Journal & Proceedings of the Royal Society of New South Wales, vol. 158, part 1, 2025, pp. 32–49. ISSN 0035-9173/25/01032-18

The UNSW Cadets: pioneers at the birth of a new university

Michael Barber AO

Emeritus Professor, Flinders University and the University of Western Australia
Email: mnjkbarb@yahoo.com.au

Abstract

The UNSW Cadets was an initiative of the University of New South Wales between 1958 and 1966. Its primary objective was to attract high-performing students, particularly in mathematics and physics, to the new university. This article describes the program's genesis, briefly describes the careers of some of the most successful Cadets, and assesses the scheme overall.

Introduction

In the late 1950s and early 1960s, the University of New South Wales (UNSW) was a very different institution from the research powerhouse it is today. Established in 1949 as the New South Wales University of Technology, it became the University of New South Wales in 1958 following the Murray Committee Report of 1957 and the establishment of schools of medicine and law, see, e.g. (O'Farrell 1999).

The new comprehensive university faced significant challenges compared to the established University of Sydney. Little research was conducted, and what was performed tended to be applied. Few staff had PhDs, so they could not supervise PhD students. By the end of 1959, only 49 PhDs had been awarded on predominantly applied topics. The situation was particularly dire in the Schools of Physics and Mathematics. In 1958, physics had only two staff members with PhDs (out of sixteen) and mathematics only one (and one with a DSc) out of eighteen.[1]

Under a dynamic but controversial vice-chancellor, Phillip Baxter[2] (later Sir Phillip), the University began to rebuild its staff and attract a broader range of students. In the decade from 1958 to 1968, the professoriate quadrupled from 21 to 80, with many of the new professors established researchers. Among the first new professors was Professor John Markus Blatt, the foundation professor of applied mathematics.

John Blatt (Franklin 2001) was born in Vienna in 1921 and fled to the US in 1938 with his family to escape the Nazis. He completed a baccalaureate in physics at the University of Cincinnati, followed by PhDs from Cornell and Princeton. In 1953, with the rise of McCarthy, in which John saw parallels with Europe in the 1930s, he left the US and accepted a position at the University of Sydney, moving to UNSW in 1958. Together with George Szekeres (Cowling et al 2019), the foundation professor of pure mathematics, recruited in 1963, they built a school of mathematics that would, in time, match, if not surpass, Sydney University's.

1 Data is from University Calendars, archived and available at https://legacy.handbook.unsw.edu.au/general/2016/SSAPO/OlderCalendars.html#top

2 *Encyclopaedia of Australian Science and Innovation* https://www.eoas.info/biogs/P000211b.htm; see also Angyal (1991).

Another challenge was attracting students, particularly the best. Derided as "Kenso Tech," UNSW had little penetration into many schools and suburbs from which the best students came. This was particularly acute in mathematics and physics.

UNSW Cadets was an initiative to improve this. The scheme's objectives were threefold: to raise the image of UNSW, to attract bright students who would not usually have thought of the university, and to help build the university's research and teaching staff. To this end, the Cadets were expected to complete an honours degree. They would then be employed as teaching fellows during which they would complete a PhD while teaching undergraduate classes (lectures, tutorials, laboratory sessions). The Cadets were bonded to this effect and were paid a living allowance of £400 to £550 pa on top of tuition fees. While called "cadets," the only selection criterion was academic merit. The difference from conventional academic scholarship schemes, was the (guaranteed) pathway to a PhD via a Teaching Fellowship.

The scheme appears to have commenced in the School of Mathematics, probably at Blatt's initiative, with the first two cadets enrolling in 1958. On 13 July 1959, the UNSW Council approved the formal Cadetship scheme to commence in 1960.[3] Initially restricted to Mathematics, the Council extended it to Physics and Commerce/Economics in 1960.[4] The scheme was discontinued on 11 October 1966, and no new Cadetships were offered after the 1966 intake.

The program does not appear to have ever been formally assessed, and no comprehensive list of Cadets exists. However, from material in the UNSW Archives and the memories of Cadets I could contact, I have found 25 Math Cadets, 16 Physics Cadets, and 5 in Economics/Commerce. Economics/Commerce made little use of the program. Of their five, two graduated with BAs, one with first-class honours in history! The following analysis is based on the forty-one Physics and Maths cadets listed in Appendix B.

The UNSW Cadets

So, who were these intrepid trailblazers prepared to take a risk on a new university? They were predominantly men; only seven were women (2 in physics, 5 in mathematics.) Only one was from outside NSW. All did exceptionally well in their final year at school, particularly in mathematics and physics. They could have gone to Sydney. UNSW was a conscious choice. They reflected the emerging Australia of the 1960s. Some were immigrants arriving in Australia as children, often with little English. Many were the first in their immediate family to attend university.

Not all succeeded at UNSW. Six graduated with a pass degree, and no record exists of graduation for three. The remaining thirty-two graduated with BSc (Hons) degrees, nine of whom were awarded University Medals — four in Physics and five in Mathematics.

Of the 32 Honours graduates, 23 are listed in University Calendars as Teaching Fellows for at least one year; fifteen completed PhDs at UNSW, five at overseas universities, and two completed MScs at UNSW, one

3 UNSW Council resolution, July 1959, UNSW Archives: file 00016438

4 UNSW Council resolution, May 1960, UNSW Archives: file 00016438

of whom later completed a PhD at another Australian university. One is known to have withdrawn and not completed a UNSW PhD. There are no records of postgraduate qualifications for the rest.

Unfortunately, I have discovered something about the subsequent careers of only twenty-three Cadets (10 in Maths, 13 in Physics).[5] Five were appointed as lecturers, senior lecturers or associate professors at UNSW at some stage. Jaan Oitmaa became a full professor at UNSW.[6] Nine (Thompson, van der Poorten, Billard, Hutchinson, McKenzie, Cahill, Barber, Hudson and Stacey (née Vale)) became full professors elsewhere. Ted Kraegen, John Grant and Jim Sinclair spent most of their careers in research institutes, reaching the equivalent of professorial appointments. Ted became a clinical professor at UNSW. Of the others, six had academic careers (without reaching professorial rank), and four had substantial careers outside academia. Three Cadets (Barber, Thompson and Hutchinson) were elected Fellows of the Australian Academy of Science, and two (Kraegen and Barber) became officers in the Order of Australia. Six are known to have died. The following are some of their stories.

The First Cadets

Colin Thompson[7] was recruited as a Cadet by the School of Mathematics before the formal scheme commenced with the 1960 intake. He attended Sydney Technical High School, placing 84th in the 1957 Leaving Certificate, winning both a Commonwealth Scholarship and a bursary to the then NSW University of Technology. He was not only the first in his family to attend university but also the first to complete high school. Wanting to do something practical, he opted for the bursary, enrolling in a Bachelor of Applied Science degree in 1958.

When the university became UNSW later in 1958, that degree was abolished, and he transferred to a BSc. Somehow, he came to the attention of the new professor of applied mathematics, John Blatt, who was looking for talented students. Blatt arranged for his bursary to be converted to a Cadetship with a living allowance and the promise of a Teaching Fellowship.

In 1962, Colin graduated with First-Class Honours and the first University Medal in Applied Mathematics. Taking up the Teaching Fellowship, he completed a PhD under Blatt's supervision on the theory of superconductivity (Thompson 1964).

After two years as a postdoc in the US, he returned to UNSW as a Queen Elizabeth II Fellow. From 1968 to 1972, Colin was again in the US before accepting the chair of mathematics at the University of Melbourne, the first cadet to become a full professor in Australia. In 1995, Colin was elected a Fellow of the Australian Academy of Science for his research in statistical mechanics, dynamical systems, and chaos.[8] He retired in 1999.

A second cadet, **Neville Smythe**, joined Colin in 1958. Neville attended Sydney Boys High and ranked 14th in the 1957 Leaving Certificate. Like Colin, Neville graduated

5 There are traces of some of the others in the literature and on the Web. Perhaps someone reading this account can add further details.

6 Promotion to full professor at UNSW was only introduced in 1992.

7 *Encyclopaedia of Australian Science and Innovation*, https://www.eoas.info/biogs/P003621b.htm

8 https://www.science.org.au/profile/colin-thompson

with First-Class Honours in 1962 and was awarded the University Medal in Pure Mathematics. He then became a Teaching Fellow but appears to have been given leave to attend Princeton for his PhD, returning to UNSW in 1965 as a lecturer.

He moved to the ANU in 1968 and taught there until his retirement. In the mid-1970s, he and a colleague, Martin Ward, became interested in using the newly released Apple Macintosh computers to teach mathematics. He and Ward developed ANUGraph, one of the first graphing packages for the Mac 128.

Following the establishment of the formal Cadetship scheme in 1959, the School of Mathematics awarded two cadetships for entry in 1960, including the first woman, **Patricia Cox (née Wadsworth)**, to be awarded a cadetship.[9] Both completed honours degrees and spent time as teaching fellows, but neither appears to have completed a higher degree.

The 1961 Cadets

Jaan Oitmaa was in the inaugural cohort of Physics Cadets who enrolled at UNSW in 1961. He had arrived in Australia from Estonia with his parents in 1949. He attended Liverpool Boys High, where he was dux. He achieved exemplary results in the 1960 Leaving Certificate: 6th in Maths 1, 13th in Physics, and 7th overall. In 1965, he graduated with First Class Honours in Physics and the University Medal and became a Teaching Fellow in the School of Physics. He completed a PhD in 1967 (Oitmaa 1967).

After postdocs at UC Irvine and the University of Alberta and eighteen months as a QE II Fellow at Monash, he returned to UNSW as a lecturer in 1972. From there, he rose steadily through the academic ranks, becoming a full professor in 1992 and serving as Head of the School of Physics from 1993 to 1999. He retired in 2003 but retains an honorary position.

Jaan's PhD thesis was on lattice dynamics, but his postdoc in Alberta introduced him to the statistical mechanics of phase transitions, which became the primary focus of his research. As a result, in the 1970s and early 1980s, when I was at UNSW, we collaborated, authoring five papers and jointly supervising PhD students.

Like Jaan Oitmaa, **Alf van der Poorten**[10] was an immigrant who arrived in Australia at the age of nine from Holland. He gained a place at Sydney Boys High School and completed the Leaving Certificate in 1960, ranking in the top three in the State. He originally intended to attend Sydney University, but after a year in Israel, he accepted a Cadetship and enrolled at UNSW in 1961.

In 1965, he graduated with fist honours and the University Medal in Pure Mathematics. Alf spent the next fourteen years at UNSW as a Teaching Fellow and then as an academic, rising from lecturer to associate professor. In 1979 he moved to Macquarie University as a professor of mathematics. He retired in 2002. Sadly, he died of lung cancer in 2010, aged 68.

Alf's PhD was in number theory (Van Der Poorten 1968), and while number theory remained the primary focus of his research, he also touched on many areas of pure mathematics. He also made significant

9 Mentioned in *A Brief History of the Department of Statistics, the University of New South Wales, 1948–1983*; https://www.unsw.edu.au/content/dam/pdfs/unsw-adobe-websites/science/maths/2022-01-a_brief_history_-_dept_of_statistics_unsw.pdf

10 *Encyclopaedia of Australian Science and Innovation*, https://www.eoas.info/biogs/P001450b.htm

contributions to administration, particularly at Macquarie and to the mathematics profession (Hunt 2013a). He was a gifted lecturer and tutor with "not only a natural feel for maths but also knowing where to pitch his explanations" as Dave Wheeler recalled.[11]

After completing the Leaving Certificate at North Sydney Boys High, **Edwards (Ted) Kraegen** was enticed to UNSW by a cadetship in the initial cohort of Physics cadets in 1961. However, the lure of the recently opened Round House proved too much, and he did not perform well and lost his cadetship at the end of first year.[12]

He recovered academically and graduated with a BSc (Hons) in 1965. He was the first UNSW honours graduate in biophysics, which was established when Paul George[13] was appointed a professor in 1964. Ted moved to the Garvan Institute of Medical Research while completing a PhD (Kraegen 1970) with George as his supervisor.

He remained at the Garvan for the rest of his career, becoming an NHMRC Senior Principal Research Fellow and, in 1990, head of the Garvan's Diabetes Research Group. Together with Garvan colleagues, Ted is recognised as the developer of an "artificial pancreas" (Kraegen et al 1977) that led to significant improvements in the monitoring of blood glucose levels in the management of diabetes.[14]

Since the Garvan Institute is affiliated with UNSW, Ted remained involved with the University, supervising research students and honours projects. From 1987 to 2006, he was a (clinical) associate professor and then a clinical professor in the School of Medicine.

In 2019, he was awarded an AO "for distinguished service to medicine and medical education in the areas of diabetes, obesity, and glucose metabolism research." Ted feels his remarkable story would have been unlikely without his Cadetship.[15]

The 1962 Physics Cadets

In 1962, two cadets, **Gilbert Vella** and **Paul Bryce**, were recruited from school, and two existing UNSW students, **John Grant** and **Geoffrey Gould**, were made cadets to replace Ted Kraegen and a second 1961 Physics cadet, who also lost his cadetship[16] again, presumably on academic grounds. All graduated with Honours degrees, took up Teaching Fellowships and completed PhDs.

This was the only occasion that cadetships were offered to existing UNSW students. A similar request by the School of Mathematics in 1964 was, after consultation with the then Vice-Chancellor, Rupert Myers, refused by the Dean of the Faculty of Science, who emphasised that "the most important role and value of the cadetship lies in the

11 Email to MNB, 14 September 2024.

12 Phone conversation with MNB, 5 September 2024.

13 *Encyclopaedia of Australian Science and Innovation*, https://www.eoas.info/biogs/P002010b.htm

14 https://www.nhmrc.gov.au/about-us/resources/impact-case-studies/improving-insulin-delivery

15 Email to MNB, 15 September 2024.

16 Like Ted, that cadet still graduated with honours but there is no evidence of him being appointed a teaching fellow or completing any higher degree at UNSW.

attraction of school pupils … and it would be unwise to dilute these functions."[17]

John Grant's family had moved to Miranda from Glen Innes in 1956 so he and his older brother could attend high school at De La Salle College in Cronulla. There, they were mentored by Brother Vincent Cotter, who encouraged them to attend UNSW rather than the University of Sydney. John heeded his advice and enrolled in the Common First Year to major in chemistry. He and his older brother[18] were the first in their immediate family to attend university. After completing the first year, during which he had a Commonwealth Scholarship, John decided to switch to physics and applied for and was awarded a University Cadetship in Physics.

When he taught and mentored John, Brother Vincent didn't have a university degree but later attended UNSW and graduated with a BSc in physics. In a delightful reversal of roles, John, then a Teaching Fellow, taught him in one of his laboratory classes. In 1999, in appreciation of Brother Vincent Cotter's teaching and guidance, John established the Brother Vincent Cotter Endowed Honours Award for Honour's Year physics students at UNSW.

After completing his PhD (Grant 1968), John became the first Cadet to spend their subsequent career overseas. Two years as a visiting scientist at the Aerospace Research Laboratories of the US Air Force in Dayton, Ohio, was followed by two years at the Philips National Lab in Eindhoven, The Netherlands. In 1972, he immigrated to the United States. Since then, he has worked as a contractor in materials-related laboratories for the US Air Force, the last thirty-five of which were through Air Force contracts with the University of Dayton Research Institute, where he was a Distinguished Research Scientist.

His contributions to surface science were recognised by the Albert Nerken Award of the American Vacuum Society (2000) and the IUVSTA Prize for Technology of the International Union of Vacuum Science and Technology in 2013. He retired in 2014 but remains active in surface science as a consultant and short-course instructor.

John and his wife live in Florida. Tragically, Hurricane Helene flooded their home in October 2024, destroying many of his records, including those pertaining to his Cadetship, which he credits with laying the foundations of his career. John's successful transition to the United States indicates that by 1970, UNSW graduates were already globally competitive with world-class skills.

The other three 1962 Physics cadets had careers in Australia. After his PhD (Gould 1970), **Geoff Gould** spent 2½ years in Chile as a postdoc at the Universidad de Chile in Santiago. Returning to Australia in 1972, he could not find a position in physics, so he switched to computing and developed a career in that field.[19]

Paul Bryce and Gilbert Vella had academic careers that involved some departure from pure physics. After his PhD (Bryce 1971), **Paul Bryce** moved to the School of Engineering at the University of Technology, Sydney (UTS), where he eventually became an associate professor. He published

17 Letter from Professor Bernard Ralph (Dean, Faculty of Science) to Professor G Bosson (School of Mathematics), 23 November 1964; UNSW Archives, Ref: 63/u120/16438.

18 John's brother, Robert Charles Grant, graduated from UNSW with a BSc (Hons) and PhD (in Chemistry).

19 Phone conversation with MNB, 5 September 2024.

extensively on renewable energy and electrification in development. He also advised various aid programs and served for several years as president of APACE (Appropriate Technology for Community and the Environment), a non-governmental aid agency.[20]

After his PhD (Vella 1971), **Gilbert Vella** switched to medical physics. He became a senior lecturer in the School of Bioscience at the University of Sydney, where he also developed a research interest in higher education.[21] In 2023, the Pope awarded Gilbert a *Croce pro Ecclesia et Pontifice* in recognition of his lay service, particularly his extensive work with the St Vincent de Paul Society (Rodrigues 2023).

The 1962 Maths Cohort

Only seven women appear among the Cadets. Nothing was done to increase that number, except in 1962, when a little affirmative action was applied. Lynne Billard, one of the 1962 Maths Cadets, tells the story (Mukhopadhyay 2017):

> In America, I once was speaking with a faculty person who told me that he had been one of the people who was selecting candidates for a cadetship. He told me how, one year, Professor Blatt wanted to select a woman. Blatt … was pushing this idea very hard. The faculty person telling me the story said he himself was opposed to the idea of including a woman. Eventually, although selection committee members did not want to change the policy of 3 cadetships going to 3 men, out of respect to Professor Blatt, such was his enormous stature, they added 3 cadetships for 3 women for that year. But they were not going to forgo the 3 men!
>
> This faculty person went on "And darn it if those women did not do better than the men!" He was flabbergasted when I said, "I know, I was one of them."

"Better than the men" is an understatement! The three women all obtained honours degrees and became Teaching Fellows. Two of the women, Billard and Reeves, completed PhDs. Of the men? One completed honours and became a Teaching Fellow but does not appear to have completed a PhD. A second graduated with a pass degree, and there is no record of the third graduating from UNSW.

Lynne Billard's career[22] is one of the most successful of all Cadets. She was the dux of her high school in Queensland and topped the state in mathematics. That performance overcame any bias against Queenslanders and made her the only non-NSW Cadet.

After completing her teaching fellowship and PhD (Billard 1968), Lynne held short-term appointments in the UK, the US, and Canada before joining Florida State University in 1975. In 1980, she was promoted to full professor — the first cadet to reach full professorial status — but later that year, she moved to the University of Georgia as professor and Head of the Department of Computer Science and Statistics.

Lynne is renowned for her research on the incubation period of AIDS which had a significant influence on public health policy and education. She was the third person to be president of the American Statistical

20 See http://tiempo.sei-international.org/portal/archive/issue3637/t3637a5.htm

21 https://www.researchgate.net/profile/Gilbert-Vella

22 *Encyclopaedia of Australian Science and Innovation*, https://www.eoas.info/biogs/P004173b.htm

Association and the International Biometric Society. Lynne remains active at the University of Georgia and frequently visits Australia. In 1999, she received an Alumni Award from UNSW. Recognising the role UNSW and the Cadetship had played in her career, in 2024, she pledged $2.5 million to fund scholarships for female students, with a focus on mathematics.[23]

Like Lynne, **Jane Reeves** left Australia for the UK after completing her PhD (Reeves 1970). She became a senior lecturer at Coventry University. **Susan Ahrens (née Lean)** also went to the UK and may have become involved in local politics.

The 1963 and 1964 Physics

The 1963 cohort of Physics Cadets included the first woman selected as a Physics cadet. Unfortunately, for some reason, she gave up the cadetship, graduating in 1968 with a pass degree.

Aside from her, the other Physics cadets selected in 1963 and 1964 performed well. All graduated with Honours degrees, two (Cahill and Sinclair) being awarded University Medals. All completed PhDs at UNSW except **David Heron** (a 1963 cadet), who "with only a chapter of his PhD thesis to complete, … abandoned academia and moved to Adelaide."[24] He developed a successful career in computing and communications, including work on the first computer network (SAENT) linking university campuses and on Jindalee, Australia's over-horizon radar system. (Heron and Rusbridge 2020). He died in 2010.[25]

Although a 1963 Physics cadet and University Medallist in Physics, **Reg Cahill** took up his Teaching Fellowship in the Department of Applied Mathematics. Under Blatt's leadership, Applied Mathematics in the 1960s and 1970s was essentially UNSW's theoretical physics department. It attracted those physics students who were inclined to study theoretical physics. Reg was the first Physics Cadet to make the change and completed a PhD (Cahill 1970) under the supervision of Ian Sloan.[26] After his PhD, Reg accepted a lectureship at Flinders University, where he rose through the academic ranks to become a professor. His early research was in nuclear physics, but later, he focused on special and general relativity. He died in 2021 or 2022.[27]

Reg's later career is marked by controversy. He worked extensively on the theoretical foundations and potential applications of Process Physics, a controversial alternative to the conventional approach (based on quantum mechanics and general relativity) to understanding the nature of reality. In particular, Process Physics challenges the conventional ideas of space and time, suggesting that these are emergent structures rather than being fundamental themselves (Cahill 2005; Hunt 2013b). While an attempt at combining physics, computation and philosophy, Process Physics remains a fringe theory in physics, with Reg's more specific

23 https://www.inside.unsw.edu.au/innovation-and-engagement/unsw-driving-progress-through-philanthropy

24 David Wheeler in email to MNB.

25 *The High Bulletin*, Vol 55, Nov 2010, 21–22, https://www.yumpu.com/en/document/read/38603910/the-high-bulletin-sydney-high-school-old-boys-union

26 *Encyclopaedia of Australian Science and Innovation*, https://www.eoas.info/biogs/P003707b.htm

27 Email from David Lewis to MNB, 4 November 2024.

predictions either refuted or unable to be replicated (Seaver 2016). He died in 2022.

A year after Cahill, **John Aarons** (a 1964 Physics cadet) also opted for a Teaching Fellowship in Applied Mathematics and completed a PhD (Aarons 1972) under Sloan's supervision. Little is known of his subsequent career, except that he died in January 2025 after many years of ill health and other problems.[28] The other 1964 Physics cadets had successful but different careers, one in Australia, the other in the UK.

After completing his PhD (McKenzie 1972), **David McKenzie** moved to the University of Sydney, where he became a professor of materials physics. There, he built a research group that significantly contributed to biomaterials, medical devices, and energy materials. He remains active as an emeritus professor and a member of the University of Sydney Nano Institute and the Charles Perkins Centre.

James (Jim) Sinclair was one of the few cadets whose parents were university-educated. His father was a research scientist at the Defence Standards Laboratory (DSL), the predecessor to the Defence Science & Technology Organisation (DSTO). While his mother never worked after her marriage, she had a degree from Adelaide and had worked as a personal assistant to Daisy Bates, the famous anthropologist who studied Aboriginal cultures.

Jim attended North Sydney Technical High School and gained first place in Physics and third place in Maths I in the 1963 Leaving Certificate. He did well at UNSW, graduating with first-class honours and the University Medal in Physics in 1968, followed by a PhD (Sinclair 1971).

Jim's immediate plans after UNSW involved a short-service RAAF commission to avoid being drafted and potentially sent to Vietnam. His birthday had been selected in the national ballot of 20-year-olds. However, he was judged short-sighted at the medical.

With the timing of this unexpected "freedom," opportunities were scarce. He finally found a postdoc in the UK, nominally with Sussex University, but working in the Theoretical Physics Division of the Atomic Energy Research Establishment (AERE) at Harwell. Apart from a six-month postdoc in the US, following his Sussex one, he would stay at Harwell for his career. Jim's career at AERE illustrates (and was directly affected by) significant changes in Britain's approach to government R&D institutions.

AERE was established in 1946 on an old RAF airfield in Oxfordshire to undertake fundamental and applied research in nuclear science and engineering. It supported the development of the UK's nuclear energy program. The first research reactors were commissioned in the late 1940s (Cottrell 1998). (AERE was essentially the UK equivalent of Australia's Lucas Heights establishment.)

The early days of the UK nuclear program involved significant computation in addition to experimental nuclear physics. Thus, AERE operated some of Britain's most powerful computers. Jim's PhD project involved computer modelling of the atomic structure of dislocations. While he continued in that field during his initial years at Harwell, he increasingly became involved in more diverse applications of computer simulation, from the simulation of transition metals

28 Ian Sloan in a phone conversation with MNB March 2025.

(Finnis and Sinclair 1984)[29] to probabilistic forecasting pertinent to nuclear waste storage (Sinclair and Hickford 1998).

When Jim joined AERE and until the 1990s, AERE's mission included basic research that broadly contributed to nuclear energy. It was a publicly-funded research agency similar to CSIRO. That changed dramatically in the 1990s. Under the Thatcher government's privatisation policies, many national research facilities and institutes were privatised. AERA and Jim did not escape these changes. Many of the technical staff of AERE, including Jim, moved into a company, AEA Technology.

AEA Technology was expected to conduct R&D for paying clients. One of its major contracts was with NIREX[30], and Jim became an internationally recognised expert on probabilistic safety assessments of nuclear waste disposal. However, NIREX's activities were severely curtailed when a controversial proposal to trial waste disposal at the old Sellafield nuclear reactor site was refused. AEA Technology sold the group of which Jim was a member to Serco Corporation, from which Jim retired in 2006. He and his wife continue to live in Harwell Village.

The 1963, 1964 and 1965 Maths Cadets

For some reason, the attrition of Maths cadets selected in the three intakes of 1963–65 was high. Of the nine recruited in the three years, two did not graduate, and three graduated with pass degrees. **John Hutchinson** and **Peter Wark** were the only two to complete postgraduate qualifications. The remaining two graduated with BSc (Hons) degrees, but no records show them completing postgraduate degrees. One of them is believed to have died in 2004.

The most successful (and one of the most successful of all Cadets) was **John Hutchinson** (a 1963 Cadet). John was awarded a cadetship after completing the Leaving Certificate in 1962 at Marist Brothers High School, Eastwood, ranking 12th in the state with first places in both mathematics honours level papers (Maths I and Maths II). He shared the BHP science medal for best performance in physics, chemistry and mathematics.

At UNSW, he opted to major in pure mathematics graduating with a BSc (Hons) and the University Medal, the first Maths Cadet since Thompson and Smythe to be awarded a University Medal. The university waived his bond conditions and allowed him to complete a PhD at Stanford. John recalls the waiving as a mixed blessing since no academic jobs were available on his return to Australia in 1972!

He finally found a temporary position as a research assistant in pure mathematics at the ANU. When an existing staff member resigned, John won the ensuing vacancy. He remained at the ANU, where he is now an emeritus professor. In 2002, he was elected a Fellow of the Australian Academy of Science for "fundamental contributions in an unusually broad array of mathematical areas, ranging from logic through analysis and geometry to computational methods

29 See also Ackland et al. (2009).

30 Nirex was set up in 1982 to examine the feasibility of geological disposal of nuclear wastes; see https://en.wikipedia.org/wiki/Nirex

(and) … fractals, which has impacted many applied areas."[31]

Peter Wark was in the same cohort as Hutchinson, but his graduation with honours was delayed a year by ill health. He then became a tutor while completing an MSc (Wark 1971) under George Szekeres's supervision. What he did immediately after UNSW is unknown, but from 2000 to 2005, he was a senior lecturer in the Department of Mathematics and Computing at the University of Southern Queensland.[32] He had switched to operations research, completing a PhD at the University of Queensland in 2005. He died in 2020.

The 1965 Physics Cadets

The 1965 cohort of Physics Cadets is interesting for several reasons (other than because I was a member!) It included the second woman to be a Physics Cadet and the first to graduate with a BSc (Hons). We had divergently different careers after UNSW. Here are our stories.

Mine **(Michael Barber's)** was a successful academic career.[33] I grew up in Tasmania, but we moved to Sydney in 1963 when my father, HN Barber[34], was appointed professor of botany at UNSW (Darlington 1972). Like John Grant, my mother was also university-educated and had worked at Sydney University until her marriage.

I completed the Leaving Certificate at Normanhurst Boys High School in 1964. While a Physics Cadet, I completed Honours in Applied Mathematics, graduating with a University Medal. I was then released from my bond to accept a CSIRO pre-doctoral fellowship at Cornell University for my PhD. My thesis concerned the statistical mechanics of phase transitions, which remained a major focus of my subsequent research career.

I returned to Australia in 1972, and after a QE II Fellowship at the ANU, I became a lecturer in the Department of Applied Mathematics at UNSW in 1974. There, I advanced to associate professor before moving back to the ANU as a professor of mathematics in 1984. At the ANU, I was head of the Department of Mathematics in the Faculty of Science, which at that time included two other former Cadets: John Hutchinson and Neville Smythe.

From 1994 to 2002, I was Pro-Vice-Chancellor (Research) at the University of Western Australia, followed by five years as a senior executive in CSIRO before finishing my career as Vice-Chancellor of Flinders from 2008 to 2014. I was the first Cadet to be elected a Fellow of the Australian Academy of Science and the only Cadet elected a Fellow of the Australian Academy of Technological Science and Engineering. In 2018, I was appointed an Officer of the Order of Australia (AO) for "distinguished service to higher education administration, and in mathematical physics, particularly statistical mechanics, as an academic and

31 https://www.science.org.au/profile/john-hutchinson; see also https://maths-people.anu.edu.au/~john/Assets/Research%20Publications.pdf

32 USQ staff lists are archived on the Wayback Machine of the Internet Archive, https://web.archive.org/web/20001009154819/http://www.usq.edu.au/handbook/2000/index.htm

33 *Encyclopaedia of Australian Science and Innovation*, https://www.eoas.info/biogs/P004595b.htm

34 *Encyclopaedia of Australian Science and Innovation*, https://www.eoas.info/biogs/P000038b.htm; see also Darlington (1972).

researcher, and through contributions to science policy reform."

I would have attended UNSW without the cadetship, but, as with many of the Cadets, that choice shaped my career in ways that would have been unlikely if I had chosen differently. In my case, a former Cadet, Colin Thompson, was particularly influential. In my Honours year, Colin taught a unit on the statistical mechanics of phase transitions. Colin had recently returned from the US to UNSW as a QE II Fellow. His course was at the cutting edge of current research, and I was fascinated: there were more questions than answers. As a result, I chose Cornell University for my subsequent graduate work, which led to the research for which I am most noted. While in the late 1960s, the theory of phase transitions was a major focus of research in theoretical physics overseas, there was little expertise or interest in Australia. Thus, I suspect my research career would have been very different if I had been an undergraduate anywhere else in Australia.

Valerie Rendle was the second woman to be a Physics Cadet and the only one to graduate with first-class honours. Arriving from the UK with her parents in 1962, she attended Hornsby Girls High School. In the 1964 Leaving Certificate, she placed 29th on the Order of Merit list, the second-highest girl. In Physics, she was 13th. (Wheeler was 26th while I was a lowly 57th and second last on the Maths I Hons list!)

After graduating with first-class honours in physics, she became a Teaching Fellow in the School of Physics in 1969. However, she became disillusioned with physics, partly because she was the lone woman, and after completing an MSc (Rendle 1974), she left for the finance industry. Later, she retrained as a psychologist and established a successful practice in Sydney. As she said[35] recently: "Once one has mastered physics, anything else is easy!" A sentiment that applies to several of the Cadets!

Like many Cadets, **Dave Wheeler** was the first in his family to attend university. He completed the 1964 Leaving Certificate at St Patrick's College, Sutherland, and only went to UNSW because of the cadetship. Graduating with first-class honours, he fulfilled his obligation as a teaching fellow while completing a PhD (Wheeler 1973).

He then specialised in teaching physics at the first-year university/senior high school level. From 1974 to 1988, Dave was, in his words, "a surfer by day, a Physics TAFE teacher by night." From 1989 to 1992, he developed, managed and taught the physics component of UNSW's Foundation Program (now renamed UNSW College). He spent the next decade in Asia, ultimately becoming Head of Physics at Mahanakorn University of Technology, a major engineering university in Bangkok.

He said his career goal was "to make physics fun again." However, riding a Wall of Death to explore its physics (Charoenkul et al 1999) doesn't sound fun!

The last cadets: the 1966 Maths Cadets

Only the School of Mathematics offered cadetships for entry in 1966.[36] The scheme was officially terminated in October 1966.

35 Phone conversation with MNB, 13 March 2024.

36 Surprisingly, there seems to be no record in UNSW Archives of the 1966 cohort. Thanks are due to Professor Jim Williams (BSc (Hons), 1970), who when I told him of my project, confirmed that there weren't any Cadets in his Physics Honours year but that his sister-in-law was one in Maths. His sister-in-law is Kaye Stacey (née Vale)!

This final cohort proved to be the most successful. All graduated with Honours, with two sharing the University Medal in pure mathematics. While the University exempted them from their bond obligations, all completed PhDs, one at UNSW and two overseas. Two went on to professorships in Australian universities, while the third, after a PhD, became a successful software entrepreneur. Here are their stories.

Malcolm Hudson completed the Leaving Certificate in 1965 at the Church of England Grammar School in North Sydney. He then accepted a Cadetship and graduated with first-class honours in pure mathematics. With the support of a CSIRO fellowship, he switched to statistics and completed a PhD in statistics at Stanford in 1974.

After an appointment as an associate professor at the University of California, Berkeley, he returned to Australia in 1977, becoming a statistics professor at Macquarie University, where he remains active as an emeritus professor. His research has ranged widely from statistical applications in health and medicine to algorithms for image reconstruction. His work in the latter field was recognised in 2014 by the *Institute of Electrical and Electronics Engineers' Marie Sklodowska-Curie Award*.

Kaye Stacey (née Vale) attended Heathcote High, where she says a mathematics teacher encouraged her to enter a mathematics competition at UNSW. At the prize-giving ceremony, she heard of the Cadetships.

She was awarded one on completing the Leaving Certificate in 1965 (ranking 7th in the State). Four years later, she graduated with first-class honours and shared the University Medal in Pure Mathematics with Geoffrey Lewis.

Freed of the cadetship bond, she entered Oxford, completing a DPhil in pure mathematics in 1973 and marrying Peter Stacey, another mathematician. They returned to Australia, but Kaye found few academic posts available in Melbourne (particularly for women), so she took a lectureship at Burwood State College (a teachers' college).

That move initiated an interest in mathematics education and how children learn mathematics, which became the focus of an influential career in teacher education and research. In 1992, she became the foundation professor of mathematics education in the Faculty of Education at Melbourne University. She retired in 2012 but continues her research and advocacy in mathematics education.[37] In July 2024, the International Commission of Mathematical Instruction recognised her contributions with the *Emma Castelnuovo Award for Excellence in the Practice of Mathematics Education*.

And then there is **Geoffrey Lewis** — mathematician, entrepreneur, and polymath! Geoffrey completed the Leaving Certificate at Sydney Boys High in 1965, ranking second in the State and first in mathematics. His Leaving Certificate performance was the best of any Cadet. At UNSW, he graduated with First Class Honours in Pure mathematics, sharing the University Medal with Kaye Vale. While, as with the other 1966 Cadets, the University waived his bond condition, Geoff stayed at UNSW and completed a PhD in pure mathematics (Lewis 1974).

He then embarked upon a remarkable career. After a stint teaching economics at the University of Sydney, he worked

37 See, e.g. Burkhardt et al. (2024).

for computer companies for several years before establishing his own company, Custom-Made Software Pty Ltd, in 1983. The company continues to operate successfully.

Outside business, he is a Fellow of the Royal Philatelic Society London with five large gold medals and the co-author of a book on the postal history of the Spanish Philippines (Petterson and Lewis 2000). His interests in history extend beyond stamps, with a book (Lewis 2006) on the French explorer La Pérouse. At 63, he took up powerlifting and represented Australia.[38]

Assessment and conclusion

So, how should we assess the Cadetship scheme? The scheme certainly brought high-achieving students to UNSW. Thirty-eight of the Maths and Physics cadets were selected on their results in the NSW Leaving Certificate; 27 ranked in the top 100 in the state in their year — six in the top 10. They came from some of the most prestigious schools in Sydney. Sydney Boys High supplied four, and Hornsby Girls High three. The scheme also gave opportunities to high-achieving students from public schools in newer suburbs, such as Liverpool and Heathcote. Considering the success of the 1962 cohort of Mathematics Cadets, it is disappointing that similar affirmative action to attract women wasn't taken in other years of the scheme. However, this would have been an idea ahead of its time.

The award of a cadetship certainly changed preferences. Several cadets commented that they planned to go to Sydney until they were offered a cadetship. Alf van der Poorten was quoted in the *Sydney Morning Herald*'s column[39] on the high achievers in the 1959 Leaving Certificate as planning to "study science at the University of Sydney and hopes to become an atomic scientist." Cahill planned to be an engineer before being awarded the Cadetship (Hunt 2013b).

The cadetship allowance was an attractive incentive. Jaan Oitmaa, one of the inaugural Physics Cadets, recalls: "We were not well off, so the living allowance was very attractive." Neville Smythe, Dave Wheeler and Kaye Stacey, at opposite ends of the period of the scheme, all said that without the Cadetship, they would have accepted (bonded) NSW Education Department Teaching Scholarships, which would have delayed if not diverted them from PhDs and academic careers.

While only two Cadets (Oitmaa and Kraegen) spent most of their careers at UNSW or an affiliated research institute, the University benefited from a ready pool of graduates to fill teaching fellowships when academic staff were in short supply.

The University was generous in releasing students from their bonds, allowing those wishing to pursue PhDs overseas to do so. Indeed, I am unaware of the bonds being enforced on any student, even those not progressing, for academic reasons.

On the other hand, little was done to help Cadets who fell by the wayside for one reason or another. In the 1960s, university was "sink or swim" without today's support services. This attrition was particularly severe in Mathematics, where eight (of 25) did not complete honours degrees, including some Cadets who had entered with

38 *The Senior*, 28 June 1981 https://www.thesenior.com.au/story/5417588/for-geoffrey-its-mind-over-matter/

39 *Sydney Morning Herald* Archives, January 5, 1960.

extremely high scores in their Leaving Certificates.

Surprisingly, the University did not use the Cadets to attract other students to UNSW. I recall no profiling or other publicity. The only student I know who was directly influenced by a Cadet to enrol at UNSW is Professor Jim Williams[40], who graduated with Honours in Physics in 1970. Jim had an illustrious career, becoming a Fellow of the Australian Academy of Science and Director of the Research School of Physical Sciences at the ANU. He was a year behind Dave Wheeler at St Patrick's College, Sutherland. In a history of the school, Jim wrote, "I looked up to David Wheeler, the dux[41] of the year ahead and followed him off to university (UNSW) ... I think I disappointed Br Mac when I chose to major in physics at university, but, by that stage, his influence had waned, and Dave Wheeler's had gained in importance." (Levins 2016).

Since he initiated the scheme, giving the last word to John Blatt seems appropriate. In a letter to the Dean of the Faculty of Science (Professor Bernard Ralph) in October 1963 (urging more cadetships for Mathematics), John wrote, "These superior students, in the long run, will contribute very greatly towards the reputation of this University for scholarship and research."

The rise of UNSW over the past sixty years is due to the efforts and success of many staff and students. The Cadets constitute a small sample of the students involved. They came from diverse backgrounds, took risks and seized opportunities. Not all succeeded but those that did both in and out of academia fulfilled John's prediction and helped the rise of UNSW.

Added in proof

Recently I have become aware of some additional documents that pertain to the initiation of the Cadetship scheme. While Blatt appears responsible for recruiting the first Cadet, Colin Thompson, there is considerable ambiguity around the initiator of the formal scheme. In his book on the development of Australian mathematics, *Counting Australia In*, Graeme Cohen (2006) records that Jim Douglas claimed, in an interview in 2003, that he initiated the scheme. Douglas was an associate professor of statistics at the time and is recognised for developing an honours course in statistics. I am unaware, however, of any other evidence supporting his claim. Douglas does not mention the scheme in his oral history[42] in the UNSW Archives. More credibly, the initiator may have been Geoffrey Bosson, as he claims in his oral history.[43] Bosson was Head of School and would have steered the scheme through the formal processes of the University. Whether the original seed of the idea was his or John Blatt's is lost in the mists of time.

Acknowledgements

I wish to thank Jaan Oitmaa, David Wheeler, Valerie Rendle, Colin Thompson, John Hutchinson, Lynne Billard, Ted Kraegen, Geoff Gould, Jim Sinclair, John Grant, Kaye Stacey and Geoffrey Lewis for their

40 *Encyclopaedia of Australian Science and Innovation*, https://www.eoas.info/biogs/P006591b.htm

41 To be technically correct, Wheeler topped the school in the Leaving Certificate but was not the formal dux. (Email from DW to MNB, 30 September 2024.)

42 University of New South Wales Archives, Reference 98A95/18

43 University of New South Wales Archives; Reference OH25

recollections and comments. Pleasingly, the project became an opportunity to renew old friendships and make new ones. I want to thank Robin Perry of UNSW Archives and Geoff Lewis for their assistance in searching the University's archives.

References

Aarons JC (1972) *Polarization phenomena in neutron-deuteron scattering*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/60919 (accessed 1 June 2025).

Ackland G, Sutton A and Vitek V (2009) Twenty five years of Finnis–Sinclair potentials. *Philosophical Magazine* 89(34–36): 3111–3116.

Angyal SJ (1991) John Philip Baxter 1905–1989. Available at: https://www.science.org.au/fellowship/fellows/biographical-memoirs/john-philip-baxter-1905-1989 (accessed 1 June 2025).

Billard L (1968) *Sequential tests for two-sided alternative hypotheses*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/62121 (accessed 1 June 2025).

Bryce P (1971) *Energy distributions of sputtered metal particles*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/61393 (accessed 1 June 2025).

Burkhardt H, Pead D and Stacey K (2024) *Learning and Teaching for Mathematical Literacy: Making Mathematics Useful for Everyone*. IMPACT: interweaving mathematics pedagogy and content for teaching. Abingdon, Oxon; New York, NY: Routledge, Taylor & Francis Group.

Cahill RT (1970) *Theoretical investigation of neutron-deuteron breakup.* UNSW Sydney. Available at: http://hdl.handle.net/1959.4/58642 (accessed 1 June 2025).

Cahill RT (2005) *Process Physics: From Information Theory to Quantum Space and Matter*. Contemporary fundamental physics. New York, NY: Nova Science Publ.

Charoenkul N, Wheeler D and Dejasvanong C (1999) The wall of death: Newtons, nerves, and nausea. *The Physics Teacher* 37(9): 533–535.

Cottrell A (1998) Harwell — the first 50 years. *Interdisciplinary Science Reviews* 23(2): 139–145.

Cowling MG, Hunt DC and Steele JD (2019) George Szekeres 1911–2005. *Historical Records of Australian Science* 30(1): 49–57.

Darlington CD (1972) Horace Newton Barber, 1914–1971. *Biographical Memoirs of Fellows of the Royal Society* 18: 21–33.

Finnis MW and Sinclair JE (1984) A simple empirical *N*-body potential for transition metals. *Philosophical Magazine A* 50(1): 45–55.

Franklin J (2001) Profile of a mathematician: John Blatt. *Parabola* 37(2): 15–17.

Gould GN (1970) *Atomic beam measurements of some sodium excitation functions*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/62512 (accessed 1 June 2025).

Grant JTP (1968) *Properties of vacuum mated surfaces of semiconductors*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/62514 (accessed 1 June 2025).

Heron D and Rusbridge C (2020) Network development: some achievements and possibilities (1978/79, unpublished). In: *Unsustainable Ideas*. Available at: https://unsustainableideas.wordpress.com/2020/11/26/network-development-some-achievements-and-possibilities-1978-79/ (accessed 1 June 2025).

Hunt D (2013) Life and Mathematics of Alfred Jacobus van der Poorten (1942–2010). In: Borwein JM, Shparlinski I, and Zudilin W (eds) *Number Theory and Related Fields*. Springer Proceedings in Mathematics & Statistics. New York, NY: Springer New York, pp. 1–53. Available at: https://link.springer.com/10.1007/978-1-4614-6642-0_1 (accessed 1 June 2025).

Hunt T (2013) Alternative cosmologies, part I: a conversation with Reg Cahill about process physics. *The Santa Barbara Independent*, 17 February. Available at: https://www.independent.com/2013/02/17/alternative-cosmologies-part-i/ (accessed 1 June 2025).

Kraegen EW (1970) *The blood glucose feedback control system*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/59596 (accessed 1 June 2025).

Kraegen EW, Campbell LV, Chia YO, et al. (1977) Control of Blood Glucose in Diabetics using an Artificial Pancreas. *Australian and New Zealand Journal of Medicine* 7(3): 280–286.

Levins DM (ed.) (2016) *The Hannigan Era: The Early Years of St Patrick's College, Sutherland, 1956–1961*. Cronulla, N.S.W.: Desmond Michael Levins.
Lewis G (1974) *Coherence for a closed functor*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/63475 (accessed 1 June 2025).
Lewis G (2006) *La Perouse: Why He Came to the Pacific*. Randwick, N.S.W.: Randwick & District Historical Society.
McKenzie DR (1972) *Ferroelectricity in thiourea*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/62136 (accessed 1 June 2025).
Mukhopadhyay N (2017) A Conversation with Lynne Billard. *Statistical Science* 32(1).
O'Farrell PJ (1999) *UNSW, a Portrait: The University of New South Wales, 1949–1999*. Sydney, Australia: UNSW Press.
Oitmaa J (1967) *The lattice theory of dielectric saturation in simple ionic solids*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/66230 (accessed 1 June 2025).
Petterson D and Lewis G (2000) *Postal History of the Spanish Philippines 1565–1898*.
Reeves JE (1970) *Bayesian estimation in the first-order auto-regressive series*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/65635 (accessed 1 June 2025).
Rendle VA (1974) *Biophysical aspects of excitation*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/59587 (accessed 1 June 2025).
Rodrigues M (2023) Varieties of service, but the same Lord. *The Catholic Weekly*, 13 December. Available at: https://catholicweekly.com.au/varieties-of-service-but-the-same-lord/.
Seaver JR (2016) Attempt to replicate Cahill's quantum gravity experiment to measure absolute velocity. *Progress in Physics* 12(4): 362–365.
Sinclair JE (1971) *Computer simulation of dislocations and cracks in crystals*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/69472 (accessed 1 June 2025).
Sinclair JE and Hickford GE (1998) Experience of safety assessment for the deep disposal of intermediate-level waste in the U.K. In: Stenhouse MJ and Kirko VI (eds) *Defence Nuclear Waste Disposal in Russia: International Perspective*. Dordrecht: Springer Netherlands, pp. 187–197. Available at: http://link.springer.com/10.1007/978-94-011-5112-2_17 (accessed 1 June 2025).
Thompson CJ (1964) *Investigations in the theory of superconductivity*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/65083 (accessed 1 June 2025).
Van Der Poorten AJ (1968) *Simultaneous algebraic approximation of functions*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/65150 (accessed 1 June 2025).
Vella GJ (1971) *The Pockels effect and electrical conductivity of ADP and KDP crystals above 20 degrees C*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/67334 (accessed 1 June 2025).
Wark P (1971) *Representations of commutative rings with two generators*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/65235 (accessed 1 June 2025).
Wheeler DJ (1973) *Recombination radiation from surface barriers in II-VI compounds*. UNSW Sydney. Available at: http://hdl.handle.net/1959.4/62414 (accessed 1 June 2025).

Appendix A — Sources

UNSW Archives has a file with two lists of "existing cadets," dated late 1962 and late 1965. The former lists appointment dates, while the latter lists graduation dates. These appear slightly inaccurate since they list the same date (1968) for the 1965 and 1966 physics cohorts. Actual graduation dates up to 1969 are available in Volume 2 of the 1970 Calendar. The 1970 graduations are available in the (archived) Order of Graduation. PhD theses are available (online) through the UNSW Library. Teaching Fellowship appointments were sourced from archived (online) copies of the University Calendars.

Unless otherwise referenced, biographical information was derived from interviews or correspondence with the Cadet involved.

Appendix B: The UNSW Cadets in Mathematics and Physics, 1958–1966

Appointed	Mathematics	Physics
1958	Colin John Thompson	
1958	Neville Smythe	
1960	Pamela Cox (née Wadsworth)	
1960	James Underwood	
1961	Robert John Farrell	David Thomas Edwards
1961	Edward Alan Mann	Edward William Kraegen
1961	Alfred Jacopus van der Poorten*	Jaan Oitmaa
1962	Susan Ahrens (née Lean)	Paul Bryce
1962	Lynne Billard	Geoffrey Nevile Gould
1962	Grahame King	John Thomas Peter Grant
1962	Michael Mullins	Gilbert John Vella
1962	Richard Telfer Mullins	
1962	Jane Elisabeth Reeves	
1963	John Edward Hutchinson	Reg Thomas Cahill*
1963	Gregor Lesnie	David Longridge Heron*
1963	Peter de Carteret Wark*	Helen Margaret Smith
1964	Michael John Butler	John Christopher Aarons*
1964	Terrence John Roberts	David Robert McKenzie
1964	John Alexander Woodward	James Everhard Sinclair
1965	G Moulds	Michael Newton Barber
1965	Howard Thomas McElnea	Valerie Ann Rendle
1965	Geoffrey Ian Whyte*	David Wheeler
1966	Harold Malcolm Hudson	
1966	Kaye Christine Stacey (née Vale)	
1966	Geoffrey Bernard Lewis	

* Known to be deceased