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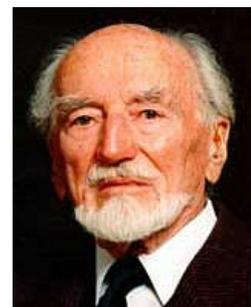
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## INTERVIEWS WITH AUSTRALIAN SCIENTISTS

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### Dr Phillip Law (1912–2010) Antarctic explorer

Dr Phillip Law was born in Tallangatta, Victoria in 1912. His family moved to Hamilton, Victoria where he attended Hamilton High School. Law was educated at Ballarat Teachers' College and worked as a secondary school teacher in Hamilton and Geelong before beginning study at the University of Melbourne. He received his MSc in physics in 1941. During World War II, Law continued his research at the University of Melbourne with various wartime projects. In 1947 and 48 Law was involved in the Australian National Antarctic Research Expeditions (ANARE) trip to Macquarie Island and Antarctica. He was appointed leader of ANARE and director of the Antarctic Division of the Department of External Affairs in 1949. He personally led 23 voyages to Antarctica and the sub-Antarctic regions, and directed ANARE activities that resulted in the mapping of 4000 miles of coastline and 800,000 square miles of territory. In 1954 he founded the Mawson, Davis and Casey bases in Antarctica. Law resigned from the Department of External Affairs in 1966 to become the executive vice-president of the Victoria Institute of Colleges. He held this position until 1977.



Interviewed by [Professor John Swan](#) in 1999.

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Dr Phillip Law is a very eminent Australian, best known perhaps for his work in Antarctic exploration between 1947 and 1966. He directed the activities of the Australian National Antarctic Research Expeditions (ANARE) in that time, and he and his colleagues were able to fully map more than 3000 miles of coastline and some 800,000 square miles of territory. Dr Law has also been eminent in tertiary education, in marine science and in public life. *(Portrait by Ian Toohill.)*

### Embracing an adventurous life

*Phillip, I think it is true to say that your life and your achievements have been very well documented in writing. You wrote a book with Bechervaise, ANARE: Australia's Antarctic Outposts (published in 1957); you have written three autobiographies and there are two biographies of you by Kathleen Ralston. The Royal Society of Victoria has published the proceedings of your 80th birthday symposium held on 29 April 1992, and Tim Bowden has written a history of Australians in Antarctica, 1947 to 1997, The Silence Calling. But perhaps here we can concentrate more upon the facts behind the story – your motivations and how you overcame obstacles.*

*You began life as a country boy, born in Tallangatta, Victoria in 1912 and educated at Hamilton High School. And from 1929 to 1938 you were a secondary school teacher. During one of those years you completed first year science at Melbourne University, and incidentally became the novice and open lightweight boxing champion. You went on to embrace a very adventurous life. How did that come about?*

Oh, it goes right back to my childhood, John. Even before my teenage years I got interested in mountains. I lived at Hamilton, and every school holiday my brother and I went to the nearby Grampians walking, riding bicycles, taking packhorses. From that sort of mountaineering and bushwalking I graduated to ice and snow. I began skiing in the 1930s with my elder brother, and over the years concentrated mainly on Mount Hotham and Mount Kosciuszko, in the Australian Alps.

In one very hairy experience, Bruce Osborne (one of my fellow-teachers at Melbourne Boys High School) and I decided we would be the first people to climb Mount Kosciuszko on skis in the middle of winter. It was a desperate, stupid attempt. We had appalling weather, with snow right down to the river at the bottom. We went up the Hannell Spur from Geehi, pushing our way through broken-down trees covered in snow, up to our thighs in wet snow, got out onto the snow above the treeline, scrambled our way up to the top of Mount Townsend – and then were hit by a blizzard. We got behind the rocks, stripped off our soaking wet clothing, changed into warm woollen clothing, made our way all the way down again to the river, waded through the river, and got back to our hut in teeming rain. Bruce said to me, 'What would have happened if one of us had sprained an ankle?' It was a lesson to me that you never go with only two people. It was quite absurd and very stupid. But nobody has yet climbed Kosciuszko on skis from Geehi in mid-winter.



*Phillip (left) with brother Geof and sister Marjorie, in about 1916.*

As a skier I began to read the heroic era Antarctic books about Scott and Shackleton and Mawson. Long before I went to Antarctica I'd read all the Antarctic literature and had become interested, but it was only good luck that gave me entry to a visit to Antarctica itself when Australia began to set up an expedition in 1947. I heard rumours about it but I didn't know how to get at it, because there was nothing in the papers. I was on the point of writing to ask Sir Douglas Mawson, whom I'd never met but knew to be a professor at Adelaide, what was going on, when my professor – Professor Martin, of the Physics Department at Melbourne University, who was an adviser on science to the government of the day – said, 'I've just come down from Canberra, Law, and they're having trouble finding a chief scientist for this Antarctic expedition.' When I said, 'Good gracious, have you mentioned my name? I'd love to go,' he replied, 'Oh, you wouldn't be interested in that, would you?' 'Ah, I'd give my right arm,' I told him. So he rang up, three weeks later I had an interview, and five weeks later I was the chief scientist of this new expedition. And then it was just luck again when, at the end of that year (1948), the man leading the expedition, Group Captain Stuart Campbell, went back to his air activities with the Civil Aviation Department and I took over as leader. I then ran it until 1966.

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### Early travels for science – optical instruments and cosmic rays

*To go back a little: you completed a BSc and then an MSc in physics at Melbourne University, 1939–41, and continued your research under Professor Laby with various wartime projects. You were secretary to the famous Optical Munitions Panel, later known as the Scientific Instruments and Optical Panel. The demise of this war effort, when a wonderful opportunity to establish a postwar scientific instrument industry was seemingly lost, is apparently shrouded in some mystery. What went wrong?*

I don't quite know. It is a pity that we didn't move into an optical industry, because the start had been quite phenomenally successful. Things that had taken other countries 50 or 100 years to develop were developed within five years. We made optical glass and various firms made optical instruments, but at the end of the war it all seemed to collapse and three or four years later there was very little left. But as part of the research into the deterioration of optical instruments in the tropics, due to fungus growing over the lenses, the Army had sent me up – as a civilian – on a scientific mission to New Guinea. I had three months going round all the battle fronts, not only carrying out experiments on the instruments but writing a report on the Army technical sections that were set up



*In New Guinea, 1944. Satelberg had just been captured from the Japanese.*

to service optical instruments like binoculars and gun sights.

*From December 1947 to March 1948 you were involved in the ANARE expedition in the Wyatt Earp to Macquarie Island and Antarctica. Later in 1948 you made a trip to Japan on the Duntroon. Would you like to speak about those two expeditions?*

Yes. Professor Martin set up a cosmic ray group to study cosmic rays before the expeditions began, but when the expeditions began he decided that it would be a good opportunity to do cosmic ray work at Heard Island, Macquarie Island and Antarctica. I was put in charge of the logistical arrangements to get all this going with a team of people – setting up, for example, a little hut at Mount Hotham to test the equipment in the snow and cold conditions. When the *Wyatt Earp* sailed from Melbourne, I was on board with my cosmic ray equipment.

It was a shambles of a trip. The *Wyatt Earp* was a crummy little wooden ship. It broke down halfway to Antarctica and we had to come all the way back to Melbourne to have it repaired. And when we got down the second time, it was so late in the season that we were unable to get within 60 miles of the coast of Antarctica. Apart from doing a running survey of the Balleny Islands, we did nothing except my cosmic ray work and some marine oceanography.

When I got back, I decided that the purpose of the cosmic ray work on that trip was to do latitude determinations on cosmic rays, and I felt it would be interesting to extend the latitude work up over the equator. I was able to persuade the Australian Army to allow me onto a ship that was going to Japan to pick up the occupation troops and bring them home, and so with my cosmic ray equipment I was able to get records across the equator as far north as Japan.

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### 'My eyes were on Antarctica'

*You became a Commonwealth public servant, being appointed leader of ANARE and Director of the Antarctic Division of the Commonwealth Department of External Affairs. That was no desk job in Canberra, because from 1949 to 1966 you led the annual relief voyages to resupply the ANARE stations on Macquarie and Heard Islands, and at Mawson, Davis and Wilkes stations in Antarctica. Also, you personally led 23 voyages to Antarctica and the sub-Antarctic regions, 11 of which explored the coast of the Australian Antarctic Territory from Oates Land in the east to Enderby Land in the west. How did you establish that effort?*

The story is long and complex. In 1949, within a month of moving to the barracks where we had our headquarters, I was going to Heard Island on a big LST (Landing Ship Tank), later called the *Labuan*, which was run as a naval vessel. So I had the experience, as a young bloke, of being under naval command, experiencing the hurricanes that you can have on that trip and the very difficult landing operations at a place like Heard Island – and later the same thing at Macquarie Island, with really hairy landings in a beach fronted with heavy surf, rocks and a shingle beach, in desperately bad weather. We came ashore in Army DUKWs (amphibious trucks) loaded at the side of the ship with equipment, a very hazardous business with the ship rolling and the DUKW moving up and down in the swell. All this was great adventure stuff, but my eyes of course were on Antarctica.

Stuart Campbell had failed to find a ship anywhere to go down to Antarctica in, except for the *Wyatt Earp*, which we proved was quite hopeless. So for the first few years I simply ran the Heard and Macquarie Island stations. But being a physicist I was interested in their geophysics – the meteorology, geomagnetism, seismology, cosmic rays, aurora, all these studies, as well as the biological work with penguins, seals and flying birds. So there was no boredom about this. But all the time my eyes were focused on Antarctica.

Finally, in 1953, I was informed by our shipping agents in London that a Danish shipping company, Lauritzens, had built an icegoing ship called *Kista Dan* to service the lead mines on the heavily iced-up east coast of Greenland. I thought, 'They can only do that in summer, so in winter that ship will be lying idle. Why don't we charter their ship in winter and bring it to the Australian summer for our Antarctic work?' Lauritzens agreed, and I was then able to go to the government with a plan to set up a station in Antarctica using the *Kista Dan*.

*Do you feel that the leadership qualities you brought to those expeditions were formed in any way by your family background and your early boyhood experiences?*

I'm sure that my bushwalking, mountaineering and skiing experiences helped, as did my experiences as a teacher, particularly in the disciplinary aspects of running an expedition. And I think as a physicist I was particularly well qualified, because physics is such a fundamental study that it enables you to talk technically to the radio people, the scientists, the people who build the huts, the electricians, the meteorologists and so on. So adventure plus technical background plus intense curiosity, plus a liking of my fellow men and the comradeship of the Antarctic fellows, was all part of this parcel of qualifications.



*On sea ice outside Mawson Harbour during the first visit to this coast by air (1954).*

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### Science or logistics? A difference of view

*The ANARE activities that you directed, along the coast and then inland, resulted in the mapping of 3000 miles of coastline and 800,000 square miles of territory. Your predecessor, Mawson, achieved perhaps 800 miles of territory and coastline, so there is no doubt that the postwar efforts were dramatically greater in extent and achievement. But to do that you must have had great support. Was the government always supportive of these adventures and opportunities to explore widely?*

Yes. I must say that the early motivation of the government was purely territorial. We had a claim in Antarctica based upon Mawson's work, and the government, in supporting the expeditions, wanted to



consolidate that claimed territory. So it was a question of our landing on unknown coasts, raising the flag and claiming territory for the Queen (or the King, as the case might be). The whole idea behind it was the possible ultimate value of Antarctic territory from a commercial point of view: for whaling, fishing, minerals and so on.

The Department of External Affairs was not at all interested in the scientific work, but I was just as interested in the science as in the exploration – they both stemmed from avid curiosity. The same curiosity that makes a scientist is the curiosity that makes an explorer. I had this wonderful job, this two-edged career, satisfying my curiosity in both those fields of work.

The biggest problems I had over that period related to the Department's belief that the scientific work should be done by CSIRO, the universities and the government departments and not the Antarctic Division, which should be purely a logistical organisation. I kept pointing out that unless the division itself did scientific work, the focus on science would be too vague and there would not be the same coordination and cohesion as if the division itself was actively involved in science. In some areas of science the Antarctic Division had to pick up the work, because there was no-one else in Australia who could do it. That applied particularly to glaciology – we had no glaciologist in Australia doing work other than ours; aurora work; some of the upper atmosphere stuff and the cosmic rays. Even biology. I had great difficulty getting support from the universities in the early days. So in the first couple of years I was acting as supervisor of the biological work, simply using my general knowledge as a scientist to direct these young undergraduates in what they should do.

*In 1960 you learnt that you had been awarded the Royal Geographical Society's Founder's Medal, a very great honour. Previous recipients had included David Livingstone, Richard Burton, Robert O'Hara Burke, Eyre, Sturt, Leichhardt, Captain Scott and Sir Douglas Mawson. Were your friendly bureaucrats in the Department of External Affairs pleased?*

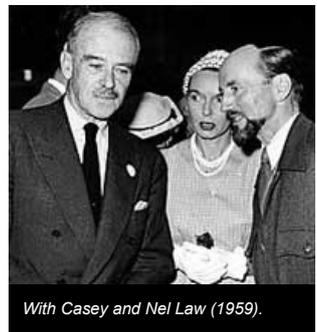
It was a strange situation and I get the idea that there was a bit of personal jealousy. I was invited by the Royal Geographical Society to come to London to receive the award, but when I asked the Department whether I could do this, they refused. They said Lord Casey was in London and could accept on my behalf. He duly did that. But about a month later I received by post a scrubby-looking package that had obviously been opened and then resealed. Inside was my Founder's Gold Medal, which had been sent out in the diplomatic bag. The people in Canberra had opened it and just sealed it up – no letter with it, no congratulations or anything. It was all a bit weird.

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#### **Matters of support and authority**

*It seems that the Minister for External Affairs played an important role.*

Yes. In the early part of my work I had the good fortune to have R G Casey as my Minister. That was important for a number of reasons. First, when most of the ministries moved to Canberra, Casey refused to leave his Melbourne office at the top of Collins Street, and I was able to see him every two or three weeks. That made it very easy to get action, because Casey was very enthusiastic and, better still, he was an airman: he had a flying licence and he was very keen on aircraft. We persuaded him to get the RAAF to set up an Antarctic flight, and I arranged for them to winter over in Antarctica with aircraft. (Since the Casey era there have been no aircraft stationed at our Mawson station.) Having aircraft stationed there made a huge difference to the sorts of aerial photography we were able to carry out, and we also used the aircraft on my ships each year to survey the coast with photo flights.



*With Casey and Nel Law (1959).*

Casey was an adventurer and supported me to a degree that the Department itself didn't. He was also the Minister for CSIRO, so he had a deep interest in science as well. Altogether, I think the Casey–Law era was the brightest part of the whole spectrum of work that we carried out.

*You certainly recognised your Minister's contribution. In 1965 to 1969 you established a new station on the mainland – replacing the Wilkes base inherited from the Americans – which was named Casey, and I believe a range of mountains was named the Casey Range. How did you get permission for that naming? Is approval for establishing place names covered by the Antarctic Treaty?*

No. We were faced with applying names to various features during the exploration of Heard Island, even before we went to Antarctica. I found I was the sole authority for naming things there, and I could see that in Antarctica the same situation would arise. I felt it was quite wrong that a single person should have such overall authority, so I asked Casey to set up a place names committee. He set up a six-man committee, with me as chairman, to look at appropriate names for all new features.

In the Antarctic this became a very complex problem, because exploration of Australian Antarctic Territory had partly been done by some Americans, Norwegians, French and British, and by ourselves, and one had to check the history and make sure that the first people to discover and map a feature could have their name on it. There was a lot of come-and-go of checking on old place names and putting new ones in, making sure particularly that one collaborated with the place names committees of other nations to get an overall general acceptance of place names, without different sorts of names from every different country.

*I gather there was an ANARE planning committee, comprising representatives of a wide range of Commonwealth government departments, the three Armed Services, the CSIRO, and at various times the Australian Academy of Science and also universities. That is an interesting mix. Did the committee function well?*

That committee was set up in a fairly simple form in 1947 and then developed fully in 1949, in my era. It was very powerful, because it had the status of heads of departments and heads of Commonwealth

sections, as well as very senior people from the Army, Air Force and Navy. The Department wanted to be making the decisions but found that it was very hard to deny the recommendations of the committee and consequently disliked it. But I found the committee invaluable. Mawson was on it, and Captain J K Davis and the people you have mentioned, and they were solidly behind me in what I wanted to do. Most of what we achieved was due to the immense clout that this planning committee had, in the final analysis, with government. Towards the end, the Department finally achieved what they wanted – to get rid of it – by the simple expedient of not calling it. I was not the convenor, and if they did not call it together for a meeting, there was nothing I could do. So I was eventually defeated on that issue.

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### The International Geophysical Year – opportunities and complications

On the scientific side, one of the greatest things gaining me government support was the occurrence of the International Geophysical Year, 1957–58. Planning for it began in 1955–56, with a national committee in each of 11 countries. Our committee was called the Australian National Committee for the IGY (ANCIGY); there was also an international committee called, in French, CSAGI. As part of the planning, on one occasion I led a delegation to Barcelona, where the nations in the IGY were meeting to plan the scientific work. They had various meetings, both before and during the IGY.

The IGY cropped up during the Cold War. It was apparent that Russia was going to come down, intent upon setting up stations in Australian territory. Having explored various aspects of our coastline, I considered that the two best places other than Mawson for setting up stations were the Vestfold Hills and the islands in Vincennes Bay, called the Windmill Islands by the Americans. I was afraid the Russians would go to those places, so I persuaded the government to allow me to set up Davis station in the Vestfold Hills, and the Americans set up one of their stations in the Windmill Islands area. So the two best places other than Mawson in 4000 miles of coast were covered by the Americans and ourselves. That meant the Russians had to go elsewhere.

My love of the Windmill Islands area was finally gratified, because at the end of the IGY the Americans were overstretched and decided to close some of their stations, including their Wilkes station in the Windmill Islands. American scientists came to me and pleaded with me to take it over so that the scientific work there could continue. So I went to our Australian government and said, 'The Americans are willing to give us this station. We should take it over.' The American Congress didn't want to give it to us but at length they decided, particularly in talks with Casey, that it should be a joint Australian/American station. This was against my wishes – I thought it should be a completely Australian station. And ultimately that is what it became, because this collaborative idea didn't really work out and after a couple of years the Americans lent it to us in perpetuity. So we took over Wilkes station and ran it for a few years, until finally it was smothered in snow and ice which had built up over the years and we had to abandon it. We built a new one a couple of kilometres away and called it Casey.

Years later, Casey itself was rebuilt, so we have got Casey Part II now. We are still running Mawson, Davis, Casey II and Macquarie Island. But Heard Island we closed down some years back.

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### From nothing onwards – development by design

*Phillip, from my reading, one of the highlights of your ANARE period would have to be the efficient logistical background to those very complex operations. Would you like to comment on that?*

Yes. This was a case of developing from nothing onwards. We had to design all sorts of different aspects of what we were into. The logistics behind an Antarctic Division is an immense array of different disciplines – the choice of radio sets, tractors, the design of food for sledging purposes and also for station purposes, the design of clothing. We were the first to design modern clothing for Antarctic work, because we were down there before the IGY started, before the big nations came in. I thought that in the IGY our clothing was superior to that of the Americans and others because it was all done by collaborative discussion between the boys and myself, tossing ideas round, selecting the best things. Our design of Antarctic clothing proved over years to be the best.



At Mawson, 1955.

The question of vehicles was very difficult. In the early days, we started dog-sledging and man-hauling, but then you had to get vehicle-hauled devices. The only vehicle available for over-snow travel of that sort was a Weasel – a Studebaker vehicle with tracks, designed by the Americans for the Norwegian campaigns of the war. The campaigns didn't ever come off, the vehicles were left in France, and a French expeditioner, Paul-Emile Victor, began using them in Greenland and then in Antarctica. From him we learnt that these were available, but we found that, although they were fine as scout cars, they were no good for pulling: their transmissions would break down. They were never designed as towing vehicles.

If we were going to tow things, we thought, we had better get something which was designed for towing. So we switched from Weasels to tractors. We homed in on Caterpillar tractors and started with D4 Caterpillars. This revolutionised the travel, because you could have a Caterpillar tractor with a tractor train of things behind it – a sledge full of fuel, sleds full of scientific equipment, a little scientific cabin for housing the drilling mechanism for ice-core work, a live-in caravan so you didn't have to put tents up. Tractor trains became used then all over Antarctica for international work.

The biggest tractor train effort in my day was run by the men at Wilkes, under Bob Thompson. He went on a tractor journey to Vostok, a deserted Russian station in the heart of Antarctica, at a height of about 13,000 feet and very cold. That was 900 miles from Wilkes to Vostok and 900 miles back – 1800 miles with the tractor going at about three miles an hour. The Caterpillars on that trip ran at temperatures lower than any tractor in the world had ever operated. This was great stuff.

We were the first people in Antarctica to design huts which gave individuals private cubicles. Before that, everything was on a bunkhouse design. We were the first to build an aircraft hangar in Antarctica. It's still there. And so on.

We even designed a publications system. All the scientific information coming from our stations had to be disseminated round the world in scientific publications. Some were the traditional publications in subject areas, but we decided that we needed a lot of other publications of a more general nature. So we set up a system of ANARE Reports, which were divided into sections. We appointed a publications officer to look after all this, and I was the editor of the scientific publications of the Reports for several years until my chief scientist, Fred Jacka, took it over. Over the years, a great spread of ANARE Reports has surfaced as a result of that publications system.

The intricate detail and design in a variety of areas were a key to success in Antarctic work – quite apart from the design of Antarctic programs and all the Antarctic equipment necessary for those, which is another matter again.

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### **Vital support**

*What sort of scientific support in Australia did you have for your programs?*

Various government departments were fundamentally important to the success of this work. The most obvious one was the Bureau of Meteorology. Our weather comes up from Antarctica, so meteorology is the most obvious scientific work to be attacked there. Antarctic meteorology is fundamental to studying the weather patterns in the southern part of Australia.

The National Mapping Office provided the surveyors and directed the mapping of the results of their explorations. All the Antarctic maps and the place names work that we did on them finished up with that office for map production.

The Bureau of Mineral Resources was a most important government department, handling the geophysics and the geology – particularly in the early days, when we had hopes of getting minerals of value from the Antarctic. They handled the major geophysical work from the IGY also – geomagnetism and seismology.

Then there was the Ionospheric Prediction Service, a small unit which set up ionospheric measuring devices in stations to help to predict the sort of frequencies you needed for the best radio transmission possibilities, which are concerned with reflections from our ionosphere.

I should also mention CSIRO and the universities. As time went on, the universities became more and more involved. In the early days they didn't know enough about Antarctica and missed the opportunity to get into it, but now they are scrambling over each other for a place in the Antarctic work because it is proving so profitable.

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### **Big success for a little nation**

With regard to the development of the scientific programs themselves, in the early days things were quite primitive. You were at the first level of scientific difficulty, in the sense that almost everything you touched was fresh and new, and even the simplest things were not known – not even the life histories of the penguins or the dates they laid their eggs. Now everything has gone to a sort of third level of difficulty: biology is all about genetics, physiology and so on, not about life histories of animals. And in physics it has gone the same way.

The cosmic ray work still runs on. We, at Mawson, have the longest-running permanent cosmic ray observations in Antarctica. Mawson, actually, is the longest-running permanently occupied Antarctic station. The British were in Antarctica before we were, but their little early meteorological stations have now been either closed down or moved to other places and Mawson remains as the oldest established station. We started Mawson with 10 people; we started Davis with six or seven. Then all our stations developed and the programs developed, and they averaged finally 25 to 30 people at each station. Davis has just recently replaced Mawson as the main station. It's all been a matter of evolution and development, and very dramatic.

I think that for a little nation Australia has done particularly well. For example, during the IGY we ran the most successful scientific station of all the nations, mainly because we had been down there for three or four years beforehand. Most of the people who came down in the IGY as a one-off start had their instruments break down for various reasons and had all sorts of problems, whereas we had ironed the bugs out of our systems. Naturally, over the years the heavyweight Russians and Americans overran us in this sense. But in those early days, really, we were the most successful.

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### **Contributions under the Antarctic Treaty**

*How did the Antarctic Treaty come about, Phillip?*

The International Geophysical Year of 1957–58 proved so valuable that there was a general desire amongst the nations to see it continue in perpetuity. There was a further problem, in that most nations in Antarctica were there in the hope of ultimately some sort of pay-off in profitable exploitation of minerals, marine resources and so on. But till then it had been a matter of colonial expansion, of claims and so on. Early in the Treaty it looked as though there would be friction between those who had claims and those who hadn't, or those who had claims that overlapped, like Chile, the Argentine and Britain. The idea developed that perhaps with a treaty some of those problems could be ironed out.

The Treaty began after the IGY, in 1959, at a meeting in Canberra. There was finally a decision to freeze the claims situation by saying, 'If you have a claim, you can still recognise it. If you don't recognise claims, you can still not recognise them.' However, nothing in the way of exploration from then on would provide any grounds to make a claim – any exploration I did after the Treaty was signed would not count as a further addition to our territorial claim. That solved the problem, particularly between Britain, Chile and Argentina.

The scientists themselves had decided also to set up some sort of organisation following the IGY, to help coordinate Antarctic programs, set goals for the future and so on. So the Scientific Committee on Antarctic

Research (SCAR) began meeting from 1958 onwards. The two international bodies – the scientific one, SCAR, and the Treaty one, the Antarctic Treaty – continued after the IGY and became tremendously important. I had the good fortune to be at a number of SCAR meetings because I was the national representative, and I also attended several of the Treaty meetings in the early days, particularly in the formative days when we were drawing up the conditions of the Treaty and making sure it worked all right.

For example, I was able to suggest that in SCAR and the Treaty, as well as in all the working groups they had on the subject areas and so on, there should be working groups in logistics, because the development of the huts, the clothing, the tractors, the movement of the aircraft and so on was a vital background to any success in the scientific work. I felt that the international meetings should include that sort of topic. So that was one contribution I made to those systems.

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### Coming in from the cold

*In 1966, at the age of 54, you took a very different path. You resigned from the Department of External Affairs and all involvement with ANARE, and became Executive Vice-President of the newly established Victoria Institute of Colleges – the VIC, as it quickly became known. How did that come about?*

Well, over the years I was getting more and more frustrated by the reluctance of the Department of External Affairs to grant us the right in the Antarctic Division to carry out scientific work. They had several committees of review look at it, and nothing was ever really properly settled. But the main bone of contention from my point of view was the refusal of the Commonwealth Public Service Board to allow me to appoint senior scientists to head up the various sections. It was clear to me that, in order to get continuity and effective research, we had to have a senior supervisor in each discipline: someone in atmospheric physics, someone in glaciology, someone in biology – the things that the Antarctic Division were doing. And they had to be appointed at salaries equal to what the CSIRO called the big-S salaries. That is, they had to be on parity with CSIRO and university salaries, so that we could attract people of sufficient seniority to get high-quality scientific work done.

By 1966, practically all exploration had finished. The only attraction to me from then on would be the development of scientific programs, but the Public Service Board steadfastly refused. Their deputy director said to me in one case, 'I know you're right, Phil. But if we give this to you, we'll have to give it to the Met Bureau and the Bureau of Mineral Resources, and the precedent would be impossible for us. So we're not going to give it to you.' I realised that was the end of the road for me. (Incidentally, 20 years later the Antarctic Division did get it.)

There were subsidiary points, such as my continual absence from home. My wife was getting a bit tired of my being away from home six months of every year, and I was getting tired of never being here for the swimming season and never seeing my wife in a summer frock. And I had always been interested in the academic side of life: for a number of years I had been on the councils of Melbourne University and La Trobe University. So I thought I would look out for an academic administrative job.

The Law luck worked for me here when Nel, reading the newspaper one Saturday morning, said, 'Here's a job for you, Phil.' It was the advertisement for the Vice-President of the VIC. Reading that advertisement, I could see that if I had dictated it myself to suit my qualifications, I couldn't have done it better. So I knew practically from the time I sent the application in that I would get that job.

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### A council for a new institute

*I understand that the VIC was established by the Bolte government to coordinate the activities of 16 tertiary institutes of technology – formerly technical schools. It was then, under your tutelage, run by a council. How did you go about establishing a functioning council for a body like that?*

The VIC arose out of an interesting Commonwealth committee which was chaired by Sir Leslie Martin, my old professor. The Martin report (as it became known) on the future of tertiary education in Australia recommended that another edifice of tertiary education be set up, a pyramid of tertiary education which provided an alternative to the pyramid of the universities.

Victoria was different from any other State, in that it had six or seven technical colleges. These formed the basis for the VIC structure. Most of the other States had a predominance of teachers colleges and only one institute of technology, but the teachers colleges had not been given much attention under the Martin report. Shortly after the VIC was established, the State government set up the State College of Victoria, embracing the six or seven teachers colleges. So there were the VIC and the State College, each being part of what were called colleges of advanced education.

The colleges of advanced education throughout Australia were run by a Commonwealth commission – just as there was a Universities Commission, so there was a Commission on Advanced Education. We adopted a leadership role in the development of the colleges of advanced education in Australia.

After the Martin report, the State government had set up a council whose chairman was Sir Willis Connolly, the head of the State Electricity Commission. He had also been nominated – in an honorary role, unpaid – as President of the VIC. The President was to be like the chancellor of a university: chairman of the council, but not running the everyday operations. The council decided to advertise for a Vice-President, and in that role I was to be the administrative head of the structure.

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### 'I'm the Vice-President. What do I do?'

My big problem was that I came into this with nothing to work on. When I went in to Melbourne as the new Vice-President on 26 April, the day after Anzac Day, I stood on a street corner and said, 'I'm the Vice-President. What do I do?' No office, nothing. So I went down to the Antarctic Division and looked up the files of when we had recently moved premises. Using what we had done with estate agents and things like that, I was able to get some accommodation in a State Savings Bank building on the corner of Swanston and Little Bourke Streets. I had three rooms, and the people who had vacated them had left a table, a chair

and a hat-stand. So I was in business.

I walked down to the Elizabeth Street Post Office to get them to put a telephone on. When they did that, I rang up and got some furniture delivered. Then I rang up the Commonwealth Employment Agency and got them to send some girls so I could pick a typist. When I got a typist, I told her to go and buy a typewriter. So we built the thing up.

There were the monthly meetings of the council and I had to appoint a registrar and a business manager. Then gradually I accumulated a team, and finally I set up a board of studies as something like the professorial board at a university. And I had to develop a philosophy for the VIC: in what ways was it going to be different from a university and what were our objectives, both practical and philosophical?

At the beginning, all the technical colleges were under the Education Department, so the big task was to get them out of the Department. But the Director of Education didn't want to lose them. He was trying to procrastinate, saying, 'Don't let's hurry this. Let's spread it over five years.' I said, 'No. I might be dead by then. I want it done in 12 months.' So that was the first big struggle.

The second big struggle was to get the Premier to change the Act. Being very cognisant of the Act of Melbourne University and the Act of La Trobe, I could see deficiencies in the rush Act that the government and the council had set up – particularly in regard to autonomy, the separation from ministerial control and the functions of our board of studies. That was so fundamental that we made it a platform, an issue, for the coming State election. The director of RMIT and I managed to get front-page news, three weeks before the election, demanding that the government rewrite the VIC Act to change the board of studies. And we got that through.

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### **Building blocks – getting it together**

*You certainly brought about changes, both to the scope of the colleges in the VIC and to the awards made at the end of college study.*

The VIC operation was immensely successful, but the organisation was exceptionally complex. We had a proliferation of committees. We had course development committees involved in designing courses and also course assessment committees involved in making sure their standards were adequate. In setting these up, I was careful to employ numerous people from universities so that our standards and the excellence of our courses would be at the university level generally. There was a whole set of logistical committees – the finance committee and, particularly, the buildings committee – because that period was one of great affluence in capital funds. Some years ago, looking at the capital funds for the whole of Australia in tertiary education, I found they were below the level that we in the VIC had in one year at the height of our career. For example, we built seven new university-style campuses and we created two completely new colleges.

I personally had considerable impact on the creation of the two new colleges – the Victorian College of the Arts and the Lincoln Institute of Health Sciences – because they arose from similar situations. In each case, small colleges had approached me for affiliation, colleges that had been in existence but leading a hand-to-mouth existence and wanting the continuity of Commonwealth funding which they thought they could get if they could become affiliated with the VIC. But being so small they had no chance of becoming affiliated, so I said, 'Why don't we join them together to make a big institute, and then we can affiliate them.'

In the case of the Victorian College of the Arts we had a nucleus, the National Gallery Art School, so that gave me an arts centre. Then a decaying music centre, the Albert Street Conservatorium – dying on the vine – applied for affiliation. I thought, 'Now, if we can put Music and Art in, we can invent a new one called Drama and then drag in the Australian Ballet Company.' That happened, and the Victorian College of the Arts is now a very successful organisation.

In the same way with the health studies, there were three therapy schools. Each one had been going for 50 or 60 years under its own council, but I could see that if we put them all together and then brought the College of Nursing in as well, we would have a decent affiliation, a big group. And that also worked.

But it was hard work knocking the heads of all these council members together to make them give up their autonomy and join in. Over the years it was an interesting study in administration, to get those two things going.

As well as building the new campuses, we rebuilt all the old ones. Then there was the administrative point of staffing in the colleges. In the old technical colleges the principal was a Pooh-Bah, doing everything. He combined the jobs of a vice-chancellor, a registrar and a business manager. For example, the man at Caulfield used to open all the mail and distribute it round the departments. So I had to restructure every administration in every college.

I also made sure that I sat on the site selection committee for each of the new campuses. We put the Gordon Institute on a new campus out on the Colac Road, in an area of expanding residential living. The Geelong Grammar School ran a political campaign to try and get it put at Corio, next to their school, but that was in an industrial area with no room for expansion and would have been hopeless. The decision to put it out at Colac was vital, and again has proved very successful.

I was very annoyed, though, when they set up the fourth university. We had already put up a number of buildings for that Geelong campus, including student residences, and they took it from us. So the Gordon Institute ceased to exist there and the site became Deakin University. I now have a sort of prime interest in Deakin University, having been responsible for the site and for the early buildings on it.

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### **Letting the awards fit the studies**

*At the start of the VIC, the institutes of technology were only able to offer certificates and diplomas to their graduates, but the VIC rapidly transformed those institutions into fully tertiary, autonomous, council-governed institutions which offered diplomas, degrees and, I believe, even higher degrees based on postgraduate research. Looking back, was it a success?*

The escalation from diplomas to degrees was a very interesting move. I could see that we would always be second-rate if we did not get university-level degrees. So there were two big fights: one on getting degrees established; the other on getting parity with university salaries so the people we employed to run these degrees got adequate seniority and status. Both those were won in the long run, but the degree fight was particularly interesting in the way it developed.

The Australian Commission on Advanced Education set its face steadfastly against degrees in colleges of advanced education, so we decided to try it out. We chose the Pharmacy College as the spearhead of our attack, because that college was already, everyone agreed, at degree standard. But for jealousies and opposition from the medical fraternity, it would have been incorporated into Melbourne University years ago.

I notified the Commission in Canberra that we intended to award a degree at the Pharmacy College. It replied saying that we must not do that, and if we did it would cut all funds to the College. I knew that the pharmacy people had an immensely strong lobby in Canberra, though, and realised there was no way the Commission could chop the funds for the College and get away with it. We kept persisting, and a couple of days before the ceremony we got a telegram from Canberra saying we could go ahead. So that was the first degree at any college of advanced education in Australia. Thereafter, not only did my colleges follow suit but the CAE systems in the other states also followed. So by the time I finished in the VIC, the CAE structure had reached this degree standard.

I also pushed for higher degrees, but we decided quite early not to have a PhD. I had all sorts of reservations personally about the PhD as it existed and I felt we would do better to keep away from that, particularly to underline our difference from the universities. But we did need a higher degree in research in our various technological disciplines – engineering, applied chemistry and so on. We made a rule that we would only have Masters degrees by research, except in one discipline, business administration. It is pretty obvious that you can't do that by research so there we allowed coursework for a degree. But we refused to have coursework Masters degrees in all the other disciplines.

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### Colleges or universities? A matter of philosophy

The whole philosophy of the VIC system was directed towards technology and industry. Everything we did was down the hard end of the spectrum of studies, leaving the pure research absolutely for the universities. We maintained that division very strenuously, but the Dawkins action which amalgamated all the universities and colleges of advanced education absolutely destroyed that philosophy.

There were two major deficiencies or defects in what happened with the Dawkins plan. Firstly, most States had five or six teachers colleges, with only one institute of technology. I think that when the amalgamation occurred all over Australia, the predominance of teachers colleges through Australia caused a dilution of standards in the universities. There is no doubt that the standards in the teachers colleges were lower. Certainly in Victoria it was proved later that the standards in the State College of Victoria were not as high as in the VIC, because they had a structure of course assessments which was not up to the quality of the committees that we had.

The other bad result of the Dawkins decision, besides diluting the university system, was that it diluted the technological emphasis that we had in the VIC. For example, the head of the applied chemistry department in one of the colleges complained bitterly to me about how the technological–industrial trend in his department had been 'purified' when it was taken over by the university concerned.

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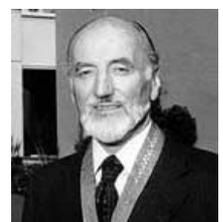
### A fundamental change in tertiary education administration

*You have told us of a number of fields in which you were an innovative administrator. But before you embarked on the VIC challenge, you were much involved in a committee of investigation into administration of the University of Melbourne. Why was that needed, and what was the outcome?*

That prompted a very important transition throughout Australia. All our universities used to have a vice-chancellor and a registrar – no other top poppies in their administration – and then the professors. The registrar was another Pooh-Bah, doing everything. In Melbourne University, over a number of years, the administration degenerated because the registrar very nicely decided that the university was for academic purposes, not for administration. So as money became tight he made sure the scholastic side of the university operated all right but he did not put money into building up the administration. Noteworthy as that attitude was, the administration suffered to the point where finally I could see, as a member of the council of Melbourne University, that the administration just wasn't coping. For example, in those days salaries were paid to academics once a month only, but some were being paid two or three weeks late because the registrar's office could not cope with the pressure. So I, as a young council member, had the temerity to produce a motion that the whole administration of Melbourne University be reviewed.

Well, I ran into opposition from the then Vice-Chancellor, Sir George Paton, and the registrar, Frank Johnston, neither of whom wanted this. They thought they could just subtly sideline me, so the first thing they did was to make me chairman of the working group set up to do the review, thinking that out of sheer laziness we would never get anywhere. But I pushed on very vigorously. The second thing George Paton tried to do was to have Frank Johnston made the secretary of my working group. I refused bluntly, saying, 'This is one of the men we are investigating. He can't be on the committee.' So we had a young fellow called Ian Barrah, who was well known in the registrar system there, as our secretary.

We had some very noteworthy people on my committee, including Len Weickhardt, who later became Chancellor of Melbourne University; Sir Clive Fitts, the top physician in Melbourne, a very influential man; and the headmaster of Melbourne Boys High School, George Langley, also very influential. It took us about two years, but we completely transformed the administration structure of Melbourne University, bifurcating the responsibilities. We proposed an academic registrar to look after the academic side of things, and a business manager to look after the financial side of the university. Then we advertised for a business manager and we appointed Ray Marginson, who then did a great



job for the next 15 or 20 years.

That system then spread to every university in Australia. I introduced it to all my colleges when I was restructuring them, reducing the load of the principal and putting under him the registrar and the business manager. This move was fundamental in the administration of tertiary education right throughout Australia.



*I can certainly confirm that it was adopted at Monash, where I was for 20 years.*

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### **Bringing home marine studies in Bass Strait**

*From 1967 to 1969 you were President of the Royal Society of Victoria. At that time you chaired a committee which lasted right through to 1977 – a committee to establish an institute of marine science. When the Victorian Institute of Marine Sciences then came into existence, you were its foundation President from 1978 to 1980. Would you like to talk a bit about that?*

Yes. I had been involved in looking at marine science over a number of years. Sir Frederick White, as the chairman of CSIRO, had felt for quite some time that marine science was not adequately being catered for. At one stage he even suggested to me that I might take on the job of being director of the CSIRO division on marine science. I was not interested in doing that, but I had always watched what was happening in that field and could see that, with our huge coastline, there was quite a large deficiency of operation in terms of marine science in Australia generally.

When Harold Holt, the Prime Minister, was drowned in 1967, a group from Monash University came to see me. Realising the need for more marine science in Australia, they thought that the Commonwealth should set up a centre for marine science in south-east Australia, as a mirror image of the one they had recently set up at Townsville. The Commonwealth government had already indicated that it intended to proliferate these round the coast of Australia. This group reckoned that this one should be set up as the Harold Holt Institute, a memorial to Harold Holt. It so happened that John Gorton, by then the Prime Minister, didn't particularly like Harold Holt and didn't see any reason to have a memorial to him. So he scrubbed the idea.

Then we thought, 'Well, we don't have to call it the Harold Holt. We'll call it the Victorian Institute of Marine Science.' They set up a committee of some quite influential people, including yourself, John, with me as chairman, to try and get this thing established. The preliminary committee, working with the Royal Society, got a Victorian Act passed to establish it and a council was set up then under the Act. I was the first chairman. I won't go into the very interesting history now, but you will remember that one of the first things we did was to initiate a major study on Bass Strait. We had found that the only people in the world who knew anything about Bass Strait from a marine science point of view were the Taiwanese and the Russians, so this long and very valuable study on Bass Strait was carried out – and a number of other things.

But unfortunately our major plan, to have the institute established on Point Nepean peninsula, did not succeed. I had even got permission from the Army to have a hunk of their Army establishment down there, if I could get this through the Commonwealth. But the Commonwealth boys blocked us off in various directions. So the headquarters office was set up in Melbourne, with a field station at Queenscliff.

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### **Young scientific voices in the wilderness**

*You were later, from 1978 to 1980, the foundation President of the Australia/New Zealand Scientific Exploration Society. How did that come about?*

Two people in Melbourne had been in the British Schools Exploration Society when they were teenagers in England, and they wanted to set up something similar here. So they came and asked me would I be the president of a group to set this up. I agreed, and we worked pretty hard to get it going. The idea was to send young matriculation-level students, or first year university students, away for five weeks over a Christmas vacation to do scientific studies in some wilderness area under PhD-type people that we would enlist from the universities. So a PhD-type bloke in, say, botany would have eight or 10 of these young people under him, and they would tackle a job nominated for them by a government department or CSIRO or a museum.

The sort of places we would tackle would be places where no scientific work had been done. For example, scientists like their comfort as much as anyone else and they would prefer to work in the jungles of Queensland in the dry season, not in the wet season when there are mosquitoes and leeches and floods. So we would send these poor kids into the middle of the jungle near Cairns, in the midst of the wet season, and make them put up with all these hardships and get the work done. This worked supremely well for a number of years, but unfortunately it collapsed about two years ago and is no longer in existence.

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### **Hazardous experiences**

*In view of your adventurous life, from your rock-climbing as a schoolboy in the Grampians to your Antarctic adventures, would you like to talk about risks? What were the greatest hazards down south?*

One of the reasons for writing my third autobiography, *You Have to be Lucky*, was to overcome the tendency of people to believe that it was only dangerous in the days of the old explorers like Scott and Shackleton and Mawson – that today it is all easy and there is nothing to it. In my view, the greatest hazards in Antarctica are not on the surface. Surface travel by dog-sledge or hand-hauled sledge or tractor is one of the safest ways of exploring. There are crevasses, but there are means you can adopt to identify and avoid crevasses, and precautions you can take against such accidents. Very few people, following Mawson, have ever fallen and been killed in a crevasse.

The highly dangerous areas of activity in Antarctica are at sea, either in ships or in small boats or landing craft, and in the air. There have been more people killed in the air or from aircraft accidents in Antarctica

than from anything else, except fire. I have had a lot of hairy experiences, particularly in small boats and on pontoons and making landings on rough coasts, and in very desperate situations on ships caught in hurricanes. If a ship sinks, you lose a lot of people in one go.

Two of my experiences on ships in hurricanes were particularly hair-raising, but in aircraft I have had about five experiences from which I was lucky to survive. In one, after we had been flying for three hours we came back to where the ship should be, thinking we would find it quite easily because we had left it in a pool of open water a mile wide. But when we got back we couldn't find the ship. We radioed it and the captain said, 'I'm sorry, but the pack-ice closed in and covered the pool. The pool isn't there any more.' We realised that if we crash-landed somewhere the ship would never find us, because it wouldn't know whether to look north, south, east or west. So we were flying round trying desperately to think of some way of finding the ship.

Finally, I radioed the ship, 'Get every pair of binoculars on board, give them to the men and then assemble them on that monkey island above the bridge. Divide the sky into sectors and let each man look for us in one sector.' One bloke picked us up as a spot in the sky and then they were able to talk us in by radio, but we still had the problem of landing. We were on an Auster aircraft, mounted on floats, and you can't land on pack-ice on floats. So we had the ship go full steam ahead: it could only move at about half a knot in the pack-ice but its vigorous churning produced a pool in its wash astern. And our fine pilot put us down into this 50-yard stretch of water. We finished up with the propeller just about hitting the stern of the ship, and with about five minutes' petrol left.

That is just one example. In one terrible experience, the ship, owing to a mistake, nearly struck an iceberg because the radius of curvature of its track was wrong. It glided down the side of the iceberg, two metres away from the face. If it had scraped the face, we would have had 150 tons of ice fall on the ship and wreck it. So there was plenty happening in those days.



At Larsemann Hills in January 1998. Phillip Law and his team were the first to explore this area in February 1958.

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### The benefits of accumulating interests

*Of your main recreations, you have spoken already about your skiing interests. I believe that at 87 years old you still play tennis. And your ability to play the piano and the piano accordion became a leadership skill. Who taught you music?*

The Law family had a tradition of teaching themselves music. I had an elder brother who taught himself to play about five different instruments and was a professional musician as well as a schoolteacher for many years. I earned my way through university playing saxophone. My main instrument was clarinet, but I taught myself piano. Because I didn't own a piano, I then bought a piano accordion, which I used on every voyage to provide music for the blokes, with singalong sessions.



With Philip Martyn (left) and Ray Martin (centre) at the Royal South Yarra Lawn Tennis Club, 1995.

*I know you are still active in the affairs of the Academy of Science and the Academy of Technological Sciences and Engineering, and you wrote your autobiographies after your so-called retirement from the VIC. Do you have any advice or encouragement for young people of today, and perhaps even for people facing early retirement?*

Well, it is a question of developing interests. Young people are always told they should develop interests which will sustain them through their lives. One of the problems is that if you are really curious and inquisitive and mentally active you accumulate more interests than you can handle. These commitments grow bigger as you get older, and by the time you retire you find yourself just as busy as you were before, trying to attend to all these things you have got yourself involved in.

I think that is very healthy: instead of lying down with the vegetables, just watching TV and reading books, you are vigorously rushing round trying to catch up with your programs. That is certainly my case. I still have a number of things I want to achieve before I die, and time is crowding in on me a bit.

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### The courage to take the break

Also, I really would like to mention the phenomenal luck I have had through my life – not only luck in surviving all the incidents that are written up in my *Lucky* book but luck in circumstance, being at the right place at the right time. I've often said that if I had got into Antarctic work 10 years earlier or 10 years later I'd have died of frustration without achieving anything. If I were in education at the moment I would be dreadfully frustrated. I just happened to be in the VIC when the wave was breaking that picked me up and hurled me ashore. It was great and exciting and fascinating, but I was damn lucky to be right there just when it was happening.

And I was lucky in the woman I married, who broadened and enriched my life in so many ways. She put up with all those years of my absence because she was able to do her own thing – painting – and be quite content alone. And yet, when I was here, she was able to support me in every possible way, being an ornamental Vice-President's wife in every respect.

Luck is very important. If you are unlucky, often you don't get to first base. I have seen bad luck just slash its way through a whole family. Many people strive valiantly and don't get anywhere because they don't get the breaks. On



Nel Law was a secondary school teacher, a professional artist and a writer. She was the first Australian woman to visit

the other hand, if you are lucky you have got to be able to put the input into it which makes use of the breaks as they come. First you have got to have the courage to take the break. Some people look at the chance and shear off because they are not game to make the jump.

For example, when I got my first job as chief scientist in the Antarctic Division, all my friends said, 'You're a bloody fool, Law, leaving a tenure position in the university to take on a job like this.' But I had the vision that this Antarctic thing was going to develop. I couldn't see any way that it could fall in a heap, and so I was quite happy to make the jump. Some people would say, 'Well, if you don't take these chances when they occur, you don't have the luck.' So it is a mixture of luck and the courage to jump, you might say. This is the advice I would give to kids: if you happen to have the luck, just make use of it.

*Antarctica and the first to land at Wilkes Land, Adelie Land, Oates Land and MacRobertson Land. Upon her return to Melbourne in 1961 she held an exhibition of her Antarctic paintings, which was opened by Lord Casey.*

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