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Neil Cherry, scientist, teacher, politician, peace worker Part 2

University studies, marriage and fatherhood

Dorothy - 2/05/03

University study

After leaving school Neil enrolled at the University of Canterbury to study for a B.Sc. At the end of his first year his results were so impressive that he was invited to join the B.Sc. Honours course in Physics.

Transport to U.C.

Neil was still living at his family's home in Opawa when he began attending classes at the University of Canterbury, and at first he biked there, to the old town site, now the Arts Centre. Neil recalls, "In my second year we moved to Ilam and I got a motor bike and later upgraded it."



Neil on his motor bike

Holiday jobs

"One of my first summer jobs was helping to build the physics and chemistry building at the Ilam site, in which I ended up spending most of my academic time. Other jobs were truck driver for Blackmore, delivering sugar etc to grocery shops. At high school I worked as a maintenance and repair worker using my practical skills; my second job was in the railway loading sheds, loading and unloading cargo. Later during university time I worked each summer for the Nelson City Council as a labourer and also a rubbish collector while I was staying with my father and stepmother, Peggy - who required that I have a swim to clean me before I went home!"

When he was a PhD student Neil taught science part time at Rangī Ruru Girls' School in Christchurch.

Church affiliation in student days and meeting Gae

The best Baptist church for students to attend at the time Neil left school was Oxford Terrace Baptist Church where the minister was the Rev. Angus McLeod. The approach to faith there was much more liberal and academic than at Opawa.

It was there that he met Gae Miller, on the launch on a Youth Group trip to Diamond Harbour. "We were looking down into the water", he said, "and we talked about left swimming and right swimming fish, and we liked each other's humour". He took her home on his motor bike.

Birthday parties had not been part of Neil's family's life, so when Gae gave him a twenty first birthday party it was his first.

At that time Gae had completed her teacher training in Wellington and was doing specialist training as a teacher of the deaf at Sumner.

Engagement and marriage

They became engaged and had a one year engagement.



Gae and Neil when they were engaged

Shortly before they were married Neil and Gae spent \$25.00 on their first car - a 1927 Morris 8 Sports which they christened *Grurgen*. Hank Jansen, Ngaire's husband, reconditioned the engine and Neil renovated the interior.

They were married on August 17, 1968, in Neil's Honours year at the university.



The wedding group

From left: Monna Peters (Neil's mother), Neil, Gae, Joyce and Jim Miller (Gae's parents)

The wedding was in Wellington in the Tawa Baptist church on a rainy day. Neil remembers that Gae looked wonderful in her wedding dress and veil. There were about a hundred guests.

Neil's best man was Terry Crooks, a friend from university and Oxford Terrace church and the groomsman was Neil Crawford, also from Oxford Terrace. The page boy who was ring-bearer was Ngaire's oldest son, Hendrik.

Gae's bridesmaids were friends she had boarded with - Lynne Rowlands and Shirley Lewis. Shirley met Richard, the organist at the

wedding, and they were married later.

The three men in the wedding party drove up from Christchurch to Picton and crossed in the ferry. Gae and Neil honeymooned in Nelson in his father's house in Rocks Road, as his father and his wife were away from home at the time. When they got off the plane in Nelson they were met by a crowd of Nelson friends because somebody had followed them to the airport, looked at the flight they were on and called and told the Nelson friends that they were coming to Nelson. It was not the quiet honeymoon they had planned.

"It was a good idea to get married before I sat my Honours exams, because it was much better living with Gae, and it saved time visiting her where she boarded," Neil explained to people who asked why they did not wait until he had finished his exams. "There was no living together before marriage in those days."

The suit Neil bought to wear at the wedding lasted many years for formal occasions, especially funerals, as he usually wore less formal clothes, especially Gae's hand made jerseys. She knitted for him as soon as they met, and later began designing her own patterns when they were living at Richland.

They began their married life in a flat on the corner of Avonside Drive and Linwood Ave at a rent of \$8.50 per week and later moved to a better flat in the same area and then to a flat in Carlton Mill Road, close to Rangī Ruru, at \$12.00 per week. The car was loaded to the limit when they moved their possessions into their flat.



Grurgen loaded to the hilt for the move

Neil's university course

Neil completed a BSc at the University of Canterbury in chemistry, physics and maths and then completed an Honours degree in Physics, (equivalent to a Masters by examination) because he believed that to teach he needed more than a Bachelor's degree to be able to make science interesting to the students.

Neil describes his Stage Three project - to look at how the electric field on a crystal could change its induction of light. "We could use a laser to connect a microphone to the field across the crystal so that the light beam then had words imprinted on it and detected by a photo detector which converted it to an electric signal. This was amplified and put into a speaker. That was done in the 1960s and is the technology which is now used by Saturn for fibre optic cables."



Neil graduates BSc Hons

The Honours degree was in solid state physics. "Growing crystals and playing with lasers and microwaves" is Neil's description. For his research he built a microwave spectrometer to look at the way microwaves changed the spinning of electrons in crystals so that he could identify what the substance was by its particular spectral

response to the microwave signal. This is called electron spin resonance spectroscopy. Particular atoms have a particular response that can be identified like a signature.

PhD research

Having finished his Honours degree he was offered a Fellowship to do a PhD. He told the staff member who suggested he accept it that he was interested in going out into the world, not going further down into crystals.

The reply was that Canterbury is the best laboratory in the world for studying lee waves during the nor'westers, so Neil moved into meteorology. It took him "just a nano-second to say 'yes'."

The lee waves are like the waves behind a boat. When the nor'westers come over the Southern Alps under certain conditions the air goes into a wave and creates clouds which are bands across the Canterbury Plains, and eventually the nor'west arch is created - a part of the wave phenomenon.

The PhD was completed in two years four months - one of the fastest at that time because with his technical training Neil was able to draw and build his own equipment. He drew a plan of a laser radar to track the clouds, using a ruby laser to send out a signal and do the profiles of the clouds. He used a telescope with a laser that goes out and receives the signal back. The time delay gave the distance, and the angle gave the position, just like a radar.

Balloon experiment

He gave his plan to the workshop, but decided to start with a balloon system. He bought polyethylene and adhesive tape from Woolworths. He wanted the balloon to rise to a given height and then flow in the air at that height and move in the waves. He realised that if you have a balloon that is expanding then it keeps going up rather than staying at the desired height. He went to the garden department and got some nylon netting. In three hours he had made the balloon with netting around it. He had contacted the Meteorology Office and asked permission to try the experiment. They were very helpful as they had a balloon tracking radar for their balloons. They provided tracking and hydrogen for the balloon. The next day he went to Harewood, on the nor'west edge of Christchurch. The Met staff helped him as he put in the hydrogen, surrounded it with nylon netting to try to confine it, closed it off very tightly with adhesive tape and string, and tied the radar reflector on the string. Fred turned on the radar and said that after Neil released the balloon he must point the machine at it.



Filling balloons for Neil's PhD research

The radar sends out a signal and the time delay coming back is recorded. If it is too close it cannot be recorded, so it is manually tracked and then the radar takes over when it is about 300 metres away. Then the outgoing pulse and the incoming pulse bouncing off the balloon radar can be separated. If they are too close they overlap.

Neil describes what happened. "Here I had my balloon heading up over the Russley Golf Course in a gentle sou'west breeze on a fine day with the radar following it up. All of a sudden it burst and fell down into someone's back yard, probably in St Albans. I had learnt that I could make balloons and track them and that polyethylene was

not strong enough, but as it took off and I turned around having connected the radar automatically to the balloon I looked around and saw three guys from the building next door watching and laughing. Painted on the door was a ghost with a balloon in his hand, GHOST standing for Global Horizontal Sounding Technique. It was the office of the National Centre for Atmospheric Research (NCAR) based in Boulder Colorado. They were releasing balloons from around the Southern Hemisphere and were balloon experts. They told me I should be using mylar which they used for their balloons, not polyethylene. Mylar was a very advanced, very strong cross fibred plastic produced by ICI and Dupont."

Neil got some Mylar from ICI and GHOST offered heating tape to seal the balloons. He built balloons with their assistance and developed quite a simple system to get them up and track them. Eventually they were released in Cass and Hokitika in nor'west conditions.

The first mention of Neil's work in the Christchurch Press was accompanied by a picture of him releasing a tetraoon, a tetrahedral balloon, at the airport in 1968. This was one of the first articles in the Press about interesting research at the University.

For his PhD research he had over forty examples of lee wave data. He finished the research in the middle of 1970, wrote up his thesis, and started applying for jobs.

Job offers

One contact was at NCAR doing lee wave research in Colorado, and was the international examiner for his PhD. He suggested Neil go there and join the programme, even before he had finished writing up the thesis. The University at Boulder is the top university in the USA for meteorological research. There was also an offer of a job at McGill University.

Gae a strong support

He developed computer and analytical models to test the results he had obtained. Gae was his assistant in this work. She was almost blown away in a nor'wester when releasing a balloon at Cass. She also did a lot of the data entry on to cards and they would book the mainframe computer at the University of Canterbury - an IBM 360 44 - for two hours between 2am and 4am. This computer, the biggest in Canterbury, allowed only one operation at a time and people were queued up to use it. PCs are now 1000 to 1,000,000 times more powerful and faster than that mainframe machine.

Birth of daughter Jo

Gae remembers typing in the data of the last balloon flight, returning home and going into labour with their first child, a daughter called Jo.

Award of PhD

The culmination of the research was the award of the PhD degree, conferred in absentia in 1972.

For more information about Neil Cherry's scientific research go to his website www.neilcherry.com

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