

**Don GRIFFIN**

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**[Transcriber's note: prominent sounds of background conversation and meal preparation may be heard throughout most of this interview.]**

**This is a conversation with Don Griffin at his home in Blackwood on the 13<sup>th</sup> July 2011.**

**Don, you were telling me about the background of Stan Tomlin.**

Yes. Well, Stan came to the University of Adelaide and appointed senior lecturer in 1950. His qualifications were PhD from University of London. I might add that, subsequently, shortly before his retirement, perhaps two or three years before retirement, he submitted a lot of his published work to the University of London and was awarded a doctor of science.

**At the University of London?**

At the University of London. From being senior lecturer in 1950, he was promoted to reader in 1964. I believe he served as head of department during the period between the time that Professor Huxley moved to ANU and subsequently Professor John Carver was appointed head of the department.

**Yes, that's right. John Carver was appointed about 1961, I think. So that interim period between Huxley's departure and Carver's arrival was an interesting period, I think – would have been around '60 and '61.**

Yes. He certainly managed the department in a very competent way and was greatly appreciated by all other staff. I found this particularly the case when I came to seek the opportunity to enrol for higher degree work in the Physics Department, and I believe I do represent a somewhat exceptional case because I had an honours Bachelor of Engineering degree awarded in 1952 from the University of Adelaide.

**That was electrical engineering?**

In those days I think – yes, it would have been electrical. The honours classifications were designated either 'electrical' or 'civil' or whatever. Indeed, the rules, which continually change, or regulations or whatever, are such that I, in fact, have two

Bachelor of Engineering degrees from the University of Adelaide; I've got two separate pieces of parchment. One is an ordinary degree –

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**Don GRIFFIN**

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**Oh, yes.**

– awarded in 1951, and the other’s an honours degree in ’52. I also have, of course, a PhD in 1966 and a Bachelor of Arts degree in 1967. Now, it was part of Stan Tomlin’s background that caused me to seek the opportunity to enrol in the Physics Department, because I was aware that Stan Tomlin, during World War II years, had worked with others in a group that was developing microwave klystrons, so he had a fairly good working knowledge of microwave engineering and all the various needs that were involved in it, and he was quite willing to supervise me to do a PhD on the use of solid state devices as microwave components. Indeed, my thesis ended up being on the subject ‘Microwaves and semiconductors’.

**So, in a way, it was very much an engineering-flavoured PhD –**

It was –

**– in the Physics Department.**

– except that what I investigated was a physics-type property of semiconducting materials, namely, Hall Effect. You might recall that. And if suitable materials, which exhibit very strong Hall Effect, could be found or developed, then it gave the possibility of building what you could call ‘non-reciprocal’ microwave devices – things that are referred to in microwave engineering terms as ‘circulators’ – or other types of devices are effectively one-way devices; they would transmit a microwave signal in one direction, along the guidance structure, but prevent reverse transmission.

**So this project was supervised by Stan?**

By Stan, strictly, yes.

**Was he a hands-on supervisor?**

I think he took an interest in what I was doing in the way of building equipment, because some of the work I did on thin films of semiconducting material, and of course I needed to build a suitable vacuum-pumping arrangement and evaporating

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**Don GRIFFIN**

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arrangement in order to prepare those thin films, because they weren't readily available from any commercial place. And, indeed, one of the main difficulties at this time, in the early 1960s, was acquisition of suitable materials for study, and they included things like germanium, which was available to some extent in manufacture of transistors; indium antimonide, which had prospects of having – exhibiting a much stronger Hall Effect because of the increased mobility of the material; and – well, that was as far as I went at that time in looking at candidate materials for Hall Effect. And in terms of building the special apparatus for studying this effect, it turned out that what I called a bimodal resonator was a suitable structure to put it in.

Now, this related well to other fields that the other PhD candidates were working on, using what is referred to as 'electron spin resonance'. That uses microwave equipment. And among the students who worked on projects of that type was Brian Clifford Cavenett, C-A-V-E-N-E-double-T – he had a BSc 1960, and was awarded his PhD in 1965; Simon Peter Burley, BSc 1959, PhD 1965; I believe Gault Anderson Antcliffe –

**What was his first name?**

– Gault, G-A-U-L-T, Anderson Antcliffe – A-N-T-C-L-I-double-F-E –

**Didn't people call him 'Jack'?**

– I think so, I think so – BSc 1959, PhD 1966. I have an inkling that Phillip Thomas Dobney, D-O-B-N-E-Y –

**Phil Dobney.**

– BSc 1961, PhD 1970, may well have worked on a related topic. There were others in the group and I've mentioned Donald George McCoy, BSc 1960, PhD 1967. And then I'm not sure that I've mentioned my own qualifications: Donald Ward Griffin, BE 1951, 1952 was the honours part, PhD 1966, BA 1967. I suspect I have repeated that, however.

Now, there was a member of staff who was in the department: Robert Lawrance, and he has only one Christian name, Robert Lawrance, L-A-W-R-A-N-C-E. He gained an MSc in 1958 and I'd known Bob from the time that we were both on the

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**Don GRIFFIN**

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staff at what is now called or used to be called DSTO – in other words, it was the electronic research laboratories at Salisbury –

**Yes.**

– which was part of the Department of Supply in those days.

**Yes. So when were you out there?**

I started out there in 1952, and I left around about April 1959. No, it was December 1958 that I left.

**Yes. When you went there it would have been known as the ‘Long-Range Weapons Establishment’; is that right?**

Well, there were two separate establishments – well, more than two. LRWE was set up strictly to work on the development of rockets and testing of them and it involved Woomera as well as the labs in at Salisbury. There was another group called the Propulsion Research Labs, PRL, out at Salisbury; that was part of the Department of Supply. And there was Electronic Research Laboratories, part of the Department of Supply, and I think there was another one.

**So you were in the electronic one?**

Yes. And I think it answered to the Chief Scientist, who at that time was Dr W.A.S. Butement. He was based in Melbourne.

**So Bob Lawrance went from there into the Physics Department –**

He did.

**– as a staff member.**

That’s correct.

**When was that?**

Well, he did his Master of Science degree I think before he went into Physics. Perhaps I can look it up in this volume here. You’ve asked me a question so there’s going to be a bit of a delay on your tape, but I’ve got it here, probably. (break in recording)

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**Don GRIFFIN**

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**So Bob Lawrance was appointed in 1959 –**

As a lecturer.

**– as lecturer.**

Promoted to senior lecturer in 1963, and during the first few years of his appointment he was also enrolled for his PhD, which was awarded in 1965, and I believe – – –.

**So he was very much a contemporary of yours in the department.**

Yes. In fact, we shared a room for several years when I'd come across from where I was employed by the South Australian School of Mines and Industries.

**So what did Bob Lawrance do his PhD on, which area?**

I believe it was photoelectric materials, so again it was a topic in the solid-state physics area.

**So what was the laboratory like in those days that was associated – the one associated with Stan Tomlin, where clearly there were people working on different kinds of project.**

Yes.

**How did that work?**

Up on the first floor, at the western end of the original Physics Building –

**Yes, I can remember it.**

– which, incidentally, used to be the Department of Engineering.

**That's right.**

Up on that first floor. There was a large lecture room at the very western end, and just before you entered the lecture room there were doors into a couple of offices and into a couple of large lab areas.

**Yes. I can vaguely remember – on the southern side, it would have been – there was a lab –**

Yes.

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**Don GRIFFIN**

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**– and it had a big wire cage; is that right?**

Yes. Yes, I think that was left over from and transported across to Physics from the Department of Electrical Engineering, because they, when Professor Willoughby was appointed in 1945 or '46, they were constructing the new Engineering Building, which is north of the Mechanical Engineering Building. It now looks like sort of an add-on to this grand, new – you know the building which has been constructed – and for some reason or another he thought that these shielded rooms would be needed for various experiments and research and the like, and had to be constructed. Now, whether, in fact, one of those was given to Physics or whether at the same time Physics had one built, I'm not sure.

**But that was a Metters shielding enclosure for the microwave work, was it?**

Yes. It was a wooden-framed box. It was lined on the inside with what we'd describe as bird-wire, about one centimetre apertures, and also lined on the outside with bird-wire, and between the inside and outside there were various filter structures to prevent any radio signals that might be picked up on power connections and other connections from actually entering the screened room. So it's supposed to be an electrically – a room that was devoid of any other electromagnetic fields.

**Could I come back to the way that laboratory worked? Was it a set of groups working on different kinds of project, or was the whole laboratory essentially a group with people doing diverse projects within it?**

Well, the laboratories were there to house the equipment, and they ranged from various pumping items and evaporation arrangements for making thin films on substrates and the like, through to test equipment which was mainly oscillators, oscilloscopes and so forth. Also there was a big DC machine to operate an electromagnet, and that was used mainly for the electron spin resonance work. So that big machine, together with the controls on it, I believe allowed you to vary the direct current through the coils on this big electromagnet so that you could, in effect, scan the magnetic field from a low level up to some maximum, which was probably saturation relating to the poles. You could vary the pole gap and you inserted the

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**Don GRIFFIN**

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microwave cavity in which you were studying electron spin resonance into that gap.

(dog barks) Oh, here's dog coming. Got another visitor – – –.

**I will just stop this. (break in recording, ringtone, voice resumes in background)**

**Don, am I right in thinking that Stan Tomlin's style in running a research laboratory was that it was a place equipped with a range of equipment and that graduate students came in and took up individual projects that they could do without equipment and (sounds of meal preparation and use of microwave oven) they would be various, but it was just a single lab; was that his style?**

Yes, that was his style. I might add that, as far as the equipment was concerned, that tended to be financed through things like grants from the Radio Research Board in its day –

**Ah, yes.**

– and various other sources, and of course it took an accumulation of equipment over several years in order to provide the essential equipment for the various project works.

**Now, Huxley had strong links to the Radio Research Board, I think.**

Yes, I believe he did.

**He had a history there before he came to Adelaide.**

That would be right. No; he actually came to Adelaide from Malvern in Worcestershire. He had been the head of the department that was involved in – during the war years, in –

**Yes, that's right.**

– an educational role for the people who worked on the development of radar systems and so forth.

**But he must very quickly have established links with the Radio Research Board, because I know within a short time of his arriving he was getting money from them to begin the work in what they call 'radio physics' – the atmospheric work, ionospheric work –**

Yes.

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**Don GRIFFIN**

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– meteor trail studies and so on.

That was Graham Elford and the like.

**Graham Elford, yes. Now, there's one bit of work that used to go on up there that we haven't mentioned, and that is the work that Harry Medlin went on to work in, which was biophysics, X-ray crystallography. What was the connection between that and things you've been talking about?**

Well, I think very early in Stan Tomlin's appointment the Philips Electrical Industries – I guess they were approached, and they arranged for the Physics Department to acquire an electron microscope, and Stan Tomlin was actually put in charge of the operation and maintenance of the electron microscope as a service for all of those who had a need to use it in relation to their research.

**As a university facility or a departmental one?**

I believe it was a university facility, but it was probably mainly used within the department.

**Do you know what kind of work?**

You've got that switched on?

**Yes.**

Well, I'm aware that indeed some of the techniques for examining the surface structure of specimens was to – I think the word is 'shadow' them; in other words, within a vacuum chamber you placed material in there which could be evaporated, and I suppose in a semi-explosive-type fashion, so that it fell across the surface of the specimen, and when you came to look at it you would have a contrast between the high spots, which would have collected some of this material, and the low spots, which would be, if you like, the opposite of a dense shadow.

**So when you were working in that laboratory was the work – was that kind of work – – –?**

That was housed separately. That was housed in a room which was opposite the landing of the staircase, in the western – – –.

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**Don GRIFFIN**

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**It was on the northern side.**

On the northern side –

**I remember, yes.**

– at the western end of the building. And there were various students working in that area. I think one of them was a person called Victor Metchnik –

**Metchnik, yes.**

– but I don't see him as having submitted or gained a higher degree from the University of Adelaide, so I don't know what became of him. I think that might have been from Egypt or somewhere like that, so perhaps – – –.

**Yes. I don't recall now. So the work that Harry Medlin went on to do, was that seen as part of Stan Tomlin's laboratory, or was that seen as separate, from your experience?**

Well, my experience would be that Harry Medlin, in effect, was operating separately. But he did gain his PhD in 1956.

**Yes.**

BSc in 1949.

**Yes, and Stan Tomlin was his supervisor.**

He was. Okay. Well, there's another person that Stan Tomlin supervised at that stage, and when you look up the calendar the name is Barbara Phyllis Potts, and the 'Potts' is her married name. She gained her BSc in 1948 and her PhD in 1956, so she was contemporary with Harry Medlin.

**Yes.**

Her maiden name was Kidman, Barbara Phyllis Kidman.

**Now, where did she do her PhD?**

With Stan Tomlin –

**With Stan?**

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**Don GRIFFIN**

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– as her supervisor. That’s my understanding of it. And I might add that whether Harry Medlin was being supervised by Stan or not I’m not sure.

**Yes, I talked to Harry last week and –**

Okay.

**– he said he was, but I gather somewhat loosely.**

Well, I think that was Stan’s style. You went along and you explained what your progress was, and he would ask a few questions to see that you could explain or interpret the progress that you were making towards what would be a suitable final objective for your thesis.

**Yes.**

That tended to be Stan’s style. He did add by offering reading courses on topics which were possibly relevant to the work that you were doing, and I think one of the reading courses I recall was a book by Bleaney and Bleaney, and I think it was on wave mechanics; but this more or less related to the underlying topics – – –.

**I reckon we had a textbook on – by Bleaney and Bleaney, it was electromagnetism or something like that.**

Yes. I might be confusing it with another one. I need to look in my bookcase to see what the other one was.

**So Stan arranged these reading courses. Who would go to them?**

Some of the research students, and it may be as few as three or four, in his room; and we would have read a chapter and assembled a few days later to just raise a few of the points involved in it, and Stan would clarify our understanding of what it was and relevance to whatever it was that we were doing.

**That’s interesting, because Huxley did the same thing with the PhD students in the radio physics group –**

Yes.

**– established a reading course, and they took a chapter of a book each and gave a lecture to – they took it in turn to lecture a chapter to the group.**

**Don GRIFFIN**

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Yes. If you like to stop it for a moment, I'll just go and try and – – –. (break in recording) When Stan was first appointed, I understand that he was the first person in the department to present a course on wave mechanics.

**I think that's right, yes. That was an important piece of curriculum development –**

Yes, a new development –

**– in the history of – – –. Yes.**

– it was, but exposing the students to what was really a fairly up-to-date and ongoing topic being taught in overseas universities.

**Yes. Stan brought quantum mechanics and Bert Green brought relativity, in those days.**

Incidentally, I have at present borrowed from the library a set of three DVDs, lectures given by Bronowski, called *The ascent of man*.

**Yes, I can remember that.**

You can remember it.

**Yes.**

And I was looking last night at the one that related to the modern developments of the 20<sup>th</sup> century, which is very educational.

**Yes. So after you finished your PhD, you resumed your – – –.**

Oh, there's one other student I might mention while we're still on it is Barbara Possingham.

**Yes.**

Possingham is her married name; her maiden name was Hall. Barbara Isabelle Herbert Hall. And she was at Adelaide High School at the same time that my wife, Barbara, was there.

**Oh, yes.**

So I've known her for quite a long time.

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**Don GRIFFIN**

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**Yes. She was a famous physics teacher.**

Yes. Now, I'm not sure just – I didn't look up the record in terms of just when her degree was awarded, but let's try and do it at this stage. Hall, H-A-double-L. I think she may have also had close connections with Harry Medlin's wife.

**That would be right.**

Because I think she taught for a while at – was it Pembroke or some college like that?

**Yes. Yes. Di Medlin was principal.**

Barbara Isabelle Herbert Hall, BSc 1951, PhD 1956. So she was a contemporary of Barbara Kidman and Harry Medlin.

**So what do you think Barbara Possingham did her PhD in; do you know that?**

I don't know. I'm not sure whether she was supervised by Stan Tomlin or not. What I am aware of is that, at the time of Stan's retirement, they presented him with a bound copy of the title page and abstract or summary of each one of the high degree theses that had been submitted that he'd been supervising, and I believe the total was 32. And the copy of that probably Stan's wife, Doreen Tomlin, still has it; but I haven't been in touch with Doreen for a year or so, so I'm not sure whether she's still living at home, but – – –.

**Yes. Do you know where – where does she live?**

The house was at Yester Avenue, Brighton. Need to look up the telephone book to see if she still lives there or not.

**Yes. It would be good to check on that.**

Interestingly enough, I was talking to my daughter-in-law on the telephone about half an hour ago, and that's Mary-Anne McDonough. You may remember her from the Physics Department.

**Yes.**

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**Don GRIFFIN**

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She married one of my sons, our second son, and Mary-Anne and Tony, in the six months after they were married in 1978, they did some house-sitting; they stayed in the Tomlin house for the six-month period. So Stan and Doreen would have been probably over in England on study leave.

**Yes – when was that again?**

1978.

**Well, Adelaide is a small place, isn't it?**

(laughter) Yes, it could be.

**So where's the connection?**

Well, I think Prof Prescott was the person that was perhaps a major player in Physics at the time that Mary-Anne was doing her honours BSc. I think she tells the story that she missed out on getting a first-class honours by about one mark or some such. But people have to make decisions, and – – –.

**Yes. I can remember her.**

Well, she was due to fly into Adelaide today – they live up in Brisbane – and, however, she's put the trip back one day. She's married to our son, Tony, who's the Director of Renal Transplant Surgery at the Princess Alexandra Hospital in Brisbane. Yes, of our five sons – and, incidentally, I'm the youngest of five myself – so of our five sons we've got four who are medical specialists and one who is a real doctor, in that he's got his PhD in Agricultural Science from the University of Adelaide.

**Oh, yes. But after you finished your PhD you resumed your career as an engineer.**

Well, I had an appointment in the then School of Mines and Industries, and I had – if I remember correctly, I had been promoted to senior lecturer. But an opportunity arose to go across to the University of Adelaide. Now, at the School of Mines and Industries, I'd been engaged to teach the Bachelor of Technology course; that was a new degree that the university awarded but the teaching was to be done at the School

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**Don GRIFFIN**

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of Mines and Industries, so one of the stipulations was that they had to have suitably-qualified staff to teach that course.

But Professor Willoughby in Electrical Engineering was always keen to get me to apply for a position with them, and on one occasion I think he sought to get me to apply for a research associate-type position, which wouldn't have had any tenure or security, and at that stage I must have had about four children or so, so (laughs) I wasn't about to swap over. But, subsequently, I did apply for and was appointed to a senior lectureship in Electrical Engineering. That would have been in 1965. 1965.

**And you maintained some contact with Physics at that time?**

Yes. One of the students that Stan was supervising continued aspects of the work that I'd been working on, and his name was John Trethewie. I saw John a little while ago. John Trethewie got a Master of Science degree and when he left he subsequently took up a position with one of the firms in the United Kingdom that was involved in development of microwave systems for use in – I think it might have been navigation. Trethewie: John Vere Trethewie. It says in this one BSc 1967, but I think he got his Master of Science degree in about 1972 or '73. I've got a copy of his thesis out there in the bookcase, but I won't cause another delay.

**Harry Medlin had two PhD students that he was very proud of: Peter Colman and Brian Matthews. Did you know them?**

I didn't know them. I think – I've got an idea that Brian Matthews might have been in the – you should be able to see by looking up a name here. He might have been in the department at the same time. Matthews: Brian Wesley Matthews, BSc 1959, PhD 1964. So he finished – we overlapped, perhaps two or three years.

**Yes.**

And the other one was Colman, was it?

**Peter Colman.**

Colman: Peter Malcolm Colman, BSc 1965, PhD 1970. So he came along after I'd finished.

**Don GRIFFIN**

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**Bit after you.**

Yes, I've heard Harry refer to Brian Matthews. I think he has a chair in physics, perhaps, on one of the universities on the West Coast of the United States.

**Yes. They've done well. Well, I think we've probably had a good conversation, Don. Thank you very much. It's been very helpful.**

Yes. All right. It's been a pleasure. I don't get much opportunity for reminiscing on years past, and of course with the sort of handicaps that my wife suffers from I don't have much opportunity for conversations in great detail. I think this is one of the problems with things like Parkinson's: your concentration span is very brief, and it's only a short window in between having various doses of the medication that's involved.

END OF INTERVIEW