Chapter 6

An Essential Function

(L to R) Ernest Titterton, John Jenkin, Ian Mitchell & Lyndsay Earwaker.

Postgraduate Research Training

In simplistic terms, the original role of the ANU was to provide research training and experience at postgraduate and postdoctoral levels, so that suitable staff would be available for other Australian universities and research organisations in the foreseen period of post-war expansion. This function was certainly achieved with notable success throughout the ANU, and no less by the School. While it is true that in more recent times, the dominance of the ANU in both areas has gradually diminished with increased activity elsewhere, the current situation has arisen largely from the substantial contribution by the School and the ANU during the fifties and sixties.

Especially during the fifties, perhaps the majority of graduate students at the ANU was made up of what now would be called mature-age students. There were those whose academic progress had been interrupted by war-time service; for example, Hilary Morton in Particle Physics could, with justifiable pride, add DFC (Distinguished Flying Cross) to his name. Others were married, sometimes with family. The family allowances that were added to the ANU scholarship made graduate study possible for them, where previously it had not been.

A complete list of School PhD graduates is given in Appendix III. Where graduate students held scholarships jointly with sections of the School and elsewhere at the ANU, only the School section is indicated. Many students external to the School, who carried out all or a significant part of their thesis work within the School, are not included, though the numbers are likely to be considerable.[1] School sections have also had limited involvement with MSc programs.[2]

Physics Summer Schools

The first Summer School, organised by the Department of Theoretical Physics, was held in January 1988. The aim was to provide lecture courses not otherwise available for honours students and postgraduate students from around Australia. A series of courses relating to a central theme, Statistical Mechanics, was given over a three week period by lecturers from the ANU, other Australian Universities, as well as by prominent international leaders in the field.

The School proved successful and has been continued annually ever since. The enthusiastic support and attendance of established research workers has strengthened and broadened the value of the Schools. The format remains essentially unchanged with most of about 45 lectures over the three week period devoted to several intensive courses encompassing an overall theme, supported by the remainder that are related and introductory presentations. Consistently, it has been possible to attract eminent overseas contributors, including the Nobel Laureate Kenneth Wilson, to the variety of themes such as Cosmology: the Physics of the Universe, Modern Perspectives in Many Body Physics and Nonlinear Dynamics and Chaos.

Typically, there are about 100 participants of whom about half are honours or PhD students. Aside from the obvious educative and stimulating value of the Schools, there has been evident appreciation by the students that the Schools provide an insight into research, not provided by more formal courses.

Undergraduate Involvement

A major departure from the original concept of the ANU occurred in 1961 with the Government-directed amalgamation of the ANU and the Canberra University College. Though strongly opposed by Oliphant and others,[3] the union went ahead.

At the beginning, it meant little more than a series of name changes. The original research-oriented ANU became the Institute of Advanced Studies, while the sections of the College formed the foundation of the School of General Studies (later the Faculties from August 31 1980). Rapid expansion of the undergraduate component, including the formation of many science departments, in particular Physics, took place thereafter.

Early relations between the School and Physics of SGS were cordial, but rather distant. There was more social interaction at the younger staff level than direct, professional (and professorial) collaboration. Overtures for some teaching contributions from School staff were at first rebuffed, or more accurately perhaps, evaded. Whatever the reasons given were, the underlying belief that SGS staff were paid to teach and should do so influenced them. The initial research undertaken at SGS was unrelated to School research programs - justifiable perhaps in the name of the diversity that could be contemplated in those halcyon days of strong funding, but still surprising since Noel Dunbar, the founda-

tion professor, had been a nuclear physicist.
As the years have passed, the merit and desirability of teaching by staff of the School have shifted to and fro, sometimes solicited vigorously and at others, discouraged, if not opposed by the Faculties. When job prospects, especially those with tenure, for post-doctoral appointees at the Institute became less than promising, Institute staff sought lecturing opportunities to strengthen and broaden their experience and so enhance their prospects. However, as increased reliance on statistics evolved as the basis for the funding of undergraduate activities, extra-mural teaching contributions were seen as a potential, and probably real, liability. Latterly, as staffing numbers have decreased in Physics, the School contributions support the provision of a much broader range of courses than would otherwise be possible.

Other factors too have affected the relationship. Dunbar became Deputy Vice-Chancellor and was replaced by Stan Hinds, another nuclear physicist, in 1970. Thereafter, a collaboration with Nuclear Physics began, involving initially both Hinds and Allan Baxter, who was appointed as lecturer in 1970. Augmented by several graduate students and an ARGS Research Fellow at various times, the collaboration has continued successfully ever since. Hinds retired in 1992, but the Faculties involvement with Nuclear Physics was sustained with the joint School /Faculties appointment of Aidan Byrne. Two such appointments were made in 1992. The other was that of Hans Bachor in association with the Laser Physics Centre.

In recent years, School staff have lectured at the Faculties and sought more aggressively to supervise honours year projects as a means of attracting graduate students.[4] Probably, supervision of the first honours projects by School staff was undertaken in Nuclear Physics in 1977. Thereafter, other areas of the School quickly became involved. As always, records have not been kept, but Nuclear Physics alone has been involved with 20 students with about a third of them becoming graduate students in the department.

The seventh Summer School 1994

The establishment of the Faculty of Engineering and Information Technology stemmed largely from efforts by the Department of Systems Engineering. With the development of a joint ACT School of Engineering, Council approved in 1989 the establishment of a School of Engineering that was initially to be part of the Faculty of Science. The foundation staff of the so-called Interdisciplinary Project in Engineering - Darrell Williamson as Professor (1990), Iven Mareels as Reader (1991) and Michael Green and Robert Williamson as Senior Lecturer and Lecturer respectively, were joint appointments with Systems Engineering. The first students were enrolled in 1990. Other School sections, notably Electronic Materials Engineering, have provided strong support to the innovative engineering program.[4]

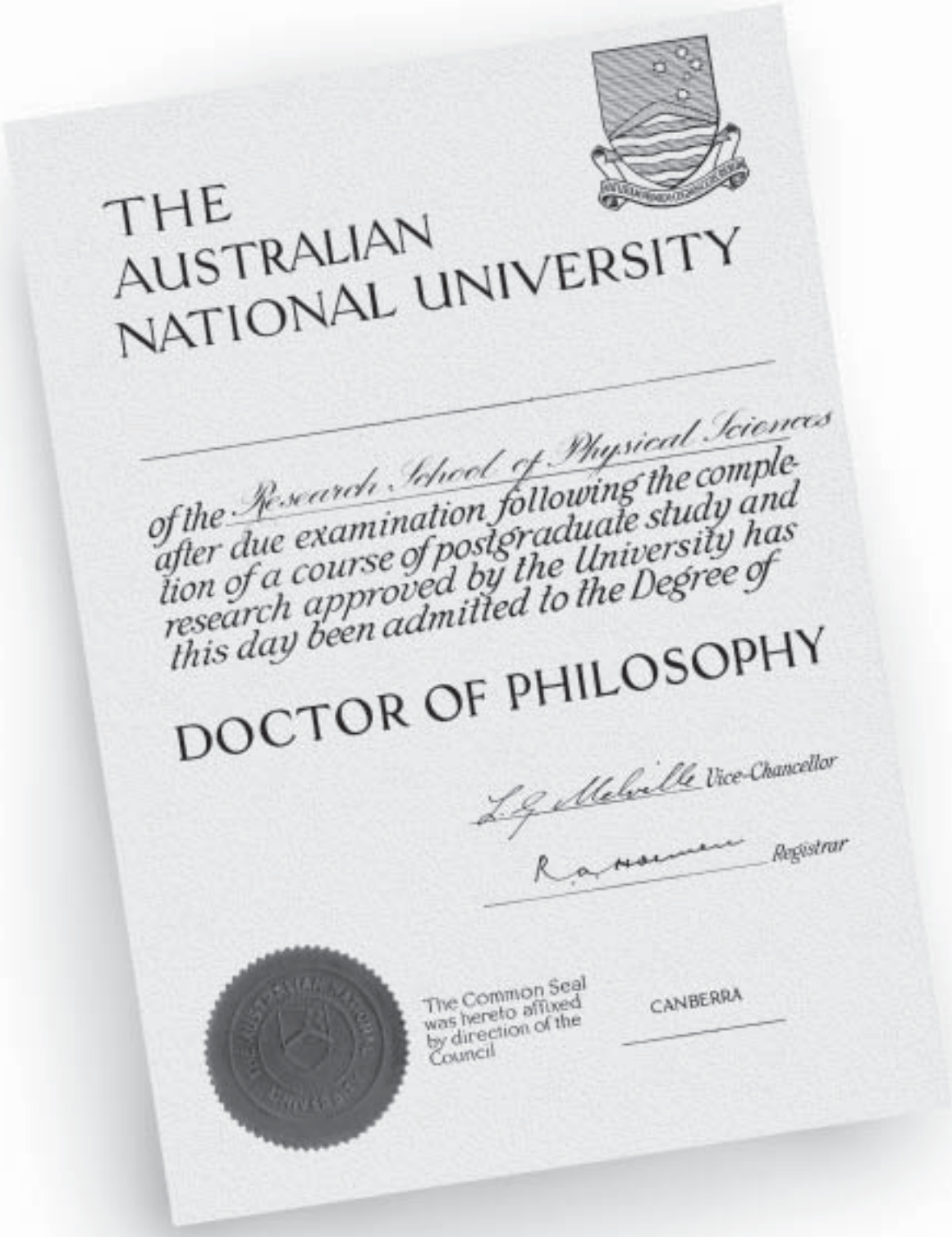
Despite the forcefully expressed fears of 1959 and 1960, it is plainly evident that the union of the original ANU and the College did not lead to the demise of the concept of a research university that the founding Advisory Committee, and those before them, had embraced so enthusiastically. Instead, the Institute of Advanced Studies has not only successfully maintained the original plan, but has derived much benefit from the amalgamation, as indeed have the Faculties also.

1 School records are not available. For Nuclear Physics, there have been 13 - 2 with the School of General Studies, 6 with Australian universities and 5 with overseas institutions.

2 Again, School records are incomplete. For Nuclear Physics, there have been 9 - 5 were associated with SGS (or the Faculties) and 4 with the University of Auckland.

3 Stewart Cockburn and David Ellyard, Oliphant - The Life and Times of Sir Mark Oliphant, Axiom Books, Adelaide (1981) p 179.

4 A complete list of School contributions to undergraduate teaching 1990-1994 is provided in the RSPhysSE submission to the Review Committee (1995), Appendix E.



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research approved by the University has
this day been admitted to the Degree of

DOCTOR OF PHILOSOPHY

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