attended – we can’t have this. They eventually had to build two houses there for a two-man sub.

Tony Silke: Of course, in the early days that was the tie between the main Canterbury, south Coleridge, all that part of the system and Nelson. It was quite important.

Ian Crabtree: Yeah.

Tony Silke: That's where I started actually in the mid-50s at that string that went down the hill. You know, cos prior to that Nelson was a standalone district. But anyway, getting back to our boat.

Ian Crabtree: That's right. [laughs]

Tony Silke: Not allowed to call them a boat, are you?

Ian Crabtree: No. A ship has boats attached to it, but you know that, don't you?

Tony Silke: Yes, indeed.

Ian Crabtree: I'll tell you about the donkeyman cleaning your overalls. The donkey man washed your overalls and he put your overalls in a five-gallon drum, and he put in with them some pink powder. I never knew what the pink powder was. It had some detergent qualities I believe, and he would add this pink powder. There was steam around cos every generator was steam - he'd turn the steam on. Your overalls had sat in this drum for several days and were just bubbling away with the steam coming through. Then at the end of that, the donkeyman took your overalls out and put them on a flat board and scrubbed them with a scrubbing brush, cos they were very much the same when they came out as when they went in.

Tony Silke: I'll bet they were. [laughs]

Ian Crabtree: Then he gave them back to you. You gave him a bottle of whiskey a voyage – you gave the overalls once or twice. You gave him a bottle of whiskey cos the crew couldn't buy whiskey.

Tony Silke: Oh, really?

Ian Crabtree: Well, the lower deck couldn't buy any. The engineers were regarded as officers, and they could buy whiskey. There were two levels. There was the level at which the engineers and the mates and people like that, captain and mates, and they bought spirits for the next level down. I only went down there about once. It was another world. They could buy beer.

Tony Silke: Yeah, and there was a duty-free shop on board.

Ian Crabtree: Well, it was five shillings, I think, for a bottle.[?19.19] It doesn't sound all that cheap really, does it? Five shillings for a bottle of whiskey.

Tony Silke: Particularly at that stage when the average wage was probably something like £10.

Ian Crabtree: Yeah. It doesn't sound all that cheap really. Anyway, it was cheap compared with...

Tony Silke: You'd be bloody desperate if you needed a bottle of whiskey, I can tell you, in the middle of nowhere.

Ian Crabtree: Well, the social life on the ship consisted of celebrating birthdays. As soon as anybody had a birthday, they'd celebrate and that's what life was. We'd all gather round and celebrate somebody's birthday.

Tony Silke: You'd have about one birthday every month each person, would you? [laughs]

Ian Crabtree: Yeah, that's right. In effect, there was a birthday going most days.

Tony Silke: Yeah. It says a bit really about the social life, doesn't it?

Ian Crabtree: It was a terrible life really. I'll tell you my story about my overalls. Anyway, I got to England with these overalls washed by the donkeyman theoretically, but they were still very oily. There were these Hoover washing machines. I don't think I've told this story. These Hoover washing machines, you know, these ones with the little disc on the side...

Tony Silke: Yeah.

Ian Crabtree: ... spinning around?

Tony Silke: Yeah, funny little things.

Ian Crabtree: They had a wringer on them - they didn't spin. They were an early model.

Tony Silke: Oh, okay. I don't remember that.

Ian Crabtree: What they said, don't ever put your overalls in the washing machine. So I didn't ever put my overalls in the washing machine except on the last day. I thought oh well, it’s the last day.

Tony Silke: You didn’t care. [laughs]

Ian Crabtree: I'll give it a go. I put my, theoretically clean overalls into the washing machine, put some detergent in with them, turned the machine on. It was okay for

about 15, 20 seconds, and all of a sudden, all the foam suddenly went black. [laughs] What was happening was all the oil was actually coming out. This is why you weren't allowed to use the washing machine cos the oil went everywhere. [laughs] I thought, God, I'm in trouble now.

Tony Silke: Yeah. Were you?

Ian Crabtree: Well, I acted with considerable speed. I fished the overalls [laughs] out and the way you got water out of the washing machine was, there was a hose, which ordinarily was just circulating, [?21.23] and you just ran the hose down into a drain in the floor. I ran the hose down and put it into the drain in the floor and nothing came out. I thought my God, the bloody hose had been blocked up with oil. [laughs] So I thought there's nothing for it - I'll have to suck. [laughter] I took the end of the hose and sucked it clean. [laughs] Then all the stuff ran out. Then I set to and cleaned all the oil out. But I must admit, having explicitly disobeyed the golden rules, I was gonna be in trouble if I was caught.

Tony Silke: Now you know why the golden rule is the golden rule. [laughs]

Ian Crabtree: The moral of the story is...

Tony Silke: I want to do a slow detour for a second, if I'm allowed to do a detour. You told me a story about sticking your finger in a high voltage little spot that you shouldn't have done. We've never actually stuck that on tape. It was one of these ones when we were discussing the tape. We'll pop that on here now just so that we record it in case I forget later on.

Ian Crabtree: This was a vacation. I'd just got a vacation job there and they said to me, this is on leaving, '22Kv switch [indistinct 22.28].' They must have shown, 'This feed is out of service.' I poked my finger up the spout and touched the contact.

Tony Silke: Twenty-two kV?

Ian Crabtree: Yeah. Well, it was out of service, and I got quite a shock off it. These days, you know, you open the spout, you lock them off and you're not allowed [?22.54] access. But in those days, anybody could poke in. They would take me round. I don't know whether they thought it was perfectly safe to do what I was doing or not. Looking back, it's the last thing I would ever do is put my hand up a spout unless I knew there was a good solid earth.

Tony Silke: Did you do any damage to yourself apart from your pride?

Ian Crabtree: No. I don't think there was [indistinct 23.17] I don't think it was all that high. But I just thought to myself, you know, the voltage you could get under those conditions can be very high.

Tony Silke: No wonder you took an interest in industry safety as time went by. [laughs]

Ian Crabtree: I just look back on that and think, my God. Oh. Anyway.

Tony Silke: Actually it's quite interesting, in that we are profoundly changed by some of these early life experiences. I went through my early life, and made some terrible cock-ups. It was a hell of a good learning experience that I'm sure I couldn't have got out of a textbook anywhere. It's a bit like your golden rule. I wouldn't have believed them. [laughs] Right, we've un-detoured. We've cleaned the washing machine out and we're on the last day of the trip.

Ian Crabtree: That was on the last day of the trip to England. I've actually dealt with the coming and going voyages sort of simultaneously really as I've dealt with those. I don't think there's much more of particular interest on board the ship. I think the only thing is, when I joined the ship, it was carrying cargo and we came up the Thames, to the docks up the Thames – the . Tilbury Docks, I think they're called. It was interesting. You were right in what seemed to be the heart of London when you arrived - as opposed to passenger ships landing in the southern part of England. There was a port somewhere down there they traditionally went to, which shortened the voyage. But when I came back, I had to catch a ship at Liverpool. I can still remember going to find the ship in Liverpool. I don't know whether I knew what dock it was at. I imagined, you know, I'd just wander around and find the ship like Auckland. I got to Liverpool and the docks just went on and on and on. Ship after ship.

Tony Silke: Yeah, I'll bet they did, a mile or more.

Ian Crabtree: That's right. I'd never seen so many ships. Liverpool was really a major port. A lot of ships were needed in those days. I did think to myself, in one way, I did wonder about signing on for a voyage around the Mediterranean as an engineer. In some ways, I quite liked being on a ship. There were two strands in my mind. One was, perhaps I could get a job as an engineer on a ship, wandering around the Mediterranean, for a bit of experience. The other thought I had was, when I was young, I used to read these boys' stories about engineers on board these ships, these Scottish engineers and they always used to go to exotic places. What I found was that when you got to somewhere interesting, the ship's engines were stopped. Then you could work on the ship and on the ship's engines. You couldn't go ashore until all the jobs on the engine were finished.

Tony Silke: Yeah, so you went around the world and never saw a bloody thing.

Ian Crabtree: That's right. [laughs] Whereas the deck officers, as long as they had somebody there to supervise the loading, you know, enough to man the ship continuously, they could get away. But the engineers couldn't cos they were all needed. It's an interesting comment.

Tony Silke: It's interesting in the formative years. At the beginning, that I was gonna come back to, but you've done it for me, you mentioned an interest in being a doctor. Then you mention now the prospect of changing to a different course from the course you did take. What's the process we go through as we decide what the hell we're going to do in life? Do we steer it, or do we just fall into it, or what?

Ian Crabtree: I think partly it's where your interests lie, and my interests lay in maths and science. Doctors don't need to have much in the way of maths, and I wasn't all that interested in maths. If the truth be told, I was more interested in science. A doctor is really an applied scientist, or my perception of a doctor.

Tony Silke: Lots of them are applied plumbers actually. [laughs]

Ian Crabtree: Okay. There are similarities between engineers...

Tony Silke: Carpenters and plumbers. [laughs]

Ian Crabtree: Yeah, I agree. Doctors were a pretty high status profession in those days. They've changed a bit. It did interest me as an area. But it was pretty hard to get into med school in those days when I was coming through. A lot of ex-servicemen were about, and they got preference, so the number of places available for people that weren't ex-servicemen was pretty high [?27.52 sic?]. In my first year, there are common subjects, physics and chemistry I thought, to medicine, to be much the same. I got pretty high marks in those. The marks I got would've got me to med school, but I hadn't taken zoology, which is one of the things you have to take to be a doctor. I did contemplate switching across. I can still remember debating whether to have another go but I thought, oh, no, I've got engineering degree, so I'll stick with it.

Tony Silke: Mind you, engineering was rather a revered profession at that stage too, more so than what it seems to be now, doesn't it? It seems to have lost its status to bloody accountants and - oops, I'm putting bias into my recording - I shouldn't do that. [laughs]

Ian Crabtree: No, I think so. I think that's it anyway. That idea of switching to medicine stayed with me for years, but eventually it went. Looking back, perhaps if I'd had a go, I would've satisfied myself, but I didn't. But I have found some of the things I've done, even the health things with EMF and safety and some of those, they're not medical things, but they're very close to them.

Tony Silke: Yes, they are.

Ian Crabtree: From that point of view, they're interesting.

Tony Silke: So we've arrived in England.

Ian Crabtree: I arrived in England on my ship. Actually, my brother-in-law was doing a doctorate in Paris, so the first thing I did was to go over and stay with my sister and brother-in-law in Paris for a couple of weeks. I pottered around Paris for a while, which was very interesting. I really enjoyed that. Then, having done that, I came back to England, and I'd said I would [indistinct 29.34]. I finished up with Metropolitan-Vickers and I had to get up to Manchester.

I'll tell you the story. I bought my train ticket and somehow in the English system you have to have your ticket when you get out of the train, rather than when you get on it. Sometimes, you have to have it when you get on; sometimes you have to have it when you get off. All I know is when I got to Manchester, I couldn't find my ticket. [laughs] I felt a bloody idiot. I didn't feel like paying again. I kept on wandering around the station to try and see if I could get off the station, somewhere where there wasn't somebody standing to look at my ticket. Much to my surprise, eventually I found a gate and I snuck out and I got away.

Tony Silke: It's a possibility that about 10,000 other poms had done the same thing beforehand. [laughs] What a funny system.

Ian Crabtree: Yeah, I think basically it was a final check in the series, you know. Sometimes they'd check them on your way in; sometimes they checked you when you were in the train. I never quite understood the system. I pottered around with Metropolitan because I didn't do much for Metropolitan. It was for a few months up there. It was not a very satisfactory time in my life really. I was really there watching what was being done rather than doing very much.

Tony Silke: There was no real training programme or anything like that?

Ian Crabtree: Not really. They just moved me round the various bits of the factory and talked to me a bit about what they were doing there and things like that.

Tony Silke: It is pretty unsatisfactory. You've really gotta be involved, don't you?

Ian Crabtree: I was involved a little bit, but not much. That wasn't terribly good. Then I came down to London to the Central Electricity Generating Board, Bankside House, where I was a bit more involved. That was good. When I was there, they were doing some work on the [indistinct 31.05] so we went up to [indistinct 31.07]. That was interesting. I spent a little time with the London Electricity Board on distribution. I guess what I saw was a bit of British manufacturing and I saw the British industry, but I wasn't much involved in what they were doing.

Tony Silke: Mind you, the British industry was just about the world's industry as far as the electrical world was concerned. Well apart from America, which was pretty big.

Ian Crabtree: Mm.

Tony Silke: We never saw anything like the range of different countries like we do now. I think just about everything was from Britain, wasn't it, in the 50s?

Ian Crabtree: Yeah, that's right. I went to a transformer factory at Wythenshawe near Manchester. I mean that's all been shut. I think that was shut down after some years. The whole world had got more competitive, and they just couldn't sustain all the big manufacturing capacity they had. But Wythenshawe was a new factory built specially to build transformers.

Tony Silke: They seemed to stop developing too, didn't they? They seemed to stop putting the research and stuff into things, the British industry. All round really: motorbikes, cars, everything.

Ian Crabtree: Yeah. Well, in the electricity industry, I said, this is stupid, this BTH, this Met-Vic. They were all owned by Associated Electrical Industries, BTH, Met-Vic and there were a couple of others in their combine. I said, 'Hey, this is silly each of these sites making the same sort of stuff.' Well, they weren't actually the same - they were the equivalent. They said, 'Well, if we rationalised this, we would only get an order for, say, two circuit-breakers, but as it is we get two for BTH and two for Met-Vic and two for [indistinct 32.47]. It wasn't [indistinct 32.48] - it was the other one. There were these funny non-commercial reasons for maintaining this structure of lots of little firms, but it wasn't efficient. Eventually, the other people came along with greater efficiencies and the British shared a market with [indistinct 33.08]. But I had a good time when I was over there. I got around. I particularly enjoyed my time in London. That was where I really wanted to be.

Tony Silke: What aspects of London did you like?

Ian Crabtree: Oh, go to the theatre.

Tony Silke: Just London. [laughs]

Ian Crabtree: I could go to the theatre and go and see things and do things. I had friends there. I got to know a girl, Pam Boomer [?sp]. She was an Australian. I met her in the art gallery in Manchester. [laughs] When I was going down to London Pam said, 'You'll be lonely when you go to London. Here's my friend Helen.' [indistinct 33.46] [laughs] I had Helen and a friend in London.

Tony Silke: That's handy.

Ian Crabtree: [laughs] That was a very nice arrangement.

Tony Silke: You can be lonely in some of those big cities though, can't you?

Ian Crabtree: Yeah.

Tony Silke: Incredibly so.

Ian Crabtree: I stayed in a place called London House in Bloomsbury, which is right in the heart of London, and I enjoyed that. Actually, when I went over on the ship, another a shilling a month guy was Alan Pye. Do you remember who the Pye it was?

Tony Silke: Alan, wasn't it?

Ian Crabtree: It was Alan Pye, yeah. One was the Bishop of Christchurch and the other was the auditor over in ECNZ.

Tony Silke: I think Alan was the bishop actually. [laughs]

Ian Crabtree: One of them was. Somehow, he went over on the ship with me. He was on as a supernumerary writer or something like that. I don't know what he did. We finished up both in London House. I don't know whether he told me about London House or how I finished up in London House. It was quite a decent hostel sort of place in central London. Without going into great detail, I had friends scattered around various parts of London. [laughs] Actually the problem is you're in such pain when you go to the loo, it's almost unbearable.

Tony Silke: It's really painful.

Ian Crabtree: I just noticed that I was in pain.

Tony Silke: Do you watch Coronation Street?

Ian Crabtree: Is that on here?

Tony Silke: Yeah, don't worry about it. One of the stars of Coronation Street, Alma, has got herself bowel cancer and something or other and she's on her last legs. She's showing signs - I don't know if it's real or not - but she's making a bloody good job of it. There's a couple of these old troupers, Coronation Street people that are going through this sort of stuff. I was like, by Christ, this is close to home. [laughs] They're all wonderfully put together.

Ian Crabtree: Anyway, we won't talk about that. It doesn't matter.

Tony Silke: We can dump stuff like that off later.

Ian Crabtree: Then I got to know some friends. Helen lived in Chelsea, a very elegant place. But I had some other friends. I went to the Friends' house, in Euston Road, that's the Quaker place. I got to know a girl called Jane there who reckoned

she picked me up. [laughs] There were a group of them living out in East London, so I got to know this group in East London.

Tony Silke: You were a lost soul.

Ian Crabtree: I don't know about lost. Well, anyway, one of them wanted to go to Czechoslovakia. Do you want to carry on with this?

Tony Silke: Yeah, I'm thoroughly enjoying it, thank you very much. [laughs]

Ian Crabtree: Hitchhiking. This is now going to finish up in Italy. Do you wanna stop?

Tony Silke: No, if you're okay, I'm okay. We've got quarter of an hour tape to go.

Ian Crabtree: Okay. I'll just get you to stop it. [pause in recording 37.21 to 37.25]

Tony Silke: Okay. Just from the taping point of view we should introduce the fact that Bev's sitting around the table now. We've grabbed a cup of coffee. Well, I have, Bev hasn't. You've got some murky-looking stuff. Carry on. School teacher.

Ian Crabtree: I thought I could teach maths and science and so I went along and applied. If you had a degree, you were accepted as a teacher, you see. I won't tell all this story. Anyway, I went, and I was allocated to a school in Hackney. I can still remember going into the first class prepared to teach maths and science, and the children were about this high. [laughter]

Tony Silke: “This high” is about half a metre.

Ian Crabtree: They were all in little groups. There must've been a teacher in the class, and she said, 'Look, we're taking reading in this way.' One child was helping the others, you see. 'But you may wish to do it in some other way.' I said, 'No.' I can't remember anything beyond that. I was just filling in time before I left for my continental tour. All I can say is that I don't think I would've been a great success at teaching with that level of training and that sort of level of children.

Tony Silke: You might've grown to love the little darlings.

Ian Crabtree: It wasn't the most successful period in my life. [laughs] I can remember even Hackney was a poor but honest part of London. I can remember I had to walk through this graveyard, and you know how they have these coffins - what do they call these things that sit on the surface? What's the right name for them with lids on them?

Tony Silke: Oh, yeah, I can picture them.

Ian Crabtree: There was a kind of horror about these, and somebody's gone along and lifted the lids off.

Tony Silke: Yeah. You've been reading too many comics and too many movies. [laughter]

Ian Crabtree: Anyway, be that as it may, Anne, who'd lived in this house, she was a Canadian, wanted somebody to hitch with her over to, I think it was Czechoslovakia. I didn't wanna go to Czechoslovakia. But we reached agreement that we both wanted to go to a work camp or a voluntary camp. There was a lot of construction projects going on where students, in particular, would work during the summer vacation. Mostly they just opened up for summer vacation students, but some went right around a year. We were too early for the ones for the university year, but we did find this one in a place in Italy, in Agape. That's right, I was talking to Bev about this. Steer me away if you've heard all this. I told you some of this, didn't I? We found this place and we assumed it was Agape, Turin, you see. We assumed it was a suburb of Turin.

Tony Silke: As you would.

Ian Crabtree: Yeah. We didn't bother to look at a map. We couldn't it on the map. Of course the reason we couldn't find it on the map was because it was so small. In fact, it was small, but it wasn't in Turin. [laughs] What a mess.

Eventually we hitched our way through France. Eventually we tried to get across, through France, to Italy and we ran out of hitching rides. The rides just disappeared and eventually we had to get a train through the big tunnel from France to Italy. Eventually we got to Turin, and then when we got to Turin, we found that we'd come far too far and we had to double back, in a sense go back towards the mountains, towards the Alps.

Tony Silke: Right. Bev had to leave the room and we're just carrying on. We've just doubled back. Carry on, Ian.

Ian Crabtree: Yeah. We really didn't know much about where we were going except there was a volunteer construction project.

Tony Silke: Constructing what?

Ian Crabtree: Well, that's the interesting thing. [laughs] We didn't even know that. Well, if I did, I've forgotten it. I think it was some centre, but I think it actually had vague religious overtones. The background to it was it was called Agape, and Agape is one of the Greek words for love.

Tony Silke: Spell it.

Ian Crabtree: A-G-A-P-E. Agape. It's also pronounced Agape. It's sometimes pronounced like that.

Tony Silke: Oh, I think I've seen it as that, yeah.

Ian Crabtree: Yeah, sometimes people pronounce it aga*pay* [ph] and sometimes a*gap*ay [ph]. I think they pronounce it a*gap*ay [ph] and it's usually pronounced *aga*pay [ph] here. I picked up my pronunciation from them and I seem to have stuck with it. What they were doing was building a sort of centre for reconciliation because their soldiers had fought in the last war and they thought, it's stupid fighting. Let's build a centre for reconciliation. They were building it in association with the Waldensian Church. Now, the Waldensian Church is a pre-reformation reform-type church started by a man called Peter Waldo, a Frenchman, who thought that the Catholic Church was really not in the right lines and that it should be poor. These people, the poor men of Lyon, took a vow of obedience and poverty and they wandered around preaching I think, the sort of things that the Protestants' reformation - that's not quite the Protestant reformation; it's getting a bit complex theologically - but a return almost to sort of New Testament simplicity rather than the complexity that the church had grown into.

Tony Silke: Terribly noble, isn't it?

Ian Crabtree: Yeah. The problem was that they were on quite a different tack to the Pope, and the Pope saw them as enemies - let them live for a fairly long time. They, you know, continued for a few hundred years but eventually decided to exterminate them. They survived in these narrow valleys and went up into the Alps between France and Italy. That's where you find the little communities of them cos, they were sort of beyond the reach of the Pope up there.

Tony Silke: What sort of numbers are we talking about?

Ian Crabtree: Well, I don't know. I think in the order of thousands. It depended, at different times. Milton, in 1600-and something, wrote a celebrated ode. There had been a massacre of one of the groups of these people, and the Pope soldiers had come and said, 'Look, we're friends, you know, we're not gonna fight you anymore. We come in friendship.' They came in friendship and the villagers let them in, and that night the Pope's men got up and killed them all off. [laughs]

Tony Silke: Oh, bloody charming. It restores your faith in religion really, doesn't it? [laughs]

Ian Crabtree: I think Europe was outraged by this; they really were. Milton, an English poet, wrote a poem, a celebrated sonnet. It starts off, 'Avenge o Lord thy slaughtered saints whose bones lie scattered on the mountainside. Mother and child -' I run out of steam there. But it was a celebrated massacre, and it was really very terrible.

The Waldensians had continued on, and they continued on until almost the present. Because they were very similar to the post-reformation churches, there's a small Methodist church in Italy and they merged with the Methodist church some years ago in Italy. When I was in Bologna, I found a Methodist church. It's a tiny little place - you know, of course in Italy there'd be Catholic churches - I wandered into it to see what was in there and I found a little newsletter and I wanted to see if I could see anything about Agape, and I found Agape listed as something that was happening in Agape.

Tony Silke: Oh, really? Yeah. Goodness.

Ian Crabtree: I thought that was nice.

Tony Silke: Gosh, yeah.

Ian Crabtree: Anyway, I got to this place and Agape was on a steep hillside – they were building on a steep hillside. What they did with the steep hillside was they make a place to live where you sort of chopped into the hillside. By chopping into the hillside, you get a bit of a platform. Then the stuff that you chopped you then throw over the edge of the platform, so you build the platform out a bit. Instead of finishing up with a straight hillside, you finish up with a hillside chopped like that and a bit that's kind of a terrace you've built. The mountain, there were various sorts of stones – some stones that were suitable for building. They have to have one flat side and a face on them like that. This was the job that Franco and I had to do: we had to take the mountain apart. We divided the mountain into three sorts of things - triage. [laughs] There were stones that were suitable for use in building, there were stones that were no use for building, and those were the ones we tipped over the edge, and then there was earth.

Tape 2 Side 1 ENDS: 47.00; Tape 2 Side 2 STARTS 00.05:

Tony Silke: We got to the point where we were selecting the three different sorts.

Ian Crabtree: Yeah. We had three heaps.

Tony Silke: Yeah, and then we built our terraces and things. Yes, right.

Ian Crabtree: The skilled workers were actually putting up the building. Some of the stones I think they actually imported - there were corner stones. A corner stone is a very special sort of stone, so those were specially cut. But then between the corners of the building, you could put these other stones in. All the locals told me you need a bit of cement, and you constructed the building. What they had when we were there was, they'd build a sort of dining hall, big hall with accommodation. It had a great big fireplace in this hall. In fact, we used to sit in the fireplace. It was so large, it had little seats around the inside of it. There wasn't a fire there. [laughs]

But it was so enormous. There was some accommodation in that main block. We workers lived in a place called the chalet, which was a little wooden building. It was hard work breaking that mountain up all by hand. The first morning on the job there was a bottle of chianti there, [laughs] and I thought, right, I really have come to the right job. I better not show myself too keen on this, I'd better show a certain streak of ability even if there wasn't one. [laughs] So I waited for a while before I went for the chianti. But of course it wasn't chianti - it was just water. [laughs] Life is full of disappointments.

Tony Silke: One of life's major disappointments, I would've thought.

Ian Crabtree: That was the end of that. It was hard work.

Tony Silke: Mind you, chianti can be a challenge though, can't it? [laughs]

Ian Crabtree: Actually they made a nice wine up there. It was a slightly sparking red wine – really good. But they were a good gang and I worked with this guy Franco, who I think was a little bit simple, judging from what I picked up. He was a nice guy, but he wasn't very bright. I enjoyed working with him. Franco had worked out this system that was much easier than sort of digging into the mountain side and dragging the stones out of it. If you actually dug into the mountain side and sort of dug a cave, eventually the cave would collapse. In terms of having to take the mountain apart bit by bit, if you dug your cave and then got out just before the cave collapsed…

Tony Silke: It would do it by itself. [laughs] Good thinking.

Ian Crabtree: This was Franco's idea. Well, it seemed a fairly risky sort of approach to me. Provided you got out of it before the cave collapsed.

Tony Silke: Yeah, and of course that's the game, isn't it?

Ian Crabtree: But I had to go along with Franco - he was in charge - but I was fairly careful. One of the other Italians knew what Franco was up to and told him he wasn't allowed to do it. [laughs]

Tony Silke: Yeah. There's an element of sort of kamikaze in that really, isn't there? [laughs] Bloody hell.

Ian Crabtree: It certainly made life a lot easier, but the risk was being crushed by a whole lot of rocks. It was hard work. That's what we were working on. Actually, we were building a tower that went along at the end of this building, most of the time I was there. They had a kind of this cord [?3.20], and they had a kind of an outdoor churchy thing that was unroofed. I don't know whether they were gonna later put a roof on it, but it was just sort of the outside part and the tower at the end.

A lot of Germans were there, and they came from Hamburg. I don't know why there was a link with Hamburg, but they were nice people, and I enjoyed my time up there. That's right, when I was coming, some Swedes were going. You could tell Swedes cos they have these round sort of sailor hats, they looked like. When they graduated, in those days, they got things like sailor hats and they were very proud. They always wore these hats - that's how you could tell the Swedes. 'Oh', they said – 'huh!' They didn't think much of the place. They said, 'The person on the job up at the tower he says, 'cemento, cemento' and the guy on the ground he said, 'momento, momento'.' [laughs] Actually it wasn't quite as relaxed as that from my perception. But anyway.

Tony Silke: How long were you there for?

Ian Crabtree: A couple of weeks. Two, three weeks.

Tony Silke: Oh, right. Right. Was that the normal time for somebody to pop in, do a few weeks and have your little contribution, feel holy and move on?

Ian Crabtree: I don't know that I felt holy. Why was I doing it? I don't think I was feeling holy - it was just interesting, fascinating. Then my little story about when I came to leave, cos I'd worked with this guy Franco. When I was leaving, Anne, who I'd hitched down with, she wanted to go in one direction and the Chinese guy said that he had a couple of friends up in Genoa and I could hitch with one of them. I thought it sounded alright. I was walking down with him, the Chinese guy, and Franco was down with a work party at a little stream nearby and they were getting rocks out of the stream. At the stream you get water worn round rocks, yeah, for a particular purpose. Old Franco saw me going cos I hadn't been able to tell him cos I didn't speak the language. He obviously didn't know I was going. Franco saw me going and he ran over to me, put his arms round me, grabbed me and kissed me. It was quite moving actually. You know, you work for a couple of weeks with this guy, without really communicating, and that sort of bond you get when you work with a person on the job. The Italians demonstrate that bond rather more than some cultures.

Tony Silke: Yeah. Far more open, yes.

Ian Crabtree: Yeah, far more open.

Tony Silke: More affectionate. That's interesting that you remember it after, what, 40 or 50 years or something. It would be all of that, wouldn't it?

Ian Crabtree: Yeah. Well, I think it was so unexpected.

Tony Silke: Yeah. There's some really nice things happen in our life, aren't there, just really, really nice things.

Ian Crabtree: Mm. I think it was an outward recognition that we'd struggled together on this job - we'd had our ups and downs, but we got there. Actually, he'd showed me photographs of his family and things like that. There was a kind of bond there that because of our language problems we never really were able to much explore.

Tony Silke: Where'd you go from there?

Ian Crabtree: Well, this Chinese guy said, 'I've got two American women turning up and they'll be at the front of the railway station at Genoa on such and such a day. I'll hitch with one and you can hitch with the other.' It sounded like an interesting arrangement. [laughs]

Tony Silke: Yeah. Sounds too good to be true. [laughs]

Ian Crabtree: We went down and stood in front of the Genoa railway station for a day, and nothing turned up. I sort of looked sideways [laughs] slightly. But anyway, he said, 'We'll try the next day.' We stood in front of the Genoa railway station next day and two women turned up.

Tony Silke: Oh, really?

Ian Crabtree: We stayed that night at the youth hostel, so we went back to the youth hostel, had a meal there. Then the Chinese guy, he knew which one he was going to hitch with, and he said to the other one, Barbie, I'm gonna hitch with…' - the one he'd chosen. He said to Bobbie, 'And you can hitch with him.' Bobbie looked over, 'Oh, okay.' [laughs] We set off hitching.

Tony Silke: You got to where?

Ian Crabtree: Well, we hitched around Europe and eventually we went up through Germany. Basically we'd come down too far, so we went back up, largely on the Rhine. We eventually got back to London, and as a matter of fact, when we got back to London. I'd been staying at a place called London House and they had an associated place for women. You know, in those days people didn't share the same accommodation.

Tony Silke: Didn't cohabitate.

Ian Crabtree: That's right. Actually I got Bobbie into the Sister Trust, which was just around the corner.

Tony Silke: What sort of arrangement did you have? You obviously had a job in New Zealand to come back to.

Ian Crabtree: Yeah. I got leave from the old organisation to take up the Federation of British Industries scholarship.

Tony Silke: Right, but that was for a term and then before that term, I suppose you had a bit of leave or something, did you?

Ian Crabtree: Yeah. I don't know what the arrangements were. I'd obviously taken some leave with pay and some leave without pay.

Tony Silke: You were not in a hurry to rush back to New Zealand?

Ian Crabtree: No. I still remember I'd gone up to Liverpool and looking from the back of the vessel as the ship left Liverpool and thinking, oh God, I shouldn't be leaving England - I like it so much here. [laughs] That was my frame of mind as I left England, that I liked it.

Tony Silke: Yeah, it's a pretty special place, isn't it?

Ian Crabtree: Yeah. I mean you could look at the good things. Some people look at all the bad things - it's dirty with all these awful people, or something. I didn't. I looked at other things.

Tony Silke: Yeah. Well, plenty of opportunity in London to see both sides of it really, isn't there? It's just an amazing place.

Ian Crabtree: That's right. Yeah.

Tony Silke: You got on a boat, and you came back to Kiwiland.

Ian Crabtree: That's right. I don't know what happened. I must've stayed in London for a while after that. Not for long. Yeah, I think they provided me with a ship to get back from Liverpool. Obviously, in a kind of a way, I must've said roughly when I wanted to go back, and they must've provided a ship that was available about that time.

Tony Silke: Of course, you weren't going as a passenger - you were going as a toiler.

Ian Crabtree: Actually, looking back, I wonder whether I should've paid my passage and gone as a passenger, cos they had a lot of fun on those ships.

Tony Silke: I'll bet they did, yeah. Mind you, pretty expensive though, wasn't it?

Ian Crabtree: Yes, it was, but I could've afforded it really. I expect you just saw another bit of the world I wouldn't have otherwise seen. Living as an engineer you saw another world.

Tony Silke: Yes. It's actually interesting too: you go through life and the interesting thing is the people that you meet, isn't it, these fascinating people. [pause on recording 10.42 to 10.45 as someone knocks on door]

Well, here we are again. It's Friday, the 30th of November 2001, and Ian and I are sitting quietly in the 8th floor of Unisys House in a meeting room. That's the first time we've been into it, I think. Today we're going to tackle a whole new area that we haven't covered before but Ian's thought a lot more about this, and this is to do with earthquake design. The floor is yours, Mr Crabtree.

Ian Crabtree: Thanks, Tony. It occurred to me having listed the things of where I'd worked, that I'd overlooked this: the Supply branch had overlooked this area of earthquake engineering, which was actually quite an important area as far as the organisation was concerned. Because the one thing you don't want is the power supply to permanently fail or fail for an extended period when there's an earthquake. I thought that setting down some of the developments there would be worthwhile. In the Napier earthquake, transformers fell off their pads. I see that there was a paper by Robinson and Benjamin in the proceeding of the New Zealand Society of Civil Engineers in 1933. I have seen this paper showing transformers fallen off pads and I presume it's that paper. At that time, it was recognised that transformers on their wheels could fall off pads, and they were all tied down to, I think, a sideways load of .25 G. That went on for a long period of time.

Tony Silke: That's actually not a hell of a big force, is it?

Ian Crabtree: No, it's not a hell of a big force at all. Then there was something precipitated the organisation into having another look at this. What had actually precipitated this, it's not quite clear to me, but I do know that Harry Hitchcock became the research engineer in November 1965. Research engineer was a broad open-ended job, but he focused on earthquake engineering. Now, I think Harry, for some reason or other, must have seen there was potential for disaster if earthquake engineering wasn't properly looked after. The other thing that I know, about that same time they were working on a DC scheme, and they became aware of the vulnerability of some of the DC scheme to earthquakes. The valve support platforms at Haywards, these were supported on insulators, and when they reassessed these, they apparently did some on-site tests on them, and they decided that much stronger insulators were needed to support the values. They dug out the foundations and put in much larger insulators and much stronger foundations.

There were other items at Haywards which were identified as possibly vulnerable in an earthquake; the smoothing reactors - these are 60 tonne reactors - were identified as vulnerable, and I think there were other things that are components of the DC which were worked on. The smoothing reactors were supported on

yielding frames at the top and the bottom. They sat on these frames and the idea was that if there was an earthquake, the energy of the earthquake got dissipated in the support frames. They're quite interesting to see. You can see that they're aligned specifically with weak places where they would specifically yield.

Anyway, there was work went on and some of it took a while to get in and some of the other DC stuff I think was put on springs and dampers, a bit like a vehicle chassis, to ensure that any earthquake loadings didn't get past the support framework sufficiently to damage the equipment.

Anyway, that was the District Court, which was worked on about the same time as Harry seemed to have gone into his job. There was also a lot of other equipment around, of course, in the organisation. That's the appointment of Harry; there was the work on the valve platforms. Now in July 1967 there was a Turkish earthquake, and I know a lot of the air blast breakers fell over in that. The porcelain broke and that caused quite widespread consternation, I think, around the world because a lot of people had these air blast breakers with lots of porcelain in them. You see, at the time of the previous major earthquakes, the circuit breakers tended to be bulk oil breakers, steel tank breakers, which were inherently very rugged sort of bits and pieces. Provided you've got them tied down, nothing much happens.

Tony Silke: They'd take a bit of shifting, wouldn't they? [laughs]

Ian Crabtree: Yeah, that's right. Whereas the failure of the air blast breakers was a bit of a worry. The other thing I noticed was that it was when the Inangahua earthquake occurred. I see there was a paper which was published in 1968 - the Inangahua earthquake and electricity services. I know Harry spent a lot of time looking at that and the consequences from the point of view of overall electricity supply. It didn't do much harm, but certainly as far as the system was concerned, it shook houses off foundations, and it did some damage to the transmission line. I think it shook the foundations and one of the towers was sitting on three legs. But it was another thing that just pointed out the vulnerability of electric transmission systems to earthquakes. Anyway, that went on during the late 60s. Harry was obviously thinking about the Turkish earthquake and the Inangahua earthquake, and this led on to his paper. This is the monumental paper, Harry Scott, *Electrical Equipment in Earthquakes,* published in January 1969. That was a paper in which Harry identified the vulnerability of some electrical equipment and the loads that it should be designed to resist and how it should be designed to resist these loads.

I see another paper he later published in '73 was the specification of earthquake resistance for electricity system equipment because what you didn't wanna do was add bits to your system that were gonna fall over in earthquakes. You had to specify them, so it didn't fall over. That was a key area that was worked on in the organisation. Then earthquake engineer continued. We set up an Earthquake Engineering Committee in the organisation. I was in Operations at the time and thought, hey, we've got all these circuit breakers that can fall over. They're

vulnerable. They can fall over in earthquakes, also transformers. What are we gonna do about it? It was easy on the design side - you just avoided buying vulnerable equipment. The operational side...

Tony Silke: You already had the damn things.

Ian Crabtree: Yeah. We decided the way to fix it up was to produce a document and it was called *Electrical Design Standard 3: A Guide to Earthquake Resistant Design of Electrical Equipment*. My memory of this is that Harry contributed quite considerably to this. The references in the paper are several, to Harry's papers. There was also Alasdair Turner, who used to work for me. He was a very bright young man, very able young man. We got together and my impression is that Alasdair Turner, who was not in operations, wrote most of the electrical design.

Tony Silke: Right. I've never seen that side of Alasdair.

Ian Crabtree: Alasdair Turner?

Tony Silke: Yeah.

Ian Crabtree: Haven't you?

Tony Silke: No. Well, I've seen him from, you know, a deep and meaningful electrical side, but never that. How interesting.

Ian Crabtree: Yeah. I had a great respect for his ability and focus. The first thing is we're gonna fix the equipment up. We have to have some kind of standard to work to, and that was with the joint concoction of Harry and Alasdair.

Then went on the process of identifying the equipment that needed to be changed or modified. That went on. That was '75. Another thing that was floating around at that time, there was an earthquake that caused damage at Sylmar. It was a Los Angeles earthquake. There was a converter station at Sylmar and there were current dividers above the valves. The supporting brackets were loaded in a way, when the building shook like this, they were suspended there, and they sort of just started to shake. Then eventually they broke off and fell down on to the valves and damaged the valves. There was quite a disaster at Sylmar and that caused us to have another look at the DC and vulnerable bits of the DC. Somebody said McGlinchy was working in this area. McGlinchy did some good work in that area to ensure that the type of trouble they had here didn't occur in New Zealand.

I think from, we might say, a quiescent period from the 30s right through to the 60s, not much happened. Then it really all started to happen. We had to write this. Then we had to get things done in the districts. Harry was still working as the research engineer, working in this area, and assisted us. Earthquake engineering is not straightforward. We tried to make it as straightforward as we could for people in

the field, but there were two things – people have to understand what they've gotta do, is one thing. The other was they had to have the motivation to do it. Of course the problem with things that are weak in an earthquake point of view, is that unless an earthquake comes along, they're perfectly alright. It's only when the earthquake comes that they fall over. There was a bit of the 'she'll be right' attitude about the place. We had Harry and we went around, and, in conjunction with districts, they had to identify all the equipment that required upgrading. A lot of the stuff required special engineering design and Harry was the key guy there.

In those days you couldn't just get a consultant in to do all this stuff like you can today. It all had to go through the in-house people and that slowed the process down a lot. But eventually progress was made. What I've got there is the [indistinct 22.30]. I'm just looking to see what had gone out. We wrote it in September '73, *Inspection Reporting Procedures Following Earthquake*, you know, if there was an earthquake. I was interested to see that this here was done in the Supply branch. But as per usual, we were doing hydro power stations [laughs] and thermal stations.

Tony Silke: Yes. In fact my memory of that is mostly in hydro stations with long pipelines and things like that.

Ian Crabtree: That's right. But I kind of picked it up in supply and thought, somebody's gotta drive this and we would drive it, so we drove it. But I was interested to see the first edition came out way back in 1973. There seemed to be a great surge of activity.

Tony Silke: Can I just pull you back a bit there to Harry, the bloke himself? He must've been getting on a bit by 1970, wouldn't he?

Ian Crabtree: Yes. I'm not exactly certain when he retired. Can I approach it from the other end? When eventually he did retire, and I think he probably retired at the age of 65, he'd been doing a good job for us but here he was going, and he was the brains.

Tony Silke: Yeah. He was the authority, wasn't he, on it?

Ian Crabtree: That's right. He had somebody called Tony. I can't think of Tony's second name. He was quite bright - a very quiet sort of man who was working for him. He didn't have much in the way of resources. What actually happened when he retired, I somehow managed to get hold of him in post-retirement. He actually came and worked in the Supply branch.

Tony Silke: When he was retired, after retirement?

Ian Crabtree: Yeah, after he retired, he came back. You couldn't get consultants in the way you can now. But he was in there for about two and a half years working

on all these problem areas. Consultants in earthquake engineering tend to be civil people and it took a bit of a re-education to deal with things like porcelain structures. It was very hard to get outside consultants in those days. Harry did a good job working in the supply branch there for his two and a half years. The only trouble was that Harry was having an argument with a man called McGlashan in Scotland, I think in Glasgow or Edinburgh or something, about the measurement of torque in joules. Harry didn't like it and McGlashan did like it. [laughter] A long and quite bitter argument would go on between these two in correspondence. Harry would try and get supporters for his point of view. I'm not exactly certain of the base of it. It was just that you shouldn't measure torque in joules. The problem with Harry was that in his effort to get support he would tackle people and say, you know, 'Isn't McGlashan… I'm right, aren't I?'

He did this to the general manager. It's my understanding of the situation that he did it once too often to the general manager and the general manager said, 'Look, we can't keep this guy any longer.' [laughs]

Tony Silke: Even though he was brilliant.

Ian Crabtree: Yeah, even though he was brilliant, so that was the end of Harry, which was a bit sad really. But he did a lot of tremendous work, and I was glad at least I'd got him for two and a half years. He did work on a lot of equipment. But yeah, he had a brilliant mind. He wasn't the world's best communicator, but he had a brilliant mind.

Tony Silke: Probably, looking back at what he's left behind, he was probably one of the more important electrical engineers in New Zealand history, wasn't he? He contributed a hell of a lot.

Ian Crabtree: Well, Hitchcock, I think his father was one of the early New Zealand engineers.

Tony Silke: Yes. I've got a lot his stuff in the museum in my collection. When Harry died, there was a sudden dumping of all of the stuff. One of Harry's sons got hold of Bob Thompson, and we went up and we only had about half an hour or something to empty what we could out of the place. It was quite difficult to do in such a short time. Here was the history of the Hitchcock family being dumped - it was just incredible. I've probably got the residue of that in my collection. Some of his father's photographs were early Coleridge when he was the engineer in charge of Coleridge construction. Just amazing. That was Henry, or whatever it was, wasn't it?

Ian Crabtree: Yeah. I don't know much. I mean I know there was an earlier Hitchcock, but I don't know much about that earlier Hitchcock.

Tony Silke: An amazing family.

Ian Crabtree: Harry, of course, worked in the power station design section for quite a long period of time and obviously made quite a contribution there before he became the research engineer. I think it was just a realisation that there were areas that needed looking at and Harry was the right man to be a research engineer. Looking back, it was a very good appointment. The vulnerability of porcelain hadn't been recognised and when Harry did write his paper, he was a world leader. I've had Harry talk about this, and his was really the first paper that identified the weaknesses or identified the loadings that could occur in the process of earthquakes spectra that should be applied in designing what strength was necessary. He moved into it first [indistinct 27.55] very interested and I think paid for Harry to go over there and talk to them about it. Harry himself said later on, once the world became a bit more aware of the vulnerability of porcelain and what needed to be done, other people's work overtook what he had done, his pioneering work. He was quite happy about that.

Tony Silke: But it was really pioneering, wasn't it?

Ian Crabtree: It was pioneering.

Tony Silke: Yeah. Cos, they braced underneath the tanks of the breakers, didn't they, and then they did something. Didn't they have something at the top of the air blast breakers that come adrift after a certain loading or something or other?

Ian Crabtree: There were earthquake release clamps people had at some stages, but I don't know whether Harry was a great believer in earthquake release clamps. Actually, looking through some of the stuff, what I did drag out here was around the grade 220 air blast breakers type DCF and DCVF of which we had a lot. Possible defective [indistinct 28.46] modification, having had their blast heads rigidly tied when relocated on flexible heavy damper sited [?28.57] mountings. We developed these mountings for them. The mountings that were developed for them were a bit like the car chassis. It's a bit like these rubber mountings that are now used by the civil engineers for buildings. It's the same idea. What you've got to do is you have something to absorb the energy.

You allowed movement to absorb the energy, and this was obviously the modification that had been carried out, but there were problems when the modifications were applied. That was, as I say, putting the things basically on a mounting a bit like a car chassis. Well, the idea was the same as a car chassis, springs and dampers. It was quite expensive too; it was an expensive modification. How successful a lot of these modifications will be - there hasn't been a general earthquake since some of these modifications, except there was the Edgecumbe Earthquake.

Tony Silke: That's right.

Ian Crabtree: One of the unfortunate things in the Edgecumbe Earthquake was that some of the transformers fell off their pads. The reason they fell off their pads was that people hadn't changed the holding down arrangements from the .25g. It's one thing to tell a district that, you know, you've gotta change. Of course, if the district's lucky, there's no earthquake comes along and it's alright. They weren't lucky and they all fell over. I was a bit sad about that.

Tony Silke: Yes, because it was unnecessary.

Ian Crabtree: It was unnecessary.

Tony Silke: That's a shame.

Ian Crabtree: Yeah, that was a shame. Each earthquake revealed weaknesses. Harry used to point out, you can never quite tell what acceleration there will be in an earthquake and how the equipment will respond. It's a pretty rough and ready sort of science. Harry used to always say, if you were in any doubt about which bolt, always put the bigger one in.

Tony Silke: Yes.

Ian Crabtree: The work has continued on because I was just talking to Mike O'Brien who pointed out Nick Taylor [?31.13], in the 1990s, was working on looking at earthquake strength of equipment and design basis and things like that because as time goes on, people learn more and are used to vulnerability. As the reliability of supply becomes more important, so does the fact that stuff shouldn't fall over in an earthquake.

Tony Silke: There was quite a few lessons learnt too from, you mentioned, the San Francisco, that was the one that affected the DC as well. Do we have the similar standard for earthquake engineering compared to the rest of the world, or are we at a higher standard because of our perceived vulnerability?

Ian Crabtree: Well, I think our standard lines up with that used in the west coast of the USA which is very vulnerable.

Tony Silke: Right. Which is pretty high, yeah.

Ian Crabtree: There have been world conferences where people have tabled their approach. The manufacturers themselves, they sell the equipment right around the world, so they know when to design that sort of earthquake resistant stuff for Japan, and this kind of earthquake resistant stuff for New Zealand, and this sort of stuff for the west coast of the USA. I think it's all comparable.

One of things that interested me is in *The Dominion* of the 29th of November this year - basically yesterday's paper – a big quake need not be a killer, says an

expert. This is where the civils have been working in this area. It says, "Wellington City Council and the Regional Council have taken measures during the previous eight years to mitigate the effects of a serious earthquake on the region's roads, bridges, water, sewerage, electricity, gas, communications." That's the Lifelines group. I must've talked about the Lifelines group. He's talked about the Lifelines group, but he's also talked about the classes. He talked about buildings. The first category were those built before the Napier 1931 earthquake whose design didn't pay much attention. That same thing, just as the 1931 drew attention to the buildings, it also drew attention to electrical equipment.

Another second class, 1930s to the late 50s. That's starting to get close to this 60s period that I'm talking about here, when building codes required a *degree* of earthquake resistance. In the early 1960s, a third class emerged, when building became sophisticated. Now, that's getting around the time of Harry, the early '60s. Buildings became more sophisticated in construction then, without recondition in [?34.12] case for a big earthquake. In the 1970s they had a man called Otto Glogau, a Ministry of Works engineer, providing a design process more resistant to over-stressing, before earthquake-resistant design. I went through that because it is quite interesting, the parallel between identifying vulnerabilities and deciding how to deal with vulnerabilities has been taking place, also in the civils. But the difference with the building is that buildings put up with the current building codes, in a very major earthquake, they won't hurt people, there won't be much in the way of casualty. They may need quite a lot of reconstruction, or they may have to be demolished, but they won't collapse. They may have to be demolished or they may have to have extensive repairs. That's okay for a building - you can put up with that. I don't know whether that's the right decision, but that's the way they were made. In very major earthquakes, the occupants will survive. Whereas with electrical equipment, the stuff has to survive.

Tony Silke: It's gotta survive, yeah.

Ian Crabtree: Because in a city like Wellington, there are lots and lots of people who will be able to, hopefully, continue to live in Wellington after a very major earthquake because the buildings, houses will survive in a way that some multi-storey buildings won't.

Tony Silke: It will be interesting to see also how some things like water pipes and sewerage pipes and things survive in an earthquake as well. It always strikes me that they're somewhat vulnerable but hidden.

Ian Crabtree: Yeah, what you're saying is very interesting because people have only been round here for a couple of hundred of years, haven't they? Not very long, and they've only really had the pipework reticulated for 100, 150 years. The first major earthquake can show up all sorts of vulnerabilities that people didn't know.

Tony Silke: Well, it's a bit like your porcelain insulators. It's something, in some cases, solid in the middle of a fluid-type earth, isn't it?

Ian Crabtree: Yeah. Then 500 years from now, people are talking like this. They're saying, 'Oh, well, you know, in 2004 or something there was a major earthquake, and we found all sorts of vulnerabilities [laughs] and we fixed them all up.' There's a process going on of making the community more resistant to earthquakes, I think. Part of the process is having the earthquake and seeing what fails.

Tony Silke: The standards that you adopt, I guess, are affected by the last bloody earthquake that you had. Let's hope we don't see one that's too big.

Ian Crabtree: I haven't looked this one up, but there was the Kano [?37.10] earthquake, which wasn't as major earthquake but did cause some damage to equipment that theoretically was brought to the standards, which were satisfactory - the standards Harry Hitchcock promoted - but there were still some failures took place. You got loadings on porcelain and point loadings and things like that that hadn't been identified as weak points. These earthquakes identify these sort of places that you wouldn't have thought of as being vulnerable, or within the equipment as being vulnerable.

Tony Silke: We passed over the Inangahua earthquake rather quickly, but from what I recall it was quite a disruption certainly to that part of the South Island. There were things like lack of access and helicopters to get in and this sort of thing. There was quite a bit of road damage and that, wasn't there?

Ian Crabtree: Yeah. I remember driving down the gorge there. The advantage of it being where it was, there wasn't all that much in the way of buildings or equipment around there. Inangahua's a remote sort of place. The substation that Transpower had there was only really a little switching station - I don't think it gave any local supply of any substance. I remember the gorge there. As you drove along it, there were a lot of slips had taken place. The transmission line towered [?38.48] to the edge of the valley, and the ground just slipped away, leaving a leg floating in mid-air. There was particular damage to the house, detailed damage to the houses, but there weren't many houses. I think somebody got hurt - something collapsed on top of them like a cliff or something.

Tony Silke: Yes, cos there were just a few operators and linesmen there, weren't there?

Ian Crabtree: Mm.

Tony Silke: It was a line maintenance place or something or other.

Ian Crabtree: That's right, for line maintenance, yeah.

Tony Silke: Yes, I can remember Fred Stacey [?sp] got a Queen's Service Medal or something or other for getting a helicopter in there. [laughs]

Ian Crabtree: Oh, yes. Well, I think the district did spring to it when the damage took place.

Tony Silke: Yes, they did. Fred in particular. Fred was my master or my boss when I was an apprentice.

Ian Crabtree: Yeah, he was quite a character. An able man.

Tony Silke: He still is quite a character.

Ian Crabtree: He's still going?

Tony Silke: Yeah.

Ian Crabtree: Yeah, I haven't seen him for a long time.

Tony Silke: Actually I must make contact with him myself.

Ian Crabtree: Yeah. There were people around in the organisation whose capability wasn't really shown in the ordinary run of the mill, a lot of these distribution engineer jobs.

Tony Silke: Yes. Showed a lot of initiative.

Ian Crabtree: They really had to shine when the chips were down, when the emergency was on hand, and I think Fred did that.

Tony Silke: Yes, he did. Because he just bypassed all of the normal ways of doing things and just got in and did it. In those days the bureaucracy to get a helicopter, you'd have to just about write to the prime minister. But he just did it. Yeah, interesting. Alright, have we just about exhausted our earthquake engineering?

Ian Crabtree: Well, I think that's a brief run through. I only did a little bit of research just so I had a few facts at my fingertips. But there's quite an interesting story to be told to go from a very vulnerable organisation to what we are now, which is an organisation that should cope very well in the event of a major earthquake.

Tony Silke: Yes. Well, there's almost nothing written about it as well. It's just another one of these subjects that there's nothing written about. Tell me: we touched on the Lifeline organisation when you were reading the Dominion article there before. Any comments you want to make about them?

Ian Crabtree: I'm not certain whether I've talked about them before or not.

Tony Silke: No, we haven't.

Ian Crabtree: Oh, we haven't talked about them.

Tony Silke: No.

Ian Crabtree: Oh, okay.

Tony Silke: Either that or my memory's failing, which is quite a possibility. [laughs]

Ian Crabtree: Probably one of the many things. Okay, that was an initiative of the Society for Advanced Engineering. What we had in New Zealand was the Civil Defence organisation, but the Civil Defence organisation was designed to respond to an emergency when it occurred, and it was a hierarchical organisation with the central base in the basement of the Beehive: an operations room there and all set up army-style. Then there was Zone [?41.47] Civil Defence, which never really worked much, which was grouping bits. Then there was regional Civil Defence and then there was local Civil Defence. It was this hierarchy of Civil Defence organisations were set up in the country to respond to a Civil Defence emergency.

Transpower was one of the organisations that was involved in the Beehive basement, and we were involved in regional Civil Defence as well and, to a certain extent, in zone. Zone never really took off. The idea of zone was if a region was so devastated that it couldn't cope at all, then a zone, which took several regions into account, would take over. But they never really developed the zones and I think it died out towards the end of the organisation. There were zone commanders, but they were kind of man-of-war without guns.

For quite a long time, we used to have exercises in the Beehive basement, and they would say, a major earthquake has occurred at such and such a place and such and such a thing had happened. They were run in the Beehive basement and sometimes they would involve one of the districts and things like that. That was basic and that sort of stand-by arrangement continues even now, set by arrangement, for Government to retain control in the event of a major disaster in New Zealand. Now, the Lifelines was started off on an engineering side and it really recognised, from an engineering point of view, there were a lot of things that were a bit vulnerable in an earthquake and rather than sort of say, 'Yes, they are vulnerable' the important thing was to do something about the vulnerability before the event. Really, what I'd been saying about earthquakes. Rather than say, 'We've got a lot of stuff that's gonna fall over in an earthquake' and just leave it like that, it was to identify the weak places and fix them up.

Now, we'd certainly done it for the electric power system because electricity people have always recognised if we had no electricity, the society just falls flat, and I think a lot of other people recognised it too. But the same look at vulnerability hadn't

taken place in some of the other areas. What's happened is that also a lot of information about vulnerability had become available from other places where there'd been earthquakes, you know, about pipe scraping and things like that; what's gonna break. Or even on the other side: what sort of installation should you have so if an earthquake does come, it doesn't break.

Tony Silke: Mm, avoidance.

Ian Crabtree: Avoidance, that's right. But the Canterbury School of Advanced Engineering decided to sponsor a project in 1990 in Wellington looking at Wellington's vulnerability in an earthquake, particularly from an earthquake point of view. John Lawton was the project person to put the stuff together. I'm not certain who chaired it. The Wellington Regional Council played a big part in providing facilities for it. They got together representatives of all the services and each one had to go and identify what their services were and identify all the weaknesses, and to some extent, what had been done to recognise the deficiencies. That Lifelines project took place over a two- or three-year period and there was a report published on it.

The idea was that this would be a pilot project and other parts of the country would follow along, and other parts of the country have followed along. The only difference is that Wellington focused on earthquakes; other places have other sorts of vulnerabilities. I think there was flooding in these low-lying areas in Christchurch and things like that. Each area had to look at its vulnerabilities, and a lot of this has continued on. Some of it's been done on a voluntary basis by the engineers concerned. When I was on the Lifelines in Wellington, I was on the original Lifelines steering committee, you might say. A lot of people were involved in that area. A lot of the electrical equipment in the area, of course, is owned by the distributing authorities and they had a big part to play in looking at their equipment and its vulnerabilities.

As I say, a lot of it was done on a voluntary basis, some was done in-house, and it continues on. The interesting thing is currently there's a Bill on Civil Defence Emergency Management. Have I talked about this before? I don't know. That Bill takes into account all the work done in the Lifelines. It's trying to incorporate Civil Defence and Emergency Management to ensure that that involvement...

Tape 2 Side 2 ENDS: 46.57; Tape 3 Side 1 STARTS

Tony Silke: Perhaps we could get a bit closer, if you don't mind.

Ian Crabtree: Okay. You want me to come closer?

Tony Silke: If you don’t mind. This microphone leaves a bit to be desired.

Ian Crabtree: Okay. Just here where I am?

Tony Silke: Yeah, that's great. Just great. We'll go through our usual garbage. It's Monday, the 17th of December 2001. It's in the afternoon and we're in Unisys House. It's a lousy day outside. This is the start of tape 3 of the set that we've been doing. It started earlier with Ian's working life but now it's getting into some of the other sides of his life. We are going to talk about the Miramar Fire Brigade and Ian's experience in that. Ian, away you go.

Ian Crabtree: Okay. I was transferred down from the Auckland office of the state hydro, I think it was then, to Wellington in 1954. I had to live somewhere, and I boarded for a while at a place that so happened that Bill Spry, who later became the District Manager, Christchurch, was there as well. Bill Spry, in fact, later married one of the young women who had previously boarded at this place in Wellington. She wasn't there when I arrived cos, to use Bill Spry's words, 'She hadn't got on with the management.' [laughs] But he married her later on.

Anyway, I came to the conclusion I was gonna die of slow starvation if I stayed there. A friend called Ces Gallach [?sp], who had also been transferred down from the Auckland office, he had found a place at the Miramar Fire Station and he'd become an auxiliary fireman. He said come out there, so I went out there. I think the theory was they needed more staff at night to fight fires than they did in the day. Therefore, they provided accommodation, and, as an auxiliary, you got five shillings an hour when you were doing a drill once a week, and you got five shillings an hour fighting fires. That's what my memory of the rate was.

Tony Silke: You never got paid just to be there to sleep for the night?

Ian Crabtree: I don't think I did.

Tony Silke: You were paid for doing stuff.

Ian Crabtree: Although somebody else, the other day, who was there at the same time, said he got five shillings a night when he was there, so there's a bit of uncertainty about that. Be that as it may, the flat rate was five shillings.

Tony Silke: You said at the beginning you'd die of starvation if you didn't change something. Are you suggesting you're not a hell of a good cook; is this what you're suggesting?

Ian Crabtree: No. The previous place where I was boarding, you see, and so you got the food that you were provided with.

Tony Silke: Ah.

Ian Crabtree: Ah. The quality of food with which I was being provided [laughs]...

Tony Silke: Food; you're using the term rather loosely. [laughs]

Ian Crabtree: Yes, it was the quantity of food that I was provided. The only thing I remembered from that, although I'd never heard before and never heard afterwards, the landlady referred to a flounder as a two-eyed steak. Now, I've never heard of a two-eyed steak.

Tony Silke: Two-eyed steak?

Ian Crabtree: Do you know it?

Tony Silke: No, I've never heard of that before.

Ian Crabtree: [laughs] Well, I'd never heard it before, but that was her language. Moving back to the fire station. The idea was that, at any one time, 50 percent of the auxiliary complement had to be on duty. I think they had an auxiliary complement of about four people, but some of the time there were only two and sometimes there were three. Actually, I really enjoyed being out there. A lot of the time nothing much happened, and in fact the man in charge with watching over the fire station was Station Commander Watt, who insisted that everything be polished to the highest level. There was a ping pong table there, but the ping pong table had to be polished. If you ever played ping pong, you had to polish the floor afterwards and you had to polish the table afterwards.

Tony Silke: I thought that would be the last thing you would want to do for a ping pong table. [laughs]

Ian Crabtree: I know, but I'm just telling you what life was like in the Miramar Fire Station. The net result was nobody ever played ping pong cos it was just too awful. It was an awful environment; it really was, from that point of view. I mean the guys, apart from the chief, there was a driver there, Bill Finucane, who was a very pleasant character, and there was another man. There were sort of two living on the station: the commander and Bill Finucane, the driver, and then there was a room which a third permanent man was there, quite often with a man called Stewie Hoy. He specialised being Father Christmas [laughs] at the appropriate time of the year. But he was a specialist. He wasn't just an ordinary Father Christmas; that was his life outside the fire brigade. At the fire station there we had the kitchen. We cooked our own food and we'd polish the table afterwards, and polished the floor. I've even learnt about brooming. Do you know about brooming floors?

Tony Silke: Yes. I was brought up in a Catholic convent where one had to polish floors on hands and knees.

Ian Crabtree: Yeah, and then you broomed them.

Tony Silke: You got a broom and you wrapped a woollen thing around them and you went backwards and forward with that to get a high sheen.

Ian Crabtree: No. I mean you still had a broom but...

Tony Silke: This is more technical?

Ian Crabtree: ... you polished the floor, and then if this was the sort of room and you were coming out of the room, you took the broom and you went across like that, the ordinary broom, and then you went across like that, then you went across like that. So the lustre had a sort of a consistency about it.

Tony Silke: Wow.

Ian Crabtree: You've never come across anything like it, yeah.

Tony Silke: This is like when you see the TV of the cricket now, they mow patterns on to the green, don't they?

Ian Crabtree: You moved out of the kitchen by brooming. I've never seen it before and never seen it after and I never want to see it again and I probably never will. That's life in the Miramar Fire Station.

Tony Silke: Was the whole environment rather a military type environment?

Ian Crabtree: It was an environment created by Station Officer Watts, who wanted to get the highest marks for the cleanliness of his fire station. [laughs]

Tony Silke: Up to you jokers.

Ian Crabtree: That's right. [laughs] I'll tell you a few stories about it. I stayed there for getting on a year and a half, and so did Ces. He stayed there longer than I did and then he got a job at the Auckland Electric Power Board and spent his life working for the Auckland Electric Power Board. Actually, he remained a good friend through his whole life. He died a couple of years ago. He was a good guy though. His father came out from Yugoslavia as one of the labourers to build Arapuni.

Tony Silke: Oh, really?

Ian Crabtree: Yeah. Sir Armstrong Whitworth built the place. Anyway, the life there was good. One of the problems of being in a fire station is that anything else seems insignificant - whatever you do seems insignificant compared with fighting a fire. While you didn't have to be there all the time, and I wasn't there all the time, if you did go out and you came back and there'd been a fire, they were sitting round talking about this fire. Anything you did just seemed trivial compared with the

excitement that they'd had fighting this particular fire. It was very hard to beat. If you went out at the weekend, I can remember at the weekend, you'd suddenly see smoke rising - there were a lot of gorse fires in those days - you'd think, if I got back there, I'd already be out fighting that fire instead of – sorry, I must stay in front here - doing something pretty...

Tony Silke: There's an expression that people use, Bob Simpson used to use it a lot, “riding on the fire engines”. He used it to sort of talk about getting in the excitement of where it's all happening and that. It's a lovely expression, isn't it, “riding on the fire engines”?

Ian Crabtree: Yeah. Seeing you've mentioned riding on the fire engines, one of the interesting things is nowadays the firemen ride around inside enclosed trucks, but in my time, you stood on the tail of the truck and hung on to a bar. The old vehicle didn't have much in the way of springs on it so if you hit a bump, you went way up into the air and eventually, because of the nature of inertia and things like that, you came down on to the little platform at the back there, but it was still a slightly scary experience.

Tony Silke: Just to be serious for a second, unusually, just describe the vehicles they had at the time.

Ian Crabtree: Well, this thing was just driven by an ordinary V8. It was just an open-type wagon; it was really a truck. A fire engine, they actually call them pumps cos in fact the engine can drive a pump. What you've got is hose storage, you've got a long wooden ladder, which gets you up a decent distance, and lots of hose. Then on the back you had bucket pumps because a lot of fires actually could be put out by bucket pumps, and the general trend was to try and always put things out with a bucket pump. Now, why did they do that? Well, the answer to that is that if you took an ordinary hose out and you put water through it, well, then it had to be dried afterwards, it had to be scrubbed clean, and it was a hell of a lot of work.

Tony Silke: It was a hell of a job, wasn't it?

Ian Crabtree: I know. I remember being very unpopular running a hose out once when they reckoned they could do it [laughs] with a bucket pump. I can also remember going to a fire and when he said, 'Bucket pumps'. 'Oh [indistinct 9.33] bucket' Finucane said. [interruption from Tony’s phone 9.33 to 9.42.] Oh that Bill Finucane. I can still remember: it was out in Seatoun, we went through the Seatoun tunnel. We came and there was this great glow on the horizon, [laughs] so everybody said, 'Bucket pumps.' [laughter]

Tony Silke: Two million of them.

Ian Crabtree: Yeah, so we tried to put things out with bucket pumps, but didn't get very far. You were asking me about what the fire engine was like and riding in a

fire engine. The other thing, riding along in this fire engine, we all had these hats on. Wattie didn't like Glassenbury. I thought Glassenbury had a wonderful sense of humour. He worked for the ANZ Bank. I don't know what happened to him. But anyway, Glassenbury's hat blew off. [laughs] Wattie saw his hat blow off. Wattie wouldn't stop the engine, no, he said, 'Glassenbury, that'll cost you so much money.' [laughs]

Tony Silke: Imagine doing that now to your staff.

Ian Crabtree: Yeah. Actually what happened was that somebody picked it up and brought it round to the fire station, so it didn't cost Glassenbury anything after all. It was a typical Wattie story.

Tony Silke: Apart from the bloody embarrassment of it.

Ian Crabtree: Yeah. I'll tell you another Wattie story. We were just having lunch on a Sunday and the bells went. We got called out right to the point that Miramar is situated on. Was it Point Howard? I don't know. No, it's not Point Howard – I don't know what it is. Anyway, it was just right out at the point there that you get to when you go from Miramar out in the direction of the harbour. What had happened was that a launch had been going into the harbour and they'd seen a little bit of smoke on the tip there, so they'd phoned up the fire brigade and the fire brigade had called out Miramar, so we went around there. When we got there, we found three young guys and they'd been diving for mussels. They'd got a few mussels and they had the tiniest little fire you ever saw and were cooking the mussels. There was a plantation there and I think it possibly was a no fire zone – but the pine trees were hundreds of yards away.

Tony Silke: Did you get any mussels out of it?

Ian Crabtree: We went up there and we got off our fire engine and Wattie, 'What are you doing? How dare you! What are your names? Who are your parents?' It was all a great performance. 'Put that fire out.' Old Bill Finucane got the bucket pump. Everybody felt such an idiot, you know, playing this thing up.

Tony Silke: Absolute over the top.

Ian Crabtree: I know, absolutely over the top. That was one of our less pleasant encounters with a fire.

Tony Silke: Tell me about things like, did they have a control room where phone calls came in, or how were they notified of a fire?

Ian Crabtree: I think the notification, they had these things in the street where you broke the glass.

Tony Silke: Oh, yeah.

Ian Crabtree: I don't know if they have them now.

Tony Silke: Yeah, you're right. I don't know whether they do.

Ian Crabtree: I don't think I've seen one for a while.

Tony Silke: Yeah, it was a box with a glass thing; you broke the glass, pushed the button and suddenly a man in a suit and a big fire pump would arrive. [laughs]

Ian Crabtree: That's right. Well, those were all connected, I think, to the central fire station. It was a little office control place in the fire station, and the bells would go and you would go and you would be able to see where the alarm came from, if it came from one of those things.

Tony Silke: Cos this would pre-date telephone in every house and that sort of thing, wouldn't it?

Ian Crabtree: Yeah.

Tony Silke: The mid-50s, yeah.

Ian Crabtree: It's interesting cos I don't know whether they still have those. Of course, sometimes a call would come through on the telephone, and immediately you'd put the bells over and everybody would tear down. We'd put on our hats and put on our jackets. Each outfit, the fire brigade regulated. You usually operated with the regulation trousers on when you were around the fire station. We also had a belt with an axe on it.

Tony Silke: Oh, what? [laughs]

Ian Crabtree: We were ready and the next minute we were on our fire engine and away. I should be up near this microphone. Eventually they took all those axes away from people. They reckoned that the Fire Brigade did more damage with their axes than good. If there was ever any galvanised iron involved, what you did was, the axe had a blade on one side and a spike on the other, you'd go to a sheet of galvanised iron with the spike and haul. Every sheet of galvanised around, you ruined. That was the end of them and eventually, I think, they withdrew those. Of course, the interesting thing with them is they had a wooden handle and the wooden handle, you had to scrub with sandsoap so it looked white. If you used it, you had to scrub it, and then the blade was steel - you had to polish that.

Tony Silke: I'm sure it would work a lot better with that.

Ian Crabtree: That was life in the fire station. But we went around. If we went out in the rain, we had to chamois every bit of the fire engine down. The only time I ever came across any humanity there was… We didn't mind chimney fires in the rain because we got five shillings or something from it. It was something to do and potter round when you were there. I remember coming back once in the rain, and the fire engine had been chamois'ed down. I saw another chimney fire and I said, 'There's a chimney fire.' [laughs]

Tony Silke: Oh, really? This is a coup. [laughs]

Ian Crabtree: Wattie refused to look at it. [laughs]

Tony Silke: Oh, really? Mind you, a lot of them actually burnt themselves out.

Ian Crabtree: I know, that's the whole point.

Tony Silke: Yeah, he might've been right.

Ian Crabtree: Oh, he probably was right. It was just that generally, he knew that they burnt themselves out, but we insisted on going in and telling everyone they hadn't cleaned their chimney and all this sort of stuff. The story I'll tell, that interests me: there was a building near where the airport is now for the Centennial Exhibition. A great big wooden building was put up there for the Centennial Exhibition which was held in, what, 1940. They used that for a wool store. Presumably, they couldn't get the shipping capacity to ship all the wool to England during the war, so it was full of wool. They had a fire brigade there just in case there was a fire, to put the fire out. Well, anyway, at some stage the fire people there got a bit bored, there weren't any fires, so they thought they'd start a little fire and then they'd put it out. [laughs] Just to pass the time. This was well before my time. They started a little fire there, but when it came to putting it out, they couldn't put it out. [laughs] The net result was the whole place went up in smoke.

Tony Silke: Really? Just for a bloody exercise.

Ian Crabtree: Yeah, just a fun thing that they were doing. Terrible story really - it must've cost lots and lots of money.

Tony Silke: Jesus, and did it do massive damage?

Ian Crabtree: Oh, it did massive damage. The Centennial Exhibition buildings just disappeared. I think they must have salvaged some of the wool because things tend to burn on the outside [?16.56], but when we were there, there was earth all over the area where the place had been, and gorse and blackberry had grown up through that stuff - the fire had been some years prior to that. We got a call out there. The interesting thing was that they obviously salvaged some of the wool, but I think they lost interest to salvage every bit, so they just put earth over what was

left. Then when they had a fire, the fire burnt down through the gorse and then it got into the wool underneath. So when we got there, there was smoke arising here from the grass, smoking arising... It probably wouldn't have done much harm, what was left, but you kind of couldn't leave it.

Tony Silke: Yeah. It would be hard to put out as well, I imagine.

Ian Crabtree: Well, that's right. We were there putting all these fires out with our great big fire hoses; not a bucket pump job this time. Anyway, they got another call and they said, 'Well, you can put it out' - this is me – and they all set off for the next call. [laughs] I had this great big fire hose in one place, so I put out the fire that I could with the fire hose in that place. Then I thought, how am I gonna move this hose? I thought, oh, well, I'll let the water out of the hose and then I'll move it to put the next fire out. I ran the water out of the hose. There was a fair bit of the water ran out, so I grabbed the hose to try and move it. I grabbed this bit and lifted it up, put it over there, then I moved along one step and lifted that bit up, but the previous bit went back to where it had been. [laughs] I did this for a while then I thought, I'm getting nowhere fast. As soon as I lift one bit, the other bit goes back to where it was. [laughs] This is useful knowledge in case you're ever in the same position as I.

Tony Silke: With a canvas fire hose?

Ian Crabtree: That's right, with a canvas fire hose. If you ever have the same trouble yourself, you'll know. What I did was I filled the hose back up with water again so it was rock solid. Then I found I could bounce the hose, so I bounced the hose to the next fire and gradually I put all the fires out. It's a useful tip.

Tony Silke: Well, I could give you a useful tip with fire hoses. Imagine a coal power station. It had a V8 fire pump built in and its own fire water supply. We were doing something with that - they used to run it every month or something like that. We decided that we'd try it out and we'd actually squirt a bit of water out with a hose, and some of the local residents were sitting in the sun on the bank of the river, just some 20 metres away from where were. We thought, we'll get this hose and we'll give them a bit of a gentle spray, you see, and sort of wet them all, seeing they're sitting there in the sun. Really quite charming. We turned on this hose expecting water to come out, and all the pipes must've been completely rusty and there was this bloody great wall of brown stuff. [laughs]

Ian Crabtree: Oh, God. You were very unpopular.

Tony Silke: They were flooded with this rusty stuff. Anyway, this is your story, not my story. [laughs]

Interviewer: No, no good.

Tony Silke: Yeah. Sorry.

Ian Crabtree: Good story. That was the end of the Centennial Exhibition, yeah. That was an interesting story. How's the time going? Oh, another five minutes. Another story was Guy Fawkes night and there was an outfit called the Fire Police, who were the sort of, in emergencies these were entirely volunteer people and they had a little wagon, a half truck at the back of the station in a little shed there. The idea was, if it was a real disaster, they could drag the Fire Police in to help. I did turn the Fire Police out. I called them on Guy Fawkes night. Guy Fawkes was always great fun cos there was a lot of readily burnable gorse and before very long there was a great fire; you could see the smoke rising up the Miramar valley. So we set off in our engine and the Fire Police seemed to have charged off too. I don't know where they were going.

We set off on our fire engine to try and find this fire cos there were these kind of little ridges that ran out from the main ridge along Miramar there and it's quite hard to find to get into the right place. Eventually we decided where the fire was. We went and parked our fire engine and got the pump ready to pump. Then we ran a hose right up the steep hillside of this ridge and we got ready to put this fire out. When we got to the top of the ridge, the fire wasn't just beyond this ridge, because when we got to the top there was a valley and then there was another ridge, and the fire was beyond the other ridge. [laughter] We were just about exhausted having run this hose up there. We sort of lay there for a while just recovering our breath, and eventually we took the hose and walked back and wound it all up again. By the time we'd got our hose run back and wound up and went to find out where the real source of the fire was, we found out that what had happened was that the Fire Police, in their little wagon, had gone exactly to where the fire was. [laughs]

Tony Silke: That'd piss you off.

Ian Crabtree: We thought it was a great joke. They'd just gone up to it and put it out, just like that, you know, these rampant amateurs.

Tony Silke: That's disappointing.

Ian Crabtree: Well, it didn't worry us. We all got back to the fire station, but Wattie, who was a vain man, in the course of the evening the Fire Police had broken a window of the little wagon. Wattie saw that broken window of their wagon, and all Wattie said, you know, they'd done the job, they'd put the fire out, he pointed to the broken window, and he said to them, 'You'll *pay* for that.' That was his only comment. [laughs] Life at the Miramar Fire Station. Well, anyway, a lot of the fires were just chimney fires, run of the mill fires and things like that, which I enjoyed. There was a fire bug there for a while.

I remember being at Ardmore, at the School of Engineering, this was at the old Air Force, and when there was a fire there, you know, what do you do? I still remember

being there and saying, 'What the hell do you do?' Moving from that state of not knowing what to do, to thinking, when I'd been at the Miramar Fire Station for a while, gee, how much I would like to have been back at Ardmore when these fires were really raging.

I'll tell you one other… it's not a story, but when there was a big fire in town, the out stations would move in. There was a big fire. Constable Street Fire Station, which was much bigger than we were, got dragged in and we went and stood by at Constable Street. This was one of the other frustrating things. Occasionally you'd get to Constable Street and you could see a great big fire downtown; and you couldn't get to it cos you had to stand by. But that was one of the penalties you paid for being at an out station. I really would've liked to have been at an in station.

Tony Silke: Yeah, so you had to just sort of man their station.

Ian Crabtree: Yeah, that's right: you stood by their station. I always would've liked being at Constable Street because the nice thing about Constable Street was that they didn't go in for all this spit and polish stuff all the time. [laughter] Except I remember almost falling over once because there was oil on the floor. I stood in a patch of oil and I didn't fall over, but I went for a nasty little skate for a while.

Tony Silke: Course those were the days when vehicles leaked oil, weren't they? It's sort of unheard of now with Japanese vehicles.

Ian Crabtree: Yeah. We're probably coming towards the end.

Tony Silke: Yeah. Just a closing thing. That kind of emergency Lifeline work type stuff like that, do you think that was a good platform for you later on where you've got involved in a lot of emergency work and health and safety type issues? It's sort of been a large part of your recent life really, hasn't it?

Ian Crabtree: It has been quite a chunk. Yes, it was interesting actually, I looked for the examination of the fire engineers, and I reckon I could've passed their exam at that time. I would have liked to have become a registered member, but the problem was you had to be there for a certain number of years and I think it was too long.

I took a passing interest in fire protection over the years, and in fact one of the last things in the old organisation, because there was no uniformity or there was no consistency in what one substation were doing, there was no way of doing that, and I actually thought, you know, we'd really better tidy this thing up. I set a committee up - well, we got the document drafted and then I set a committee up, and I asked John Malcolmson if he'd chair it cos he was design and construction. He was very obliging to chair it. We did quite a lot of work on getting a consistent fire protection policy going through the old organisation. Unfortunately, it didn't last

long after that, but it stood by for quite a while as a useful document. John was good. I mean we had little teams to look at the various areas, the substations and power stations cos it was the old organisation.

The organisation had quite a range of situations, and the question was, you know, how elaborate a system did you put in. Traditionally, we'd put very little in the way of spray but you'd get somebody who would come along and put sprays everywhere - if you got a consultant to do a design. We needed to have some consistency and some logic there about what we were doing.

Tony Silke: Yeah, some standards.

Ian Crabtree: Yeah, that's right. I always was interested in that. When I did have the opportunity of having my two bits' worth on substations, I could, yeah. I got interested in fire protection, but you raised the more general issue. Yeah, probably did.

Tony Silke: Yeah, these things tended to set you up for later life even though you don't realise. It sort of makes you wonder if there's not a big plan somewhere that you go and do this at some stage of your life to equip you to do this later on. I wonder.

Ian Crabtree: Could be.

Tony Silke: Alright. We'll stop for now. [pause on recording 26.35 to 26.42]

Today is Monday, the 4th of February 2002. This is Tony again, and Ian and I are just going to have another rather ad lib recording session. We'll probably start talking about some gold and that around Karori. Ian is going to leave some money in his will for the funding of an access road to a particular part in there. Won't be a second. Here we go.

Ian Crabtree: Do I just start?

Tony Silke: You just carry on it's on automatic and it'll stop and start as we talk.

Ian Crabtree: Okay. Well, one of the interesting things about Oteranga Bay is that it is alongside what were some goldfields, in fact they still are goldfields. There was a gold rush in Wellington and, just looking at the dates here, the first mining period 1852 to 1872, the Makara mines. Karori goldmine rush 1869 to 1873. Then 1881 to 1883, here we are out at Terawhiti, the Terawhiti field 1881 to '83. Then they didn't find much gold and the whole thing just died away. There were revivals of 1888 to 1911. I'm actually looking at the index of the book *Terawhiti and the Goldfields* by James Brodie. It has, on the front, a picture of James Brodie and myself. [laughs]

Tony Silke: Oh, really? I didn't notice you. I see him there.

Ian Crabtree: Jim was head of the Oceanographic Institute, a geologist. He was interested in the area and a man who wrote, in great detail, the book *Terawhiti and the Goldfields*. Jim was keen to do the book and got the Karori Historical Society keen to publish it. I went around and actually got Kevin McCall [?sp] to put in, I think, something like about $1,000 to assist with the publication, so I thought I was instrumental. But when I look at the practical assistance of a lot of people, I don't know how much money they did get really. There were a lot of other names here as well as the Electricity Division, the Ministry of Energy. There were quite a number of other people.

Tony Silke: What year was it published, roughly?

Ian Crabtree: About 1986, just before the old place crashed. It actually went out of print and was sold for quite a high price in the second-hand market. But the Karori Historical Society has reprinted it, which of course has knocked the bottom out of the market.

Anyway, one of the interesting things about the cable terminal station, as I say, was that it was adjacent to these goldmines, and on the way out there, down in one of the creeks that you could look at from the roadway going out there, there were what are called berdans, B-E-R-D-A-N-S, I think. I'm not an expert on gold mining, but these were the kind of annular pan, if you know what I mean by that, in which the fine crushings from the stamper were put in, and there were big balls that rolled around. The idea with the big ball rolling round was to mix the mercury - mercury was added. The mercury found the gold and took it out...

Tony Silke: Oh, right. Gold was attracted to mercury.

Ian Crabtree: Yeah, and then you'd get a mercury gold amalgam, and then periodically you'd take that out and drive off the mercury, recover the mercury, and there's your gold. I think that's the basic process. With quartz mining you put it in the stampers.

Anyway, as far as the actual New Zealand Electricity was concerned, I expect all you would see, there was the odd drive you could see from the roadway. There was this mining machinery down one of the little gullies or valleys or streams that went down from the road and then you could see the odd entrance on the hills. I have actually been out with the Karori Historical Society. When we went out there, it must have been before this, it must've been about 20 years ago cos this was taken on our last trip, there was still some of the machinery there. The machinery basically consisted of, there was a steam engine. If you are mining and crushing quartz, you need power to drive the stamper.

All the stamper consists of is a series of stamps. Stamps are just about like a car or an engine upside down. Instead of the piston being pushed down by an explosion in the ordinary sort of car, what you've got is the other way round. You haven't got a crank shaft. You've got the equivalent of a crank shaft lifting the pistons and dropping them, but you can't have a crank shaft cos it would slow the speed of the stamps down. What you have, in place of the crank shaft, you have lifting cams attached to a shaft.

Tony Silke: It always struck me [?32.49] that they must be.

Ian Crabtree: You see the lifting cams. Lift the stampers. I don't know whether you can see a stamper. I don't know there is a stamper there. The stamper operates up and down and that's, in effect, the cylinder block, see? The stampers operate in that and you feed the quartz into it. That gear, obviously, is to slow the whole process. Is it to slow it down or to speed it up? No, to speed it up; it must be to speed it up. The steam engine would be pretty slow going. That's the steam engine's fly wheel, so you've got the old slow steam engine going there and then you've got the speed with those gears. You speed the lifting cams, which is a cam shaft in a way. See the cams which lift up?

Tony Silke: Yeah. God, they must be noisy, thundering, thumping, banging things.

Ian Crabtree: I know.

Tony Silke: There's some down the West Coast that I've seen in the South Island, and they just seem to be huge.

Ian Crabtree: You probably know more about it.

Tony Silke: No, I don't. No, I've only ever seen the relics of them round the place.

Ian Crabtree: Well, anyway, here's the old steam engine. Well, that's the old boiler anyway. The tragedy of it all was that I think the first time I went out there, the steam engine was relatively intact. But steam engines, as you know, have white metal bearings in them and somebody had gone along and ripped the whole thing apart just to get the white metal out. You know, so wrecked the steam engine.

Tony Silke: You'd wonder that would be worth the cost of recovery.

Ian Crabtree: If you're just a scavenger, you know, your time's worth nothing. I mean it had obviously been scavenged by somebody. These people scavenge scrap metal - it's one of those sort of stages you can go through in life if you've got no money.

Tony Silke: Pretty bloody desperate, isn't it?

Ian Crabtree: Yeah, it is. Whether there are still bits out there or not, I don't know.

Tony Silke: I'm sure the big bits that are too hard to do anything with will be still sitting there rusting away. That seems to be the case.

Ian Crabtree: Staying with the gold mining theme for the moment, you have an area of substantial gold mining at Cape Terawhiti, lots of drives and they're all described in the book, or maps of them.

Tony Silke: It's right on the cape, it's right close to the sea itself, is it?

Ian Crabtree: Well, I think so. I've never been to one on the seaside, but what happens is that if you go to Oteranga Bay, there's a kind of valley runs between Cape Terawhiti and the sea. Terawhiti is a big sort of lump and on one side, it's a bit hard to see.

Tony Silke: There was a picture here, somewhere in one of the plans.

Ian Crabtree: Yeah, it looks as though there were drives on the seaward side, but how they got the ore from the seaward side around, it must've been hard work. The only drives I have ever been in have been drives that go from sort of the landward side to that Cape Terawhiti.

Anyway, there was a little bit of gold out there, but eventually the whole thing closed down. When you go to set a mine up, you've gotta check - well, you don't have to - but the logical thing is to check the gold content of the quartz, if it's hard rock mining. The story I heard was that in some places the strata are vertical and so you can go to a vertical strata and gain access to the top of vertical stratum of silica. But what happens in the weathering process is that gradually the silica gets washed away, but the gold, being fairly heavy, tends to stay there. If you go to the top of an exposed seam of silica and you take a sample from there, you tend to get a sample with much more gold in it than you have in the general run of the seam, because it's concentrated in the top.

One of the stories is that they took the samples from the very top there, submitted them for analysis, found quite good quantities of gold and got going with all this sort of stuff. But to get at the seam, instead of going in from the top, they had to go in from the side to get into it. When they went into it from the side, of course there wasn't much gold there cos there never was much gold.

Tony Silke: [laughs] So much for their first survey, eh.

Ian Crabtree: The other thing is, one of the classic ways was salting stuff. You'd sprinkle a little gold dust. When you sent the stuff for analysis, you would sprinkle a little bit of gold dust on the top, and the analyst would come along and analyse

how much gold was there and find quite good quality. So, away the mine went, and the original promoters did well out of the whole thing.

Tony Silke: Their money was not in the return; their money was in the...

Ian Crabtree: Owning the thing.

Tony Silke: ... bloody great [indistinct 37.53].

Ian Crabtree: Right. Now, continuing on from that. There's quite considerable historic interest in that area. But it's pretty inaccessible - it's on private property, and it's a long way away. But in the Karori Sanctuary there was also some mining took place, which is described in there. As I was just showing you, Tony, the Sanctuary people thought it would add interest to provide access. Can you turn this off for just a moment? I just wanna get something and show it to you. [pause 38.32 to 38.33]

Tony Silke: Okay, we've had a phone call and a slight pause and we're back in business. Away we go.

Ian Crabtree: Just rounding that off on the mining business: because there have been these mines in the Karori Sanctuary, the hope is to provide access to them. As well as just a wildlife sanctuary, it will have technological interest as well. It's got the waterworks there; there's the valve intake. Overhead, there is a transmission line; I'm pretty certain the transmission line runs up the valley. On the side of the valley is this gold early mining drive. I think, from the point of view of technology, it's an opportunity. It may even be that there needs to be a little pamphlet produced. There should be a pamphlet about each of the things. I think there's already something on the mining - a simplified version will be available. There's already a good display on the waterworks in a place called the boatshed. I think the transmission line runs up that valley, and it may be that if people want to know about the transmission line, there should be a little pamphlet. It may be, of course, that Transpower doesn't want to mention the transmission line, or they hope that people won't see it. [laughs] I won't say what's the right thing to do.

Tony Silke: [laughs] Yeah, you may well be right.

Ian Crabtree: We may not mention it, but it just occurred to me that all these bits of early technology: water supply, electricity supply and mining, they're all things that date back to the fairly early days of the colony.

Tony Silke: Yeah, that's very good, and so close to a community as well, which makes it even better. A lot of these things like that are 6,000 hours away from civilisation, where this is in the middle of town just about.

Ian Crabtree: That's right. The point Jim Brodie makes is that this is the only place he knows where there's a goldmine of this period that's accessible from the centre of the town. It is the only place to come and see a real genuine goldmine of 1870s vintage.

Tony Silke: It's a bit like Dunedin having an albatross colony nearby. It's the only land one like that that's close to a community anywhere in the world apparently.

Ian Crabtree: We must celebrate these special things.

Tony Silke: That's quite good, to be able to do something that's actually got a good targeted thing that you can leave behind like that as well.

Ian Crabtree: As I say, it's only a smallish portion of what I'm leaving, which basically goes to the underprivileged for Mary Potter.

Tony Silke: That's good. Are Mary Potter happy about that? They've got it all sorted out, have they?

Ian Crabtree: Well, I haven't actually told them exactly what they've got. What I've got is a trustee, from my estate, a man called David Hurley. I don't really want all this on this tape, but it's harmless. David Hurley is also on the board of the Mary Potter. He hasn't seen my will, but I think it'll all work out.

Tony Silke: It's actually not bad to have stuff on tape. I think it's nice for people to drop their thoughts on to something. I often find that a tape is a good place to start something from.

Ian Crabtree: Basically what I showed you there, that first page about the goldmine, that's an addition to my will to explain the will leaves some money, and that explains the intentions and links the will in with people like Judith Burns and Jim Brodie.

Tony Silke: That's great, isn't it?

Ian Crabtree: Now you're starting to get linked in, and in a sense, knowing something about the Karori Historic Society, it's probably helpful to you in a sense that I think there are transmission lines going through the Karori Historical Society [sic].

Tony Silke: Yeah. That'll be good. Any idea of how long it'll take before it's useful?

Ian Crabtree: I don't know. No, I imagined they'd already got sketch plans cos they quoted me a price when I asked them. But they hadn't and so they're working on that now. They're trying to get somebody. No, I've got no idea. They haven't come up with it. Like most things, it'll take longer than one thinks.

Tony Silke: Aha, there's an engineer speaking. [laughs]

Ian Crabtree: The other thing I was talking to you about was I've started on Max Rudd. Max Rudd was a poet who died in 1926 at the age of 23. He was my uncle. His work has been published only in an obscure English journal, the *Right Review*, in the thirties. Nothing about his life has ever been published cos very little was known. But I had some papers and I've put some information together, and I've now got this book called *All Things Bright and Beautiful: Maxwell Billens Rudd, His Life and His Poems*. I worked through that with my sister, who's helped me with the research. I went through that with her last week, another version of that. We think we've got the text almost right for that. There were some references that have gotta be fixed up, but Helen's happy to do the references. Thank goodness for that. I can now see that being published.

Why I'm interested in this? Well, Max Rudd was my mother's brother and she was very fond of Max, and very distressed when he died at the age of 23. He was of the fraternity of poets who were operating in New Zealand at that time, but because he died at the age of 23, he didn't write very much anyway. What he did write, are what you might say are the first… He didn't have the opportunity to keep on writing as the years went by. People might look at his work and say, 'well, so what?' But this is a little bit of New Zealand's poetic history, and so I'm pleased to get that going. As soon as I took ill, I started work on that cos I knew I was going to have to do it. Why I had to do it was there were a few letters had been kept in the family and they'd been passed on to me. There was very little material. When he died, the family burnt everything, so that's really why I started.

Tony Silke: Really?

Ian Crabtree: He died in Avondale Mental Hospital, and I think there was a great stigma attached to mental hospitals in those days. His father and his stepmother were leading people. His father was a senior manager in the Union Steamship Company, and the Union Steamship Company was really big in those days.

Tony Silke: It's like Air New Zealand now. Well, like Air New Zealand two years ago.

Ian Crabtree: That's right. Exactly.

Tony Silke: [laughs] It's not quite so big now.

Ian Crabtree: The fact of his death and how he had died was something that was kept fairly quiet. The reason he died, seeing we've started on this track, when we read the papers through: his father wanted him to be a lawyer like his brother. His brother became Laurie Rudd of Rudd Watts and Stone – although that Rudd has been dead for many years now. His brother became a very successful lawyer, and

Max was supposed to follow in his brother's footsteps. He didn't want to be a lawyer - he wanted to be a minister or perhaps a poet. It was too much for the guy and he just collapsed under the strain of family expectations and what he wanted to be. Well, there's more to it than that, I expect, but there you go. So that's the other major project that I've been on. I started on that when I took ill and made a lot of progress with it. But when I came back to work, I decided that I couldn't work away at Max. Well, I worked away at Max and the book for a while, but then I had to go and get on to work things, so I went back on to work things. It's been sitting to one side and then with my sister down last week, we drove it through.

Tape 3 Side 1 ENDS: 47.21; Tape 3 Side 2 STARTS:

Tony Silke: Okay, that should be enough to get past that.

Ian Crabtree: Count Potocki was a friend of Max's. Count Potocki was the man who thought Max was a wonderful poet, and Count Potocki wrote the *Right Review* and published Max's poems. Count Potocki has just had a book published about him, which I have a copy. The book was published by Stephanie de Montalk. He was Count Potocki de Montalk. I tend to call him Count Potocki. Stephanie de Montalk, a relative of his, has published this book about him, a memoir, which has actually featured quite high in the literary lists in New Zealand, you know, bestsellers. It did for a while. She also gave me a version of Max's poems which are slightly different to the ones published in the *Right Review.* The ones that Stephanie gave me, I've put in my edition in my book. That's the end of that.

Tony Silke: We've got those books that we talked about before: *People, Power and Politics*, and the Waitaki River book and stuff like that. I'll see what we can do that's proper for them. Is there anything else at work that you want done to or has Bev got all that in hand?

Ian Crabtree: I don't know if she's got it all in hand. You can go and see her, but staying, first of all, with my papers in that area, I also saw I had a box there of earthquake papers on the early days of earthquake engineering. There's a box there. It seems a pity to throw it away because it's early earthquake stuff. It dates back to Harry coming into the scene. As you know, there was a certain blissful ignorance for a while and then Harry came along and said things might fall over.

Tony Silke: It was worse than a blissful ignorance - it was almost an opposition to it, wasn't it? [laughs]

Ian Crabtree: My role was to work with Harry because the equipment that I had control of, supply equipment, was the stuff that could fall over. My job was to encourage Harry to work on any of the supply equipment - get Harry involved as much as I could while he had other interests as well, power station interests. Then to get him to work on supply equipment strengthening. He finally retired and then I grabbed hold of him. He retired at the age of 65. I may have said this in another

place, and from 65 to 67-and a half, I had him working for me on earthquake engineering on the supply equipment. I think I told you the story in the other place. He had this argument with Professor McGlashan. He used to tap the general manager on the shoulder and tell the general manager how stupid McGlashan was. [laughs] McCall got sick of it and so, having kept him on till the age of 67-and a half, I eventually lost Harry. [laughs] But the work did continue in the organisation. There were other people in the group. There was Tan Fan [?3.23].

Tony Silke: There might be some papers there?

Ian Crabtree: Well, there were some early papers there that I had collected together at the early stages of earthquake engineering. It's a pity to throw the whole lot away.

Tony Silke: Okay, I'll have a look and see. Cos there looks like there might be quite a bit of stuff that perhaps should be catalogued and boxed for posterity, just in case.

Ian Crabtree: Yeah, and the question of whether it goes into your library or into your patch. I believe the librarian has got it for each person. She aims to have a complete list of their papers.

Tony Silke: Is that right?

Ian Crabtree: I think she's got most of the things I've written. But we found one the other day that she didn't have. I think there was one she didn't have. It was one I wrote on the landscape architect [indistinct 4.09] for a conference in Australia about 1979. Anyway, it's just using your discretion to put into your museum the stuff that should go into your museum, and the other earthquake stuff. The earthquake stuff followed on because it got taken over by a man who is now in your disaster management or business continuity area. I can't think of the name. Shortish, very bright.

Tony Silke: Whereabouts?

Ian Crabtree: He now works on the disaster area. Who's the finance man in the disaster area?

Tony Silke: Oh, John Bishop or Steve Ballard?

Ian Crabtree: Steve Ballard. No, who does Steve Ballard work with? They've also had somebody else in there.

Tony Silke: John Bishop's the guy that did it.

Ian Crabtree: No, on the engineering side.

Tony Silke: Oh, yeah, Guy.

Ian Crabtree: You know the man.

Tony Silke: Guy Waipara, is it?

Ian Crabtree: No. Look, don't worry - we'll think of it later on.

Tony Silke: Yeah, I know the bloke.

Ian Crabtree: Curly hair. Nick Coad.

Tony Silke: Nick Coad, yeah.

Ian Crabtree: Nick Coad took the area over and he must have a lot of records. He did a lot of work in there and got a lot of work done. What I'm saying is the stuff that I've got, the boxes relate to early papers in the area.

Tony Silke: Maybe we should liaise with Nick as well.

Ian Crabtree: Yeah. Well, Nick's stuff is probably in Transpower's archives and the stuff that I've got in my box, and you'll find it full of earthquake stuff, it's got survey papers that I wrote of where we were at and things like that at a particular stage in strengthening and things like that.

Tony Silke: I'll have a look at that.

Ian Crabtree: I've talked on earthquakes before on this thing and then I found my box afterwards.

Tony Silke: Yeah. Well, that's good. Is there anything else at your desk that I should put to the right sort of places or anything?

Ian Crabtree: Now, right, yes. Now, the Safety, Strategy and Policy group. You'll find a whole lot of green folders of the minutes of that group cos the minutes include papers written. I was speaking to Bernard, and Bernard said, 'Yeah, I want that stuff.' That was just before Christmas. He was away after Christmas and then somehow I haven't made contact with him, but we've gotta make contact with Bernard.

The other person who's actually doing that job now is Harvey O'Sullivan. I think Harvey doesn't want any of the past papers, from my last conversation with him. But there are a lot of safety papers there. There are safety papers and they either go to Bernard or Harvey. I think the idea of having a record in the building, Bernard

seemed to quite like the idea. The records date back to the first production of the blue book and even prior to that.

Tony Silke: Bernard would be mad keen on that, I would think.

Ian Crabtree: Yeah. I mean, why don't you have a word to Bernard and he can talk to me on the phone.

Tony Silke: I will talk to Bernard about that.

Ian Crabtree: It's one of the things I've been meaning to do, telling Bernard that he's gotta come and get his safety stuff.

Tony Silke: Okay. That sounds good. I can do that. Anything else in there?

Ian Crabtree: I think ECB34 I've chucked most of the stuff away cos I think that's all dead. Ian can go through my stuff and see if there's anything more he wants to keep, but most of that disaster and emergency repair stuff is dead now.

The only other area I still haven't given quite up on, although I think I'll have to - I'm getting weak rapidly - is EMF, and I may need to talk to Monica. But if I don't get around to sorting things out with Monica, Monica can go through all my stuff. I've thrown a lot of it out, the EMF stuff.

Tony Silke: Now, I've had some correspondence with her regarding those instruments and she's given the okay. I said next time I'm over that side I'll just pick them up. She's quite happy about that. She's recorded the fact that I'm going to do that and Bev knows about it.

Ian Crabtree: I think that's nicely sorted. That will be nicely sorted out. For years I didn't know what to do with that damn thing. I didn't really think about it.

Tony Silke: Well, the fact that they're not just disappearing down the gurgler is the important thing really, isn't it?

Ian Crabtree: Yeah, and since I gave them to you or wrote to you, I've seen pictures. There are pictures of people using those instruments that I came across in some of the early stuff, you know, the long pole? I think it was in the USA or Canada.

Tony Silke: Yeah, cos a lot of these things, there's not so many people who understand how the industry got to where it is now.

Ian Crabtree: That's right, and the measurement of electric fields is quite a tricky business.

Tony Silke: I was talking to Kevin Daykin [?sp], who used to be a controller at Hamilton, up until two or three days ago. He's just moved to Wellington. Him and another controller, they used to work for me at one stage, and they've both moved to Wellington. Somebody made the point that just those two leaving is the loss of years and years of experience from a very small group. Once, there were guys up there, that were a bit like myself, that had been around and we sort of learnt to fly Tiger Moths, as far as power system operating was concerned. Now it's got so sophisticated that if something goes wrong with the technology, I don't know that the new breed of person could actually run it.

Ian Crabtree: Yeah.

Tony Silke: Which is a bit of a worry. Ian Scott and I were talking about this the other day. If you had to set up an area, the one I've done a bit of work on is Nelson/Blenheim, and if it was isolated from the rest of the grid, how would you actually keep the lights on in that area. There's actually no way of doing it at present with the market and all that - it just doesn't allow it to happen. Ian's got an interest in this. To me, the only way you could actually do anything is to actually declare some sort of emergency where you have the right to allocate and do what you'd have to do. But there is no mechanism for it.

Ian Crabtree: Well, that mechanism should be provided.

Tony Silke: Yes.

Ian Crabtree: I've been on the edge of similar discussions before and I'm convinced that you have to make provision for emergencies, for people to just run it the way it used to be run in the old days, for the good of the community as a whole.

Tony Silke: Yeah, but before you can get to a situation where community good exceeds commercial contracts - because that's the conflict, isn't it - you've actually gotta have some declaration that we're going into this particular mode.

Ian Crabtree: Yeah, that’s right.

Tony Silke: It's sort of the force majeure type thing really, isn't it?

Ian Crabtree: Exactly.

Tony Silke: You have to get into that, but how the hell you do that, cos to do that with the Civil Defence takes bloody days. Well, that's just not on.

Ian Crabtree: You can set something up if you bring the Prime Minister in or something like that. I reckon you could set something up.

Tony Silke: Well, I think we *have* to set something up.

Ian Crabtree: I think you have to set something up.

Tony Silke: Yes. Ian and I were talking about this the other day and saying, you know, how the hell are you gonna do something about it? Are we off again, are we?

Ian Crabtree: No, not at all, just the temperature.

Tony Silke: Getting roasted, yeah. Yeah, it's interesting, there's probably not many people that can even bloody talk about it now because they don't even understand the argument, which is a bit of a worry.

Ian Crabtree: Well, it'd be an interesting project. You've gotta write a paper explaining why it's necessary and then how it could be done; what are the options; why it's necessary. I mean if Taupō went up again, that would be a major catastrophe. It would need to be linked in with the declaration of a Civil Defence emergency, I think. It doesn't have to be a part of a Civil Defence emergency because you could imagine if a whole series of power stations failed in the Waikato or something, that would be a major catastrophe. It's likely to be associated with a major catastrophe, isn't it, that affects other things?

Tony Silke: Yeah.

Ian Crabtree: But it's an interesting project. It should be floating around quietly moving on.

Tony Silke: I don't even know who's interested in it. The Civil Defence are, and it was Ian who brought it up the other day just in a discussion.

Ian Crabtree: I see.

Tony Silke: Somebody had spoken to Ian about, you know, the industry should do this, or Ian should approach the industry. Ian rightly says, 'Well, there is no such thing.'

Ian Crabtree: Well, where it came up was at Y2K.

Tony Silke: It come up there - that was one of them, yeah.

Ian Crabtree: It certainly came up at Y2K time and when we looked into it, we thought, if, you know, this Y2K thing really goes bad in a big way, we need to be able to run the system for the good of the community; to hell with commercial considerations.

Tony Silke: Well, we built that standby dispatch thing that would do that if all of the standard things fell apart. At least you could do things. That was a special case - you knew it was happening, so there were agreements in place, and there was a willingness from people sitting round the table. But there's no machinery for it, there's no mechanism and there's nobody apart from the Emergency Management people who even give a stuff about it.

Ian Crabtree: Yeah. Therefore, you or somebody has to - hasn't Kevin got something to do with grid control now or something?

Tony Silke: Yeah, it is Kevin's...

Ian Crabtree: It's Kevin's patch and I think Kevin's sort of fairly enlightened in that sort of way. What I reckon should happen is you should write to Kevin and say, 'Look, there are no procedures that really exist for doing what we've been talking about. Shall I draft out a way ahead?'

Tony Silke: Okay.

Ian Crabtree: That's what I would do. I'd go and see Kevin first of all. He might do it. I'd go and see Kevin.

Tony Silke: Yeah, okay.

Ian Crabtree: I remember it certainly cropping up at the time of Y2K, and when it cropped up at the time of Y2K one thought it would be relatively easy to sort out, but it clearly finished up in the too-hard basket. At least that's my impression.

Tony Silke: Well, yeah, we put a system in place and hoped to Christ we never have to use it. That's about where it got to. Remember Doug Goodwin and I set up this industry subgroup thing to do just that.

Ian Crabtree: Yeah, you know more about it than I do. Is there an agreed way of activating it?

Tony Silke: No, no.

Ian Crabtree: No. Well, it's the agreed...

Tony Silke: The trigger is the problem.

Ian Crabtree: It's the trigger. Okay, fair enough. Right. I'd go and see Kevin cos I believe it's essential to do it. You understand it, and there are not all that many who do. Ian understands it.

Tony Silke: Yeah. I think Ian and I, with our different backgrounds, probably do.

Ian Crabtree: Yeah. You and Ian could both go and see Kevin.

Tony Silke: Yeah. Well, Ian's certainly worried about it and he's had the word put on him from Emergency Management.

Ian Crabtree: Okay. Well, these were things that we had in mind. Unfortunately I've been struck down.

Tony Silke: It's alright, the things will live on, mate.

Ian Crabtree: Thank you, man.

Tony Silke: They will. Anything else under your desk?

Ian Crabtree: Not that I can think of at this moment that matters much.

Tony Silke: Okay.

Ian Crabtree: I started to clear it and it's hard work clearing stuff away.

Tony Silke: Oh, it's a bugger of a job. It's bloody hard work.

Ian Crabtree: You don't know what to do with it.

Tony Silke: Well, it's hard enough moving office. I mean we moved over to the other side over in Sovereign Assurance, and even that's a prick of a job. I was totally rooted at the end of the day. Mind you, I chose to do it all myself, which probably didn't help much.

Ian Crabtree: I've thrown a lot of old US [?17.13] stuff away because I thought that while it was interesting to me, it wasn't much interest to Monica. But when they do get to my files, there are files, Transpower, yeah, we have policy statement of other authorities. You'll see those. Those are the critical ones now. The Australian ESAA have redone their policy statement. Recently, Kevin told me that Richard Gibbons is working on a policy statement for the ESAA. We don't want a discrepancy between what Transpower are saying and what they're saying. I don't think there will be. We've got a fairly detailed statement at the moment. It could be slimmed back a bit; I think that's the main thing. That was the next thing I was going to do at work, but I never got around to it.

Tony Silke: Is Monica switched on in these things?

Ian Crabtree: I don't know how much she knows. I've been, in a sense, teaching her - teaching her is a bit presumptuous, but at least I've involved her in some of

the things that have been going on. I think she's coming up to speed fairly fast, but it wasn't a patch that she knew.

Tony Silke: Well, anything we do, we'll make sure that she's involved in that because I just want to make sure that it gets done.

Ian Crabtree: Yeah, I realise that.

Tony Silke: Yeah, because then we can make sure it's done properly.

Ian Crabtree: Yeah, and she's an able woman. But, as I say, coming cold into the area. We've been gradually getting up to speed.

Tony Silke: Also, the need to ensure that some of these older documents that tell you how to where we got to where we are, that they are preserved.

Ian Crabtree: Yeah. The other thing I was going to say, but the conversation keeps ducking and diving...

Tony Silke: It does. Yeah, that's me, mate. [laughs]

Ian Crabtree: No, it's not you - it's just the notes of the conversation.

Tony Silke: [laughs] No, it's my brain as well.

Ian Crabtree: Amongst the valuable things, from a transmission point of view in history, is this thesis that has been done by this Auckland woman, Jo Whittle.

Tony Silke: Jo Whittle. That was the name; I was going to bring her up before. Yeah, where is that at?

Ian Crabtree: Well, I haven't heard a peep out of Jo Whittle for some time.

Tony Silke: It's funny because Richard asked me that same question today. Stuart asked me that question today, Stuart Nicholson. He was the other guy who wanted to be remembered to you.

Ian Crabtree: Oh, yeah.

Tony Silke: Does anybody have some contact with her?

Ian Crabtree: Well, Don Smith, is that the guy with very short hair?

Tony Silke: Oh, yeah, Dr Bruce Smith.

Ian Crabtree: Bruce Smith. He's the contact with her. We want to keep her enthused. If she's losing her enthusiasm, she may need a bit of help. I felt that she was biting off a big chunk.

Tony Silke: So did I.

Ian Crabtree: I also know a little bit from my sister who knows her up in Auckland University, and I got the impression she was having a little bit of difficulty. I won't say more than that.

Tony Silke: It's interesting that some people get into a bit of a bother like that and they stop or they get distracted onto something else, where other people would actually call out for help. The fact that none of us seem to have heard anything from her for the past few months is a bit of a worry really, isn't it?

Ian Crabtree: That's right. The time is going by. Therefore, I think...

Tony Silke: I might give Bruce Smith a call on that actually because I'd like to see where that went as well.

Ian Crabtree: I think we're all saying that we would like to see that well done. There's a great deal of support for what she's doing. She seemed an able woman to me.

Tony Silke: She's a clever girl, yeah.

Ian Crabtree: It may be that she needs a bit of help. You see, I put her on to other people who could help her and she's gone to see all these people in the Ministry of Works and she's probably found the thing far too complicated. It may be that she's gotta cut it back. If she cuts her thesis back to just transmission lines or something like that, the government policy and the power system. Or she could do power stations if she wanted to, but power stations is harder. I think she had too much. What she told me, she was collecting information and then, from that information, decide where to focus. She may have had difficulty in deciding where to focus.

Tony Silke: Is Bruce funding her?

Ian Crabtree: Fifty percent or something. No, it mightn't have been 50, but he's certainly giving her some funding; I don't know how much.

Tony Silke: Do you know if he's got any progress reporting structure in place or anything like that?

Ian Crabtree: I don't know, no. He put her on to me and I told her about the Transpower and put her on to a few Transpower people. Then I said, 'Hey, people

who knock the landscape round are not just Transpower - it's the old generating people.' I put her into Works and away it went.

Tony Silke: I'll have a talk to Bruce about that cos I was keen and so was Stuart, remember? She interviewed me twice, I think. Part of it, she wanted some history of the development of the power stations, so I put her on to Stuart because he's got a really good chronological list of when all these things took place. Stuart's the guy who should be writing the book actually, Stuart Nicholson. He's just the right man for the job. Yeah, and he's keen, so I'll give that one a stir up.

Ian Crabtree: Good on you.

Tony Silke: Good.

Ian Crabtree: Well, that was the only other thing that was floating around in my mind as things that I needed to talk about at this particular stage.

Tony Silke: Shall I kick the tape in the guts?

Ian Crabtree: Kick the tape in the guts.

Tony Silke: Go to bed, tape.

Tape 3 Side 2 ENDS: 23.36; Interview ENDS