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Professor Fred Hollows AC FRCS in interview
with Dr Max Blythe. Oxford, 27 April 1992

Part 1

MB Fred, it was only four weeks ago that we were in Australia talking together but we didn't have a chance to record an interview at that time. But now you've been able to come to England and sneak time out to be in Oxford, and it's a delight to have this chance to talk to you about your life. Can I go right to the beginning? I've been reading your biography; it's got fascinating beginnings your life, fascinating parents. Can we start there and go into the story? Tell me a little bit about your home life, your parents? They sounded exciting.

FH Well, I was born in 1929 to a working-class father who was a railwayman - a railway fireman, later a driver - Joe, Joseph Alfred Hollows. His father had come out from Lancashire with his nine brothers and a sister. They were refugees from the industrial revolution really, and they had that sort of Arcadian hankering for some open space. And he married my mother in a bushwhacking town, a timber mill town in the centre of the North Island of New Zealand, in what was called the King Country because the last of the Maori kings were there. And they were married. She was the oldest of nine, actually the oldest of ten and sort of the second mother, and her father after whom I'm named, Frederick Cossom, he had been a ship's cook from Newcastle-upon-Tyne. But he could see what was happening to his eldest daughter and at their marriage day, he said to my father 'Take her away from here, Joe.' So he did, being in the railway he took her down to the bottom end of the South Island of New Zealand, hundreds of miles away, where a year or so later my elder brother and then, two years later, I was born. So I was born in Dunedin which is a fairly cold climate not unlike Oxford, I guess. But it was also the university town, the major university town, and had the only medical school. But I grew up during the Depression with quite a strong sense of class. My mother was an Anglican, my father came from a sort of Presbyterian background, and I don't think either of them were particularly religious but they hit the sawdust trail in some evangelistic campaign. And they were both keen members of what was the Church of Christ, which was an American Protestant, frontier-type religion, similar to the Baptists. They believed in adult immersion and they believed in one church based on the Bible, particularly the New Testament. It was full of fundamentalists but with some progressive elements in them.

MB So you grew up in a strong evangelical home.

FH Yeah, it was pretty strong, the church played a very significant role in it.

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MB With parents who were very proud of what they did and the way they lived their lives as well.

FH Yeah, yeah sure. My father and mother never saw any difference between private and public morality. They just thought it was impossible to do good things if you weren't a good person, and it was impossible to be a good public figure if you drank too much or if you beat your wife or if you did those sort of things - no distinction between private and public morality.

MB So that was the kind of home, and that must been very exciting. You must have got very enthusiastic about religion in your own right.

FHB Oh yes, I did. Well, so much of our life was in the church and then Sunday school and then the Boys' Brigade - remember that Scottish organisation founded on the twin pillars of religion and discipline. My father was an officer and a company was founded there. And I actually went to university studying divinity and art so I went back to Dunedin. By this time we had shifted the family to the North Island, and my father had left the railway and was a small-time horticulturist.

MB That's right, he got gardening really into the blood.

FH He caught the bug of chrysanthemum growing during the Depression. He told me he was pushing his bike up a hill in Dunedin and he saw these beautiful flowers. And he went in and asked the man, and this man told him that anybody could grow them as long as they took care. So my father, Joe Hollows, got stuck into it, and he in fact went as far as you could possibly go in growing chrysanthemums, hybridising them. In the last few years of his life, he'd spent a month or two in America judging shows and telling Americans how to grow them.

MB So he was really big in this by now.

FH Oh yes, he got quite big in it. Yes, oh yes, he was the biggest grower in New Zealand at one stage.

MB Fred, we've put a marker in that you eventually went to read divinity at university in Dunedin. But what about school days? We haven't actually said, is there anything of school days we ought to remember before we move on?

FH Well, I went to an all boys school. I think it was a pretty Spartan place. A few things - I can remember getting caned a few times. Actually, I remember the first day - the same school of four hundred odd, boys - and I was standing in the front with the third formers, the junior chaps, and there were some very big boys there too, and suddenly a man walked in on the stage just above me and shouted out 'Brookie.' And from the back of the hall, one of the older boys said 'Yes sir.' 'What's the first rule of the hall, Brookie?' And Brookie shouts back 'No talking in the hall, sir.' And this master said, 'That's right Brookie. What's the punishment, Brookie?' And he said

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'Six of the best, sir.' And then he says, 'Go and get it, Brookie.' This boy walks out and comes back on the stage just above me with this enormous stick, this cane. And I'm standing there, about twelve years old, and I'm watching this big fellow bend over and get six almighty biffs across the backside with this cane. And that was my first five minutes in the school.

MB Yes, what a start.

FH I didn't do particularly well at anything.

MB But you were good at sport.

FH Well, without any natural ability. I was keen and eager, and I got into the first XV because of that. Towards the end of the season as the bigger fellows got fit, I'd get sort of systematically broken up every Saturday. But the high school teams in New Zealand - and New Zealand's a country where the only male who doesn't play rugby union has to be a double amputee or worse - but we used to have to play in the normal city competitions so we would be playing bricklayers and farmers and builders. We were playing men as high school kids. We generally won but we got beaten about a bit.

MB Fred, we'll get you along now to Dunedin. You were going to read divinity and the view was that you might go into the church, I think. Is that right?

FH Yes, that's right, I was going to go into the Church of Christ's Ministry. What I'd noticed, I couldn't from a long time back, I've not tolerated piety very well, or some people have told me that this is pietism that I can't stand. And there were some very pious chaps in this college that I was staying in. It came to the end of the first year and we used to have about a three month recess then, at a time when students used to go and earn enough money to help them through the year. And it was just after the Second World War, there was plenty of work around. And it was suggested that I should go and take a church for a minister while he went on vacation. And I didn't think that was a very good idea because I thought, I'm going to be in the church with all this piety and all that stuff for the rest of my life, and perhaps I should get out and see something. So I applied for a job as a mental hospital attendant, and it was that I think, working there, that was I think, the most significant changing thing in my life. You see before I went to this place, what I saw there was .... this was mental hospitals really before electro-convulsive therapy, before any chemical treatment for any of the psychoses or neuroses, and where it you were melancholic - I know all this now, I didn't know anything about it then, of course - where if you became depressed you had a fair chance of ending up being permanently institutionalised, something that hardly ever happens now. And it was a big mental hospital, thousands of patients, and being run by mostly a group, on the male side, by a group of English ex-seamen, riggers and scaffolders and blokes like that, who had really no professional training but who never once in my presence, showed any spleen to any madman, and who under enormous pressure showed a sort of a basic humanity. And I went out with

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these blokes, went out drinking and went to my first cabaret and had my first post-pubertal sexual experience, and I really realised what secular goodness was about. You see before that, I had thought that all the good things in life sort of came directly from the Sermon on the Mount and its precursors. Not only that, I thought that anyone that was out of the religious context was miserable, unhappy and on a slippery road to perdition, and not only that, they were incapable of exercising the basic humanitarian aspects of Christianity. But I found religion to these blokes was quite irrelevant, it would have been sort of stupid to bring it up.

MB But they were still doing terrific work.

FH Doing terrific work, the sort of most inspiring sort of work. I remember helping them. A bloke had gone and broken forty windows with his fists and his head, and the doctor was sewing him up and he was raving and carrying on. And these attendants, as they called them - everybody called each other mister - were quietly talking to him and soothing him down. Absolutely amazing stuff.

MB So this was a time of revelation.

FH Yes, I went drinking with them and of course got drunk and couldn't handle the liquor then - it was even worse then than I'm now, handling liquor - and had a very enjoyable sexual experience, and then went back to this rather pious Church of Christ theological college.

MB A really rather narrow seminary.

FH Yes. And some of the chaps in there who thought they were pretty good and close to God, I felt I couldn't really tolerate, and I decided then to back off. But the head of that college, an A. L. Haddon, was a liberal Christian and he said 'Well stay on and do your studies.' So I stayed on to pursue a BA.

MB And how did the transfer to medicine take place?

FH Well, I was young and foolish and wished to major in psychology - you know, most young people get interested in psychology or psychiatry at some stage. But the psychology in those days was a very small addendum to the department of philosophy, there was no department of psychology at Otago University in those days. But the new professor there, he had a feeling that psychology had something to do with the human body and the brain and how it worked, and it was sort of, in some aspects, physiological! So he insisted that anybody wishing to do that subject, psychology was going to be a post-graduate subject, and the people would have to have done physics, chemistry, zoology, and botany which was, in fact, the medical intermediate course. And so I did those along with my BA.

M.B. So you were on track anyway.

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FH Yes, I didn't know it, I hadn't even considered doing medicine. But I failed stage three education and I failed the philosophy of education, which always bothered me. Failing it didn't bother me but as a subject it bothered me, I thought it was an absolutely incomprehensible, un-teachable non-subject, and my opinion of the educative process was never quite the same as any of the professors. So I got eight ninths of a BA, but at the same time I was working in the bush and a plane came in with the mail. And the plane would come in and you'd have two hours to give return mail; it was the only way, it was in a remote part of New Zealand. I happened to be working with a medical student Trevor Gebbie, a bloke who was a fourth year medical student at the time, and the first medical student I ever got to know because of working in the indigenous forest survey.

MB This was a sort of a holiday job.

FH Yes. And this letter from the university said - Otago University in those days used to write letters to the top one hundred people in New Zealand in physics, chemistry, zoology, and botany and offer them a place in medical school. But they had to reply promptly because there were a whole lot of people queuing up for these places, you see. So I got the news that I'd failed my BA, the last unit of my BA, but here was an opportunity of going to medical school. I wasn't all that sure so I asked Gebbie what he thought. He said 'Fred, you'll always get a job, you'll always be sure of a job if you do medicine, you see,' which seemed better than teaching or some of the other things I was probably going to do. So I wrote back and said 'I'll take it.' So I went and took it.

MB That was it, within a two hour turn round.

FH Yeah, that's right, yeah.

MB Amazing, so you go back to read medicine.

FH Yes. I remember the first day was a real shock. See I'd been doing stage three arts subjects, where you sat around and smoked your pipe and shouted with the tutor, you see. And we all went into this amphitheatre, quite a steep amphitheatre, and then suddenly a man walked into the class, shouted 'Silence' in a centurion voice, you see. And then he shouted 'Abernathy,' and nothing happened. And then he said 'Abernathy,' and then a voice said 'Yes sir.' And he said 'Well answer your name when you're called. And then he went through Abrahams right through to Zimmerman, you see, and I thought 'My God, they're going to call the roll.' He went right through the roll and then he turned round and he wrote on the blackboard 'The return of the U-shaped loop.' And then he started on the embryology of the small and large bowel, you know, how it develops outside - this is within the first ten minutes of being in medical school - how the intestines develop from a loop that's outside before the ventral abdominal wall is formed, and then how this elongates and shapes itself up, and then is gradually enclosed as the ventral abdominal wall enlarges and as it returns and zygoses down. And he gave us a fully five minute or fifty minutes burst

on the return of the U-shaped loop. And then he said ‘You will now go down the end of this corridor and in the room there, there will be twelve bodies, alongside each body on a post there will be the name of ten of you.’ He said ‘Find your body and dissect the axilla as in the dissecting handbook.’ And so we all went down and sure enough here were twelve bodies. It was the first time in my life I’d ever seen a human corpse. And I had been deer shooting while I was in the forestry to earn extra money, using government ammunition I might say, and making about three quid a day on top of my wages. So I could skin an animal, flay an animal, so I had to flay the axilla of this corpse. So that was the first two or three hours in the medical school. Actually, I quite liked it. I can’t stand introductions to, or introductory courses towards, and that sort of stuff.

MB It was hands on right from the start.

FH Right from the start.

MB And that was really enjoyable. How many years were you there, three years, four?

FH Oh no, I was there for five years.

MB Oh, it was the full course, you didn’t get any kind of exemption from early courses?

FH Oh no. I had just started in the second year. It was a six year course then. I took a year off in Queensland. I met my wife on one of my summer vacations while I was guiding in the mountains; I met an Australian woman Mary, who I fell in love with. She was already married and I chased her and went back to Australia, and I chased her back there and met up with her in northern Queensland, without enough money to get back to start again in fifth year or to start fifth year. So I spent a year in central western Queensland, basically bore-sinking and making a lot of money. I mean, I remember I got £418 for my share - I was with another chap - drilling a hole 1350 feet down in the ground and getting artesian water. And I remember that money in my hand - and that was in 1955 - and I have never felt as rich before and I don’t think I’ve ever felt as rich since.

MB But that was the one year out and you came back and finished your qualification in New Zealand.

FH That was in 1956 I graduated in Otago.

MB Anything about that course you remember apart from that incredible first day, any particular, lectures, people?

FH Jack Eccles, you know, the Nobel prize winner was our lecturer. He also had a family of, I think, nine or ten children. He was a devout Roman Catholic then; he

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later deviated from that sort of path of marital fidelity, I understand. But Jack was a bit of a fundamentalist. He was putting electrodes into neurones - one of the first people so to do - and measuring the electrical changes in neurones. I remember an Englishman coming in to lecture us in the middle of the course, and he started of by saying 'I believe people talk a lot about electricity in this department,' he said, 'I always considered it vital force myself.' He was an expert on bilirubin and bile salts and so on. But Jack Eccles used to give us all a little - apart from inviting selected members out with some of his daughters to go square-dancing and so on - he used to give us, at the end of the physiology course, he'd give us a lecture to save us from the evils of materialism, to sort of tell us that behind all these neurones and things, there was a God and everything. He also was producing a book that he later developed with Popper called 'The Physiological Basis of Mind .' And I happened to be a member of the philosophical society and he came along to give a talk, you see. And I saw him in an academic atmosphere where, in a sort of intellectual contest with members of the department of philosophy, he didn't fare too well, actually. The philosophers were quite sure that what he thought was mind, was in fact just thinking. Well, philosophy's just about the meaning of words in any case. So, Jack Eccles ......

MB He stands out.

FH Yeah.

MB And so now you're married, you're qualified. What next, you go on to internships, you go on to surgical internships?

FH That's right, yes. Well, I remember the first time I turned up in Auckland. First of all, when I got there all my colleagues that I had gone through medical school with, were already there. They were all house surgeons and working their butts off. And I was certain that I wasn't going to work like that, because I couldn't get a game of billiards with any of them - we used to play billiards, drink beer and chase women, that's what we did for five or six years, you see - and I couldn't touch base with them, they were all working in a frenzy. So anyhow, next year I started in the same hospital, having graduated, you see.

MB Where's that Fred?

FH In Auckland, the main hospital, Park Lane, Park Road in Auckland. And I remember I went and met the senior surgical tutor, a bloke called Harry England - we called him Harry for England - and he at 7.30 in the morning, he said 'Now look Hollows, you've got an easy job,' he said, 'there's only sixty beds here that you're responsible for, thirty women and thirty men.' And he said 'There's only eight surgeons operate in this unit, on your side of the unit,' and he said, 'I do a ward round here every second morning,' and he said, 'I just want to know everything that's happened to all the patients, when I come round.' He said, 'That's all you have to do, is to know that,' and he said, 'The rest of the time's your own. You can go to the races, to swimming, chase women, drink beer, do anything.' Of course, for that three

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months, I didn't taste alcohol at all, didn't go out, never worked less than about one hundred and twenty hours a week. And I just couldn't believe it, couldn't believe it. You worked during the day as a house surgeon getting cases ready for theatre or assisting in theatre, and at night you'd then go out to the casualty to run the casualty for two or three nights. You'd get whatever sleep you could in a room at the back of the casualty, you see. Then on another night, you'd be the paediatric anaesthetist. Now I remember, I'd been taught anaesthetics, rag and bottle, ethyl chloride and ether, and I go down as the paediatric anaesthetist with those kids. And I said to the surgeon 'Will a rag and bottle do?' and he said 'No Hollows, this is a proper hospital, you've got to tube every kid.' You see pentothal had just come in and suxamethonium and various relaxing agents. And with fear and trembling I had to ask the sister what size tube. But anyhow, the first anaesthetic I gave in that place was for this chap, Harry, for England. We were doing something and the anaesthetist didn't turn up. He said 'Hollows, get around the other end.' He was doing a debridement of the leg. The man had an enormous burn, and he was pretty cachectic this man too, because he had been seriously burnt and he'd been in and out. He was sort of cachectic and wasted and so on, and so I just had to get up the other end and give a tube anaesthetic. I remember the first time I did a varicose vein, the surgeon just said - I'd watched him a couple of times - and he said 'Well look, I've got to go, really. I've got people at my rooms, you see. But you can do these last two cases,' which was a hernia and a varicose vein. Well, I'd assisted him with several score hernias, but it's really quite different. And when I did a herniorrhaphy without cutting the external spermatic fascia it must have been a funny sort of cobbled up herniorrhaphy. And I remember all the blood in the varicose vein. My God, I was terrified. But anyhow there was a great shortage after the war, of resident hospital staff. I really wanted to go to Africa, I always wanted to practise medicine somewhere where you didn't have to queue up for patients. And my father had a friend who was Garfield Todd, who trained in the same theological school that I did the year. In fact, his name was carved on one of the desks, and he later became premier of what was then Southern Rhodesia, now Zimbabwe. And I'd met Garfield Todd and he, of course, was a bricklayer from Southland - still alive by the way - and he later played a very significant role as a white liberal. He wasn't always liberal but he saw the way to go in the struggle in Southern Rhodesia. And I met a bloke who'd just come back from Africa, he was a senior surgical tutor or something. And I said 'You know, I'd like to work in Africa,' and he said, 'Hollows, if you're going to work in Africa, you've got to be able to take out a cataract.' And I said 'That sounds extraordinary,' and he said 'Yes, because the medical assistants can do it, and there's an awful lot of blind people that just need their cataracts taking out.' And he said 'Unless you can take out a cataract, they won't think you're a real doctor, you know.' So the next year, I had to get a job at a place where they usually sent government bursars, because I collected a government bursary and I was going to be directed to a bursary-dependent hospital. So I chose one before they directed me and I went down to a place called Tauranga. And I had in my year also done three months of eyes, so I knew what the anterior chamber was, and the ciliary body, and what choroiditis was, and a few elementary things like that. And there was an ophthalmologist there who was not entitled to any of the house surgeon's time. And I was the only house surgeon for one hundred and twenty beds: obstetrics,

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diabetes, pilonital sinuses, breast abscesses, the whole thing. I remember, on one afternoon between about twelve o'clock and half past eight at night, I assisted at, or did, twenty three surgical procedures, and it was a very busy little place. And anyhow, there was this eye surgeon named Ron Tingey - great fellow still alive - and I said to him, I said 'Look,' and he had a case there and I said to him, 'You've got a case of quite severe anterior uveitus, it's with secondary glaucoma.' And he sort of thought 'Who the hell's this, you know.' And I said 'Well, I did a little bit of eyes in Auckland,' I said, 'And I'd really like to be able to take out a cataract by the end of this year.' And I said 'I will see every case of yours, you know, work up every case that comes in, and I'll assist at every operation as long as by the end of this year you will have me able to take out a cataract.' And he sort of said it was a deal.

MB You'd got a deal.

FH So we got a deal and I helped him, and we sort of learnt as the usual apprenticeship way, as you do in surgery.

MB Is that quite difficult, that's quite a difficult procedure?

FH Oh yes, because you can't actually feel. With abdominal surgery, you can get your hands into it and you can get tactile sensations. There are very few tactile sensations, and these are all intracapsular. It's rather funny, Ron would come into the hospital, and I was the only bloke in this town that he could talk to and he was sort of hungry for someone with the slightest ophthalmological knowledge. And I'd be up there putting a drip up for somebody in a diabetic coma, flat out like a one-armed paper hanger, and Ron would come in and be talking about eye cases over my shoulder. And he and I have remained friends and he taught me how to handle ocular tissue. I'll never forget the first cataract I did, we were doing forceps cataract extractions which most young fellows can't do. Actually, I asked a bloke in Vietnam who...

MB This was recently?

FH Last week, a few days ago. And he was said to be the best surgeon in Ho Chi Minh City, and he was waiting for the cryoextractor, which came late. Which is ... you stick that on to the lens to pull it out and I said 'Well, if you're one of the best why don't you just use the aruga(?) forceps,' the capsular forceps you see. And he said 'Oh yes, yes sure.' Anyhow, he ripped the capsule off, so he wasn't quite as good as he thought he was. But we had to learn how to use those forceps, you see. And the first cataract he let me do fully, was a mature cataract - very mature, about the colour of the lighter parts, the white in your tie - and I put the capsule forceps on it and suddenly the anterior chamber went all white and you couldn't see the iris. And I knew nothing about this and I thought 'My God, I've blinded this case' and Ron just said 'Oh, hypermature,' which you know, the whole cataract, the substance of the lens was liquid and fluid and I just nicked the capsule and he said 'Just wash it out Fred,

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and convert it to quite a nice extracapsular extraction.' But that was the first moment I grasped a human lens, that happened to me.

MB The first of many thousands.

FH Yes, or scores of thousands.

MB Were you by that time - I know you'd come in from the Africa side, and that you were going to remove cataracts, by this time were you beginning to be confirmed that you were going to be an ophthalmic surgeon, for sure?

FH Well, I thought, you know, really it's only a one inch sphere and, you know, if you did a couple of months hard work on it, you'd probably know everything that you could possibly want to know about it. So I thought, well, I'll do a registrar's job, perhaps not for a year but for six months. And there were three registrars jobs going, and I went to Wellington, you see. And then I just started to learn that I really knew nothing about it at all, and then I thought, oh well, I'll go to England and do a diploma in ophthalmology.

MB What year was that Fred?

FH It must have been about 1958. In '59, I then decided, but I needed some money. So in those days there were great vacancies in general practice and it was lucrative in New Zealand, so I did a year of solo general practice. I got into this solo general practice. I was up in Auckland and I went to see this man and I had done locums in general practice during the holidays to sort of keep the kettle boiling - and I went to see this man out in Otahu, a bloke called Robert Bruce, quite a short fellow with long arms and an undershot jaw. And he taught me a great deal, actually. And I went out to see him and he said 'Look Hollows,' he said, 'General practice is about making money.' And I thought, well, that will suit me because I have been doing general practice for £30 a week, knowing that I was earning £300 for the principle. And anyhow, he had the first Mercedes 300 in New Zealand, this bloke Robert. He said 'Come on now, I've got some calls to do.' This was while he was sort of interviewing me for this job which I was going to take up in a few months time if I accepted or if he accepted me. And we zoomed around to this house and it was a Maori house. We burst in the front door and there were about twenty people in the room, a big room, and he just went round and he said 'Oh now you're the one with the fits, aren't you, are you taking those tablets? And you're the one who broke your leg, aren't you?' And he went round every one of them he'd done something to and he said 'Now, who have I come to see this time?' And this old Maori grandmother brought over this little girl who had an enormous abscess, big fluctuating abscess of the right triceps, in the right triceps area. And Robert just looked at it quick as a flash and he said 'Fred, hold this.' So I held this kid's arm and while I was holding the arm he opened his bag, he whipped out a scalpel and just made a slash in it. And the pus went everywhere, on my trousers and on my boots. The kid didn't have a chance to cry, and the whole thing was over. I thought 'Wow, what an operator you know, a

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direct medicine man.' And anyhow, when I came up to take the job, we came to a deal that I would work for £50 a week and live in his house, which was a two-storey mansion. I had two cars then and I'd get petrol, oil and tyres for the two cars, free telephone and everything, and I'd get seven shillings and sixpence for every patient over two hundred that I saw. And anyhow, he had about four or five ancillary staff; a night sister who lived in the place and an accountant, and you could see patients in four or five different places.

MB He was well set up?

FH Very busy. Biggest single general practice in New Zealand. And I worked my butt off. You'd be woken up first thing in the morning at about six o'clock by the night sister who would say, 'Your bag is ready.' That meant when you went to collect your bag, on the front of the bag was a list of visits that you had to do in an order so that they brought you back to the house, you did a circuit so you came back to the house for breakfast. Then while you were having breakfast, she'd say 'Your bag is ready.' She'd have taken the syringes - this was the days before you had disposable syringes, you see, so they had to be boiled. And then you'd do another round, which would bring you back to the surgery, and then you'd do a surgery, and then you'd do another round of visiting and go back for lunch. And then after lunch you'd do another. Anyhow, I thought I was working very hard. And Robert before he left, he said, 'Look, I'll just tell you something Fred. If the phone rings while you're getting undressed getting into bed at night,' he said, 'continue to get undressed and do the call in your pyjamas and dressing gown. There's absolutely no reason why the patient shouldn't realise that their doctor needs some sleep, you see,' which is very good advice, otherwise you'd be getting dressed and undressed all night. Well, anyhow I was working very hard and I'd say to the staff, 'Gee, we've seen a lot of patients today' and they'd say 'Yes, but Doctor Bruce sees more than this.' Everytime I thought we were doing well they'd say Doctor Bruce ... So anyhow after six weeks Robert came back and we were sitting out having morning tea and he said 'How have you been going Fred?' And I said, well I thought I had been working damn hard actually and I said, 'But your staff don't think so.' And he said 'Well how many patients have you averaged?' and I said 'Three hundred and sixty a week.' And I could see this fruit machine clicking over adding up one hundred and sixty, seven shillings and six pence on top of the fifty quid, and he looked sort of startled and then he rushed inside and came out with the schedules and he said, 'My gosh Fred, you have been working hard, haven't you.' And anyhow apparently I saw more patients in that practice than anybody other than Robert Bruce, but it was quite a lot of maternity and...

MB Fred, I read in the biography a wonderful story you recalled of going late at night, a call you might not have taken, but you went out to see a child one night.

FH Oh yes, now Robert said to me, he taught me some interesting things, he said 'Fred, if you have a sick kid anytime during the day, don't go to bed that night,' he said, 'It doesn't matter what time it is, you're getting into bed, don't you go to sleep

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until you've gone to see that kid, because kids die quickly and easily, you see.' All the sort of stuff that you're never taught at medical school or we weren't. Mind you I wasn't around much when I should have been at medical school. I remember I'd circumcised a kid in the morning, and this was the only boy in a family of about five girls that lived just opposite the surgery. And this family was very important to the surgery, and this little boy's name was Geoffrey. And I'd circumcised him and the nurses were ringing up asking how Geoffrey was. They'd taken him home, you see, just across the road, and they said 'Oh, he's fine, he's fine, he's fine, Geoffrey's fine. Yes, he's sleeping you know, sleeping off the anaesthetic.' And I was just about to get into bed and I remembered Robert's adage, the advice not to go to bed until you see any sick kid. We had had about three phone calls saying that Geoffrey was all right, so I thought, 'No, I'll go and see him.' So I went over and Geoffrey was lying there all right, quietly breathing, a little more rapidly than I would have liked. Anyway I thought 'My God, he looks pale,' and said to his mother 'Have you changed his nappy?' And she said 'No.' He had about three nappies on. I took off the first two and the bottom one you could wring the blood out of it, he was just quietly sanguinating, you see. I cauterised that bleeder but I saved that boy, who could have died that night, because of Robert's advice. I remember another time, Robert said 'Fred, I delivered a little Indian baby.' There was a little enclave of Indian people in that place. They were market gardeners, and the Indian blokes used to go back to India and bring their wives out, who'd never learnt to speak any English. It was rather funny, they'd bring them into the surgery and they'd unwrap these saris from them, you see, and the bloke would speak a bit of English and the woman never spoke any English. And then the husband would point to some part of the body and say 'There, that's where the trouble is.' Actually because you had a virtual absence of any symptomatology. And I said to Robert one day, 'Robert, what's with all of these Indian patients?' I said, 'I can never quite work them out?' And he said 'Fred, neither can I. I think it must be the curries or something.' But anyhow he said he'd delivered this little Indian boy and I'd better have a look at it before I turned in. So I go at midnight, I go round to this place and they reckon the baby's all right, but I have a look and the baby's got inverse respiration, the chest is going in when it shouldn't be. And I listened carefully to this kid's chest and this kid was less than a day old, about twelve hours old I suppose. And I heard bowel sounds in the left side of the chest, so I rang up the hospital. I thought this kid should be taken in, you know, straight away. And there was a senior paediatric registrar who was a year or two ahead of me. I won't mention his name but he was the bloke I had to get on to. And I said 'Look, I've got this baby and I think its got one of these diaphragmatic hernias,' or something that I heard vaguely about because I said 'I'm quite sure I can hear bowel sounds way up in its axilla and stuff, and the kid's breathing fast and stuff.' He said 'Fred, why can't the kid just have a pneumonia.' And I said 'It might just have a pneumonia but I don't think so and I don't want to have this kid out here about twenty miles from the hospital, I don't want it dying here tonight. I want you to get it in here.' And he said 'Fred, you know, why don't you just belt it with some penicillin or something.' And I said 'No, I've called the ambulance and you're getting it.' And so I got the nurse to ring up the hospital in the morning to find out about this kid while I was doing the surgery. And they said the child had been transferred to Green Lane,

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which was the cardiothoracic hospital. So later on that paediatric registrar rang me and he said 'Hollows, you are a smart arse.' He said 'I thought the kid just had pneumonia, you see, and I gave it penicillin. And it was a bloke called Fox, a paediatrician, we were doing a ward round earlier in the morning and Fox said, "And what is this kid?"' And this fellow, this paediatric registrar, said 'Oh this is a case that Hollows sent in and I think it's just got pneumonia. Hollows, thought it had some diaphragmatic hernia.' And Fox said 'Get me a needle,' and there and then he stabbed between the ribs and sucked out some faeces and sent it straight over. 'And he said it in front of me. Hollows, I was denigrated, chagrined or something as the senior registrar.' Anyhow, so that's the value of looking at kids.

MB Fred, that was an interesting period but it paid the way and you came to England.

FH That's right. I saved five thousand pounds and I thought it was a fortune, but I spent it in less than three months in England.

MB That was an impressive time, you enjoyed being in England and training at that time.

FH Yes, well for the first time I found myself in a post-graduate setting. I realised that I was doing a diploma.

MB Where did you come to?

FH I came to the Institute of Ophthalmology in Jermyn Street and doing a D.O. [Diploma in Opthalmology] in three or four months or something, and I quite quickly realised that I was ahead of most of the other people doing the course. And there was a General Moorfield's prize thing on there for people who were doing the course, and one of the senior chaps a bloke called Hudson, Jimmy Hudson he was called - I was starting to get the hang of the way Englishmen operated, very slightly, I don't think I've really understood that - but anyhow, he said to me - I was one of the sort of people who ask questions, a lot of them probably are damn stupid, but some of them may have had some substance to them, and he said to me 'You're sitting the prize examination, aren't you Hollows?' And I said 'Well, I hadn't thought of it' and he said 'Ah.' But I then realised that what he was saying was, 'You should sit the prize examination Hollows,' you see. So anyhow I ended up sharing it with another New Zealander, Ross Ernshaw, who later stayed in Oxford here, I think. And I was thoroughly enjoying it, mind you I'd taken six weeks to get from New Zealand to KG5 dock in London, and I'd read every text for the course in that six weeks you see, besides drinking some good English beer for the first time. And so I was sort of ready and I'd had quite a bit of clinical experience and I was ready to learn some of the basics, and the electron microscope had just come in. I then sat the DO, and got it and then decided I should proceed to a fellowship. And I then did a course in basic medical sciences at the Royal College in Lincolns Inn Field. And I think I was there for about two and a half months and intellectually that was the most exciting time in

my life. For the first time I was beginning to see - you know, the physiology and biochemistry and pathology I'd done as a medical student were a whole series of words that were boring to me - but I'd been dealing with sickness and disease and death and so on and I was understanding. I remember there was a bloke called Wyke, I think, who was telling us about the electron microscopy of myelin sheath formation and how, you know, it spirals itself round - the Schwann cell. It was the first time I'd ever heard of it and I can remember sitting enraptured by this stuff because suddenly extraordinary anatomy was starting to make sense, what it was was, where it had come from.

MB So that was a time of heady experience really, that felt good.

FH And I remember I was sitting besides an Englishman who was probably very bright and he'd come straight through the schooling system. And on the way out - he was writing all the way throughout this lecture, and I made a point of not writing, I wanted to listen and get things in my head - and I said to this bloke, I said 'Gee that was an exciting lecture wasn't it?' And then he tried to remember see, and had to sort of flip up his notes and said 'I suppose it was really.' And there was a fellow called Last - the anatomist who had written a book. Now the ventral abdominal wall and the muscles that make it up, their origin and insertions are extremely complex.. Now Last, used to give a lecture called ... Now the great thing about this anatomy course was that for the fellowship for the primary, the curriculum said a study of functional human anatomy. That was it, one sentence. Oh no, there was a sub-section under it, 'Candidates will not be expected to recognise disarticulated carpal or tarsal bones.' So they couldn't throw you a lunate or a scaphoid and ask you whether it's right or left and all that sort of nonsense you see. But I remember Last walks on to the stage and gives us this lecture about the ventral abdominal wall, which I thought was a pretty dull piece of anatomy really, nothing like the upper arm or the wrist or the elbow or things, but he gave us an account of the ventral abdominal wall as an organ and he showed you why the muscles had to go that way, and why their insertions weren't bizarre but how they enabled breathing movement and all that sort of stuff. Of course, in the middle of it he put his finger in a waistcoat pocket and pulled out a bit of snuff, and in mid-sentence put it in to the anatomical snuff-box and sniffed it up one nostril and on to do the other side and still be haranguing the hall of three hundred people. And then of course a few seconds later he'd get the sneezes and pull out a gigantic, coloured kerchief into which he would snuffle and blow his nose, talking all the time.

MB Last, a great character.

FH A good teacher.

MB So that was a great time.

FH Oh yes, I remember, for instance reading a whole volume on the innervation of the heart and I thought the innervation of the heart was the Pierkinje fibres. I didn't

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know anything else about this stuff and I remember, I think, I spent a day reading this sort of little monograph in it and being really excited about it.

MB Where did you go to after that Fred?

FH Oh, I then got a registrar job in Cardiff.

MB Where you met Archie Cochrane?

FH That's where I met Archie Cochrane.

MB Is this a time we can talk about Archie briefly?

FH Sure, sure.

MB You had an amazing meeting, it was a chance phone call I think and all of a sudden you formed a close association.

FH This was a time when people were saying any eye department or any eye service puts a lot of time, out-patient time into treating glaucomas, sort of the commonest call-back thing in a clinic is glaucoma. And there was a bloke, Goldman, who just said 'We're getting glaucomas too late, we should go out and find them, we should screen the public for glaucoma, you see.'

MB It was all the rage.

FH And it was just starting then. Some Americans were going slightly overboard about it. And I'd heard about Archie's unit because Archie was captured in Crete with New Zealanders, and there were some other New Zealanders, a bloke doing respiratory medicine who knew Archie, who'd been at medical school with me, and so I had a sort of a link there. But Archie's secretary's mother needed her cataracts out or something, and she was being mucked about. So Archie rang and was put on to me, as the senior registrar. So I guaranteed him I would help and get his secretary's mother in and do whatever. But I think I said something, 'Look I want to talk to you about doing something, sensible about glaucoma. You know, working out how frequent it is and when we should find it and so on.' We did not use terms like epidemiology. Archie would not let me use - and in not one of my papers that I wrote with Archie, did I use the word epidemiology because he said 'Fred because there's a whole lot of people who are coming in and are going to be number crunchers or something, and who are going to make a great monument, a great thing out of it, epidemonology - but epidemiology is simply the study of diseases and treatments amongst the people and that's all it is.' He said 'I consider my unit here,' and that was a substantial unit.

MB An MRC unit.

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FH It was the first epidemiological research unit I think, ever.

MB That's right.

FH He said 'We are simply here to take clinicians into the populace so that they can see what diseases are there, get some understanding of their true prevalence and attack rates, and to see if their treatments are any better than the natural history.' But they were fairly remarkable things to be saying.

MB Yes it was really about real health care surveillance in the population.

FH That's right.

MB And you found that remarkable when you met Archie, did you? How did Archie come over to you at that time? You remained good friends with him I know.

FH Well Archie, he had these defined populations you see. Within half an hour with Archie I could see that Archie could see, I could sort of put in the propositions that Goldman and Leidecker were putting forward about the prevalence and attack rates for glaucoma and Archie could see straight away in the one hundred and fifty thousand census population in the Rhonda Vale and the Rhonda Fach that he had the mechanism of really getting true prevalence rates, you know, in age-related prevalence rates for this disease and that which in fact he was dead right. He said something, he said 'Fred I'll make you famous.' And I thought that was a bit of hyperbole, you know, and in fact he did. That paper that Peter Graham and I wrote called *Glaucoma and Glaucoma Suspects in a Defined Population* is a classic still cited and it was interesting you know. It had I think, it had eight or nine definitions in it. You see, at that time there was a virtual Niagara of glaucoma and glaucoma screening literature but nobody defined what they were talking about, you see. So that in our paper when we said angle closure glaucoma, it was defined and you knew exactly what it was. When we mentioned congenital glaucoma or chronic simple glaucoma it was all defined and it's a paper that reads easily now. I had a shock you know, the first paper that Archie made me write was called *Sources of Variation in Tonometry Measurements in Eye Pressure*. We worked with Hubert Campbell who is Professor of Medical Statistics now, or may have retired. And the first thing Hubert did was he said 'What's the least count of this instrument?' See in these instruments there was an indentation, so we'd pull out the piece of paper and we'd say a 1/4 mm and 1/2 mm. Hubert said 'I don't believe that.' So we had to do a trial - we did an inter and intra observer error trial of the methods of the methods of tonometry and we had to test what is called the - when you measure the pressure in the eye, the pressure in the second eye is more likely to be lower than higher, irrespective of the original level and I've forgotten the name, but the pressure varies according to the time of day and so on. But we had to do what's called a randomised balance block trial. It was beautifully designed and we thought we would do ten or twenty and we would sort this sort of sceptical statistician out. We did thirty and he said 'No you have to do ninety.' So we had several nights organising them and you have to do them you know

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I'll have to do the aplanation on the right eye in this patient first then I'd have to go and do the indentation in the left eye of the next one and so on and then when the packs laid down in its suits the answers there. And the first paper was called that I wrote was titled - it wasn't the first paper - it was the first paper I wrote in the unit it was called *Sources in Variation in Tonometry*, which I thought was dead dull. And you know I wanted to get on to glaucoma and how to stop it and cure it and all this, and here I am doing this statistical stuff on sources of variation in tonometry and I was going up to read it at Oxford at the Oxford Ophthamological Congress and Archie said 'Well Fred you had best come in and just go over the paper with me here and run it through.' And I thought that is fair enough and I turn up there with this paper into Archie's office which was quite a big room and there were about thirty people jammed in it, and I didn't know that these people worked in the epidemiological research unit. There were people who had been working on iodine deficiency and anaemia all sorts of things and they sort of hid in various backwaters of the place and they turn out two or three papers a year, but the thing they always came to do was to criticise the new man in the unit, you see, and they gave this paper ... I was torn to shreds by all these veterans in the epidemiological research - look, I just about crawled out of the place. I thought what a pack of bastards. Poor little Fred comes in for his first paper and they tear my arms off, but Archie was very supportive and he said 'Fred, don't worry about that, I mean that is the only sport that really happens around here you see.'

MB He was a great contact you made and you stayed in touch for a long time. You had a good relationship.

FH Oh yes, we brought Archie out when we were doing the trachoma programme later.

MB To New Zealand.

FH To Australia. He was over in New Zealand seeing Biggerhall and he came. I arranged for him to come because we were doing quite a bit, we eventually saw 105,000 people, about 65,000 Aborigines. It was really quite a unique programme but epdemiologically it was quite seriously flawed, you know. We had five aims. But anyhow I wanted Archie's opinion and I wanted to get him out there and he came out to Alice Springs and we took him to a place called Hermansberg which was a sort of disintegrating Lutheran mission and the Aborigines were splitting up into little, what they called camps, outstations. And there was one dried river bed which had eight or nine outstations on, and Archie and I and my team went out there. And we'd come to the first place and there's about 30 people, 30 Aborigine people in this camp. There are two amputees, there is an old lady lying there who can't walk at all, there are about four blind, and all the kids have got pure pus running from their noses and two out of three of the kids have got pus coming from a wet perforation from one or both eardrums. And Archie being a numbers man, of course thought Fred's stacked this. This is the worst camp we have, you see, and Fred's just sort of collected these people and put them here to try and impress me. So I assured him that that wasn't so. Then

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we went on to the next camp with a similar sort of thing and I remember we did that all day. And by the time we got round the eighth or ninth camp that day, it was dark and we were working in the headlights of the car or the cars and Archie said to me, he said 'You know Fred, Australia should be harangued before the United Nations for the state of health of these people,' and I said 'Oh yeah,' and because I knew that wasn't going to happen and I said 'What do you think should happen Archie?' He said 'Fred these people have got to live in houses that can be kept clean, that have running water so that they can live in health.' And I sort of played the devils advocate and said 'Who's going to build them houses?' and he said 'The government of course.' You see there still is no concept that the state has a responsibility to ensure that people grow up - you know, in England there is a municipal responsibility to ensure that places where people live are healthy and if there is no running water or you can't wash clothes or things you can't rent it out and you can't live in it - that used to be the case when I was here. But Aborigines are allowed to live in very polluted circumstances, you see, and that sort of basic right to a safe sort of living area for children, Aboriginal children, has yet to be accomplished for about 160,000 Australian Aborigines.

Part 2

MB Fred, while we are talking about the Australian Aborigines - I know we are running ahead of the story because there is a lot more in that - perhaps we could concentrate on their plight for a while, and the kind of help that you've been able to bring them. Where did it start, how did it start?

FH It started quite fortuitously. I began to realise that the Aboriginal scene in Australia was different from the Maori scene in New Zealand. My parents, my mother's family had leased farms off Maoris. The Maoris owned the land and they could sell to the crown, but that wasn't so in Australia. I found out there was a land rights movement and a chap who had written a book that I had read, a communist bloke called Frank Hardy, was talking at a teachers' federation. I went along to hear him talk and he was a very good sprooker, as they say in Australia. And they asked for money for this land rights to try and get land for Aborigines, and I wrote them out a cheque. I think it was for about five hundred dollars or something and they thought it was a shonkey cheque because they weren't used to getting that sized money. I remember being treated quite brusquely because the bloke said 'What's your name and put it on the back, and put your address and telephone number,' as though this was a dud cheque, so I did that. A couple of days later I was rung up and the bloke says, 'We have got two Aborigines here, we would like you to have a look at them.' They sent them out, they hadn't got three eyes between them. They both showed signs of having had trachoma and they both had infected nasal lachrymal sacs, as quite often happens in trachoma people. And they both had a condition that I hadn't seen before but a colleague from Wales, who was now working in Sydney, saw and in a nanosecond said 'That's Labrador keratopathy,' which Friedman had described amongst the hunters of Labrador, and Bietta first described in Eritrea. It is a glazing from ultra-violet on the front of the eye and as soon as Roger McGuiness said it, I

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knew he was right. And I was then offered a flight up there to this place way up in the Northern Territory and I said ‘Yes, I’ll take it.’ So I got a couple of medical colleagues we went up there and ... This disease had never been described in Australia. And so three days later I’m in the Northern Territory looking at Aborigines, a group of Aborigines in primitive shelters. And the change ... first of all there were one hundred and fifty people and there were about five blind. Well, I don’t know how many people you need to see in Australia but you’d need to see several thousands, scores of thousands to find five blind and there were - all the kids had trachoma. Every man who had been a stock man for twenty years or more had this Labrador keratopathy, and I was absolutely fascinated and furious that here in modern Australia there were people blind from cataracts, absolutely blind, being led around from cataracts. I was actually so mad I rang up the director of health of the Northern Territory and insisted that he fly somebody down while I showed him these diseases. And he flew down somebody who the only instrument he ever used was a desk and a pen. But anyhow we later went back and that’s when I realised the discrepancy between eye care in rural and metropolitan Australia. And I later helped a group of Aborigines in Redfern. I was the first doctor who worked with them. They set up their own medical service and there are now sixty four of them throughout Australia, in the remotest parts, and some of the better medical work being done in rural Australia is being done in organisations modelled on that, with Aborigines controlling.

MB Because I believe when you first started doctors in Sydney and places like that wouldn’t treat Aborigines.

FH Well not in their surgeries because Aborigines never paid, they had no money. We ran this as a volunteer service and within a couple of weeks we had seventy doctors and seven professors working nights and weekends. The police harassed the patients terribly but it was a fascinating time, very exciting time. A lot of terrible pathology right in the city. I remember I got a bloke, Burka, who had been an anaesthetist for me and was now in general practice. I got him in and he’d come in. I used to go in ever ynight when it started and just make sure that the doctor found out where things were and the Aboriginal staff were introduced to him and so on. And he used to get home at four or five o’clock in the morning and he’d ring me up - I’d be in bed you see - and he’d say ‘Fred, I’m ringing you up, you got me into this,’ and he said ‘I’ve just got to tell you.’ He’d seen a fourteen year old girl just about bleeding to death from a backyard abortion, and he’d see all this sort of stuff. And this was a pretty seasoned general practitioner. He couldn’t himself go to sleep until he talked over what he’d seen that day. He said ‘Fred, you are the bloke who got me into it and you are the bloke I’m going to talk to,’ so I had to listen to him telling me of the woes he had seen that night.

MB And that was in Sydney?

FH That was in Sydney, in Redfern.

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MB And that was a service. You found a building and set up a service.

FH Yes, we did it very quickly. One of my registrars came with me. I went along to this meeting which I thought was about legal services and it turned out to be ... it was on Friday night, my staff and I used to have a drink each Friday night, and through the fumes, I was sitting waiting to be bored about legal matters and I then realised they were talking about medical things. So I looked around and thought now who could be the doctors here or nurses. And there was one Aboriginal sister who I thought, well she could be a nurse. There's certainly no doctors here. Just as I was realising I was the only doctor, they all asked me - they were talking about the possibility of setting up their own medical service - they all turned to me and said 'Well what about it?' I am sitting in the corner like this, I thought 'Hey just a minute.' So I said 'I'll tell you what, let's have a meeting next Friday and I'll bring some doctors along and we'll talk about this.' So we went along, I took four doctors and they told the story again, how they couldn't get medical treatment anywhere. Actually, one of these Aborignal blokes who is now my closest friend, Gordon Driscoe, had a black friend die in his car and that was trying to get him to medical care, and he died before they could get him there. It made a great impression on Gordon. Anyhow, after half an hour or twenty minutes they explained their position and this registrar of mine who is now an ophthalmologist, or has been so for a long time, he stood up and said: 'Look, we only need five things for this medical service. We need doctors; Fred and I will get the doctors for you. And he said we need premises; John Russell there from South Sydney community aid, he can get the premises. We need publicity; Ross he can sort out the publicity. Transport - the taxis there wouldn't carry Aborgines then in those days - Eddie Newman's got a car, he can be the transport. We need an Aboriginal receptionist; Mum Shirley Smith she can be the receptionist. Thats all you need,' and he sat down, and there was silence and people realised that's all you needed. And then somebody said 'Well, when will we start?' This was Friday night and some wag said 'Monday.' And I said 'Whoa, whoa,' and we in fact started not the Monday but the following Tuesday. We plundered the hospital, we pinched all the gear and that was all the planning that was in it, because what happened, we'd go down there you see, we'd work you see, work the first night and a bloke would come in and I'd say 'Well, you need some of this,' and write out the script and I'd give it to him. And he said, 'What am I going to do with this doc?' And I'd say, 'Take it to a chemist. there's an all night chemist round here,' and he said 'Will it cost?' and I said 'I don't know,' and he said 'Could you find out because I've got three bob, or I've got fifty cents.' So I'd ring up the chemist and the chemist would say 'That will cost eight dollars.' So I'd give him the eight dollars but we fast realised we'd have to get a dispensary. So we backed a truck up to the hospital pharmacy and an Aboriginal carpenter came in and built the shelves and we put that pharmacy in and we just delivered direct care. But there were a lot of exciting things happening in that time. They tried to close us down, the council tired to close us down and we welcomed them. It quite quickly became a very popular thing and there are now sixty four.

MB So it was the beginning of real services for Aborigines.

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FH What it did, we put doctors in the outback instead of nursing sisters. We reckoned that a primary care person in Australia can afford to be a doctor and that Aborigines were entitled to that sort of primary care, not the sort of fag end of what a nursing sister would like to give them. And we've got a lot of those around the place, Aboriginal community controlled medical services, sixty four at the last count, it might be up to seventy by now. It's a very dynamic sort of thing.

MB Fred, and you're still deeply engaged in this sort of work.

FH Yes, well I've got a lot of Aboriginal friends, it's been a great joy to me the Aboriginal work. But of course I've been working in Eritrea and Nepal and Vietnam.

MB In the last two or three minutes available to us, can we just summarise where the work is today. I know we're going to talk later when we get another chance.

FH What we're actually doing, you see in my philosophic decision, the greatest problem facing mankind at the moment is the disparity, the disequity that occurs in the world. You see five out of the six people who go blind from cataracts each year, around five million of the thirty five million who go blind, don't just get visually impaired from cataracts, never get surgery at all. And of the ones that do get surgery in the third world, it's a very inferior type of surgery, not the sort of surgery that's done in the first world and in Australia and places like that. Our programmes are aiming to give that surgery and to give the lens factories and the injectibles necessary, and hopefully the sutures and hopefully the operating microscope. So we're doing our medical programmes here, adding to the economic development of these third world countries. Now, remember Archie Cochrane used to say, remember a letter he wrote to the British Medical Journal, he said 'Look health and *per capita* domestic product are linearly related, it's a straight line through the middle.' He said 'If you really want to improve health you've got to get your GDP up.' And you see health is not affordable to two thirds of the people on earth unless you deal with that. You know we're lucky in eyes, a lens factory just like vaccine factories can add to the economic wealth, increase the GDP, and it can be part of blindness prevention, and it can be import substitution making these lenses in the factory. Not only will it give these third world countries the chance to export to each other but perhaps to the first world. It is exciting stuff, we're making the factories with toolmakers in Eritrea and Nepal and in Australia now. It is really exciting stuff and the Vietnamese are breaking their necks to get one but they'll need about three.

MB Fred, it's an enormous programme you've got, are you still having the chance to get into the bush and see these things and do some surgery?

FH Yes, although I'm easing off my surgery but I've got a whole team of young surgeons behind me. I mean I'm sixty three and I've had a serious illness and you know how much time I've got, I don't think I've got a lot of time left. But I get out in the bush a bit. I'm going to spend a month with a couple of Aboriginal mates,

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actually in the middle of winter which is a beautiful time to be in central Australia. We won't be anywhere near a town I assure you or a bitumen road or any sort of road really.

MB Fred, I shall think of you and thanks very much for talking today about so much of your work with me and I hope that we can take on this story when we next meet.

FH Thanks Max.