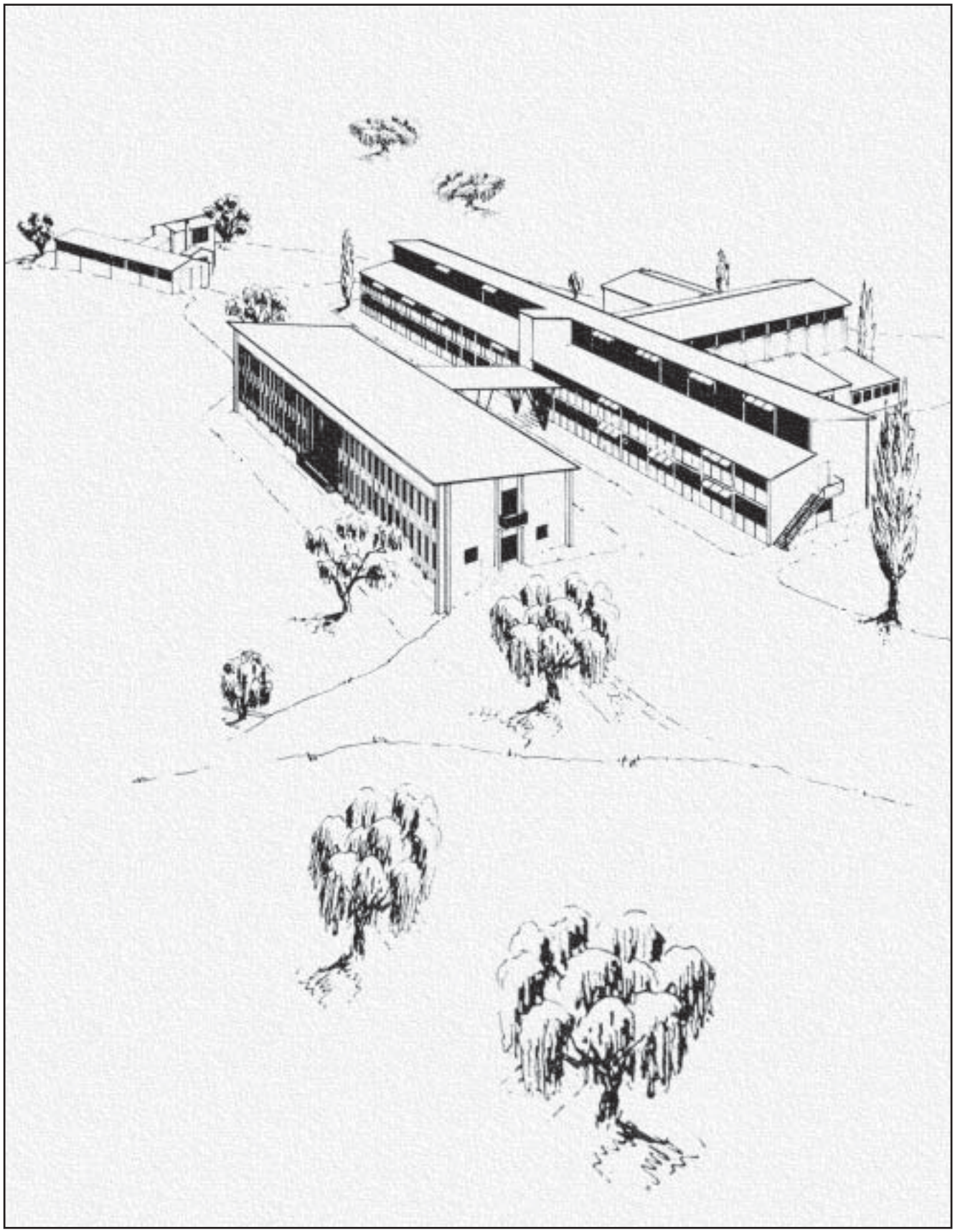
Chapter 4

New Fabric & Facades



The Next Two Decades 1957-1976

Shortages of both office and laboratory space became evident almost as soon as the "house warming" party for the Chifley Building was held on May 28 1954. Staff were scattered throughout the Cockcroft and Chifley Buildings. For example, Titterton had an office on the second floor of the Chifley, with the remainder of his department distributed downstairs, on the second floor of the Cockcroft, where a 600kV machine had been set up, or in the distant High Tension Laboratory. Though most Geophysics staff were located in their own buildings, Germaine Joplin had an office on the second floor of the Cockcroft. Many students improvised in corners or used their rooms at University House as offices. All in all, the dispersion thwarted any strong sense of departmental coherence.

Geophysics won approval for extended laboratory facilities in 1957. The Rock Mechanics Laboratory, identified as the building with "the wavy roof" for some years after in such an architecturally-starved environment, and workshops were completed in 1958 atop the rise overlooking the Research School of Physical Sciences. Additions to the workshop were made in 1964/5.

A building to house the Nuclear Physics EN tandem accelerator was started in 1959. Built largely by School Services, with labourer Paddy Lalor playing a major part — by declaration at least and sometimes by exertion, it was very much a no-frills structure. Titterton's legendary personal frugality was always applied with no less diligence to department, and later School, expenditure[1]. The fibro-clad building was completed in mid-1960 in good time for the delivery of the accelerator in September. In 1961, the tandem building was linked to the original HT laboratory, and a small extension added to the front of the latter to accommodate mechanical and electronics workshops, a drawing office and a luxury beyond all possible understanding of those outside Nuclear Physics — a toilet. Relief at last after years of inconvenience. One staff member and his student shared for an office what had been intended as a small store room for the electronics group. Supervision could scarcely have been closer!

◅ *The Rock Mechanics Laboratory of the Department of Geophysics (1958).*

▽ *Top right. An aerial view of most of the campus as of January 12 1960. The roundhouse can be seen on the eastern side of the accelerator wing (which runs roughly north-south). As with maps of Australia that omit Tasmania, Geophysics at the far right is not shown.*

▽ *The austere Nuclear Physics Office block (1963).*

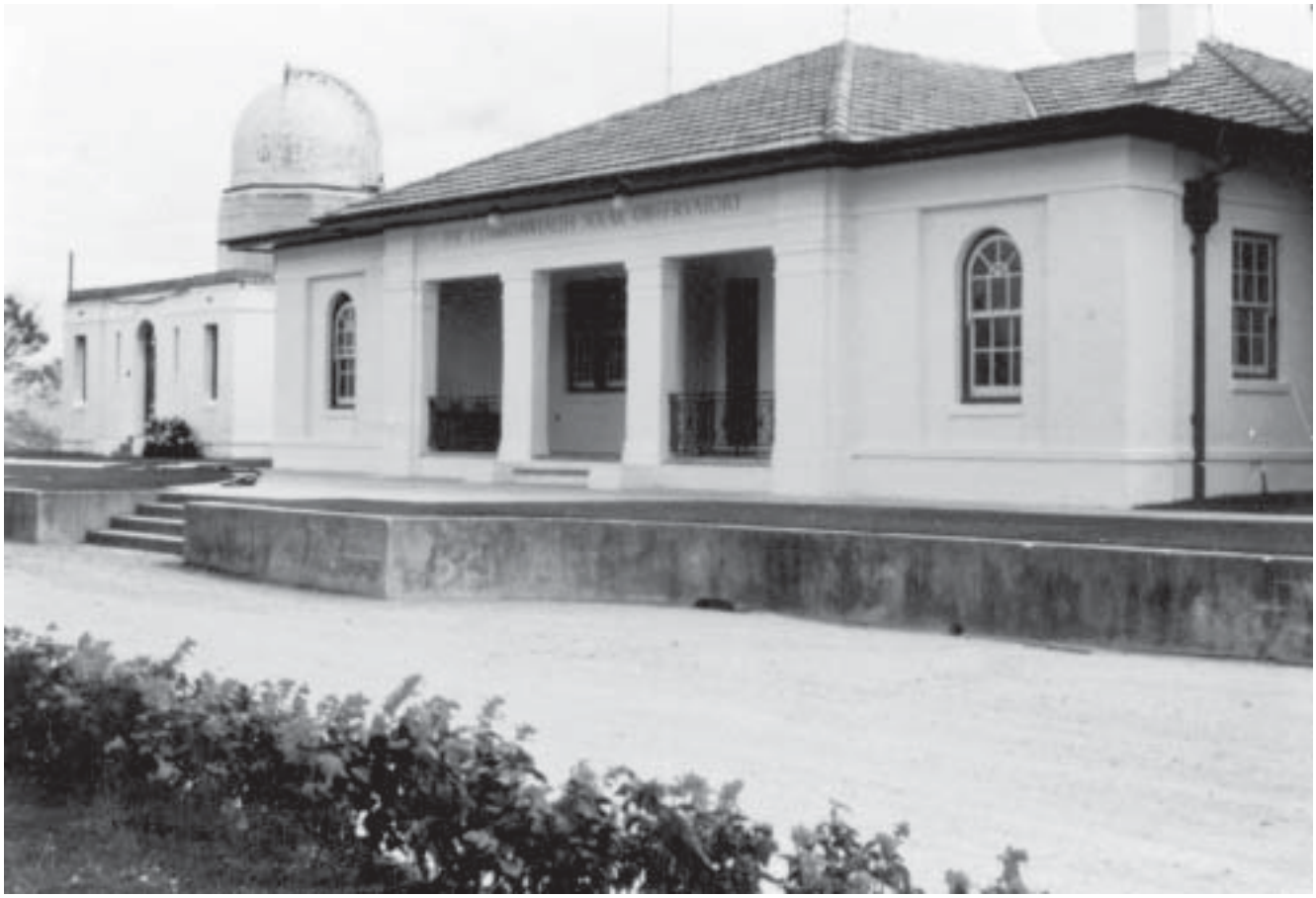
▻ *The link building and extensions to the High Tension Laboratory (1962).*

◅ *The Tandem Building as it nears completion. (October 1 1959)*

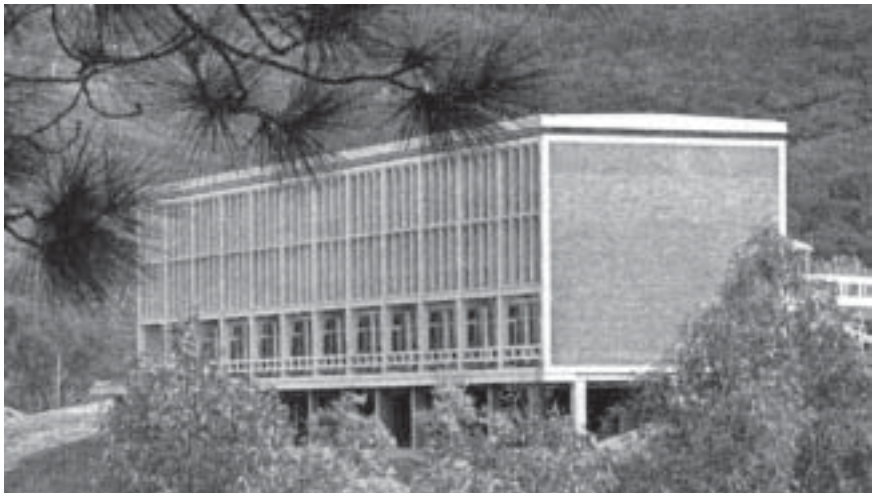
Returning to chronological order, the next change was brought about by unfortunate circumstances. A fire during the night of July 5/6 1960 destroyed a substantial part of the eastern end of the Cockcroft. Staff and students lost valuable records, thesis material and research data. The drawing office, along with almost all of the design drawings for the homopolar generator and other parts of the synchrotron, suffered severe fire and water damage, as did Joplin's extensive collections of mineral samples and papers. The 600 keV Cockcroft-Walton accelerator itself was mainly only water-damaged, however the control area, housing the console and research electronics, was completely gutted. The accelerator had to be scrapped. The cause of the fire was possibly due to the malfunction of a furnace in one of the Geochemistry laboratories, although investigations proved inconclusive. Refurbishment, completed in September 1961, ended more than a year of particularly severe over-crowding. By then, of course, new pressures for space had arisen. The Ion Diffusion Unit, transferred from Adelaide when Leonard Huxley was appointed Vice-Chancellor, became associated with the School, moving into the area previously occupied by Nuclear Physics in the Cockcroft.

The Mathematical Sciences Building was completed and occupied in 1963, much later than anticipated. It housed the School's Departments of Mathematics and Theoretical Physics and Statistics from the Research School of Social Sciences. A major branch of the Library, holding all of the physics and mathematics collection of Advanced Studies, was established on the ground floor of the building.

Off-campus, the Duffield building at Mount Stromlo was nearing completion in 1963 also, to augment the delightful, but hopelessly inadequate original Observatory buildings. Duffield was the first Director of the Commonwealth Solar Observatory. He had lobbied vigorously for its establishment in the years before 1924 when it came into being. Also in 1963, the observatory on Siding Spring Mountain, near Coonabarabran, was established. The site



The Commonwealth Solar Observatory at Mount Stromlo (February 19 1953).



The Mathematical Sciences Building (1963).

Top Left. Portion of the gutted control area of the 600 kV Cockcroft-Walton accelerator. The remains of one of the "kicksorters" and the control console provide stark evidence of the intensity of the fire (July 1960).

Top far left. The interior of the eastern end of the Cockcroft Building after the fire. (July 1960)

A view from Black Mountain, circa 1969. Two major changes during the decade, the Nuclear Physics office block and the Geophysics and Geochemistry office/laboratory building, are evident. So too is the lake that slowly filled after an extended period of drought.

The Duffield Building (1964).

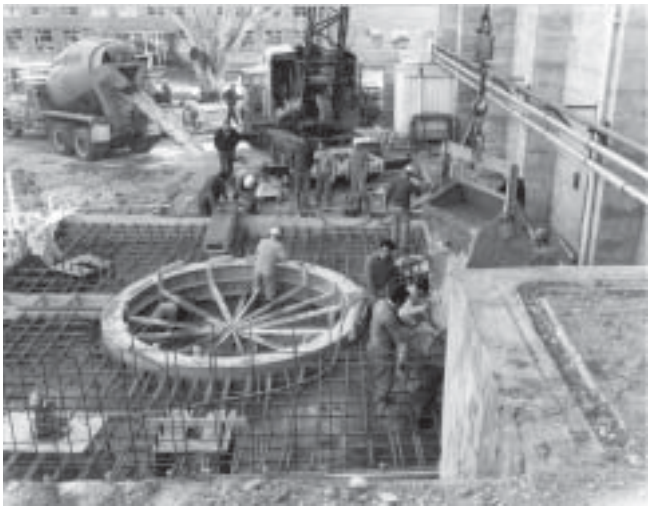
had been selected in 1962 for a field station after several years of the testing of various possible locations. A 40" reflector telescope came into full use in 1964.

In November 1963, the office-laboratory block for Nuclear Physics became available for occupation. It was located adjacent to the tandem building, but on the loosely-compacted fill that had pushed Sullivan's Creek over toward the future lake bed. A pile-driver was in action for many weeks driving more than thirty support columns into the bed-rock many metres below the surface, before the foundations were poured. The contractors operating the plant were somewhat disappointed to learn that only a modest two-story building was planned rather than a towering skyscraper that they had imagined. Though indeed modest and certainly never nominated for any architectural award, it meant that Nuclear Physics finally had offices and a tea-room nearby to its experimental facilities, serving to consolidate the department though tending to isolate it from the rest of the School[2]. A second section was added in 1967.

Even with Theoretical Physics and Nuclear Physics accommodated separately from the Cockcroft/Chifley complex, the need for additional space remained. The western end of the Cockcroft Building was extended during 1964 and 1965 to provide additional workshop and stores sections and an improved amenities area, later named the Cornick Room. Hindered by insufficient funding, the project was undertaken in two stages. First the shell was completed, then the internal fitting out done the following year. Significantly, so far as later events were concerned, Geophysics added an office/laboratory building adjacent to the Rock Mechanics Laboratory in 1969. This allowed the Department to vacate the original buildings at the end of what had become a peninsula and to be physically removed from the School. Demolition of the old Geophysics buildings was seriously considered then and later. Fortunately, the new Department of Applied Mathematics recognised their charm — and perhaps their separation, and moved in when the group was established in 1971. Thereafter, the Department has fought successfully for the preservation of the buildings with a zeal worthy of the National Heritage Trust. Also in 1969, the round house was renovated and fitted out as a laboratory for Engineering Physics.

The next major venture was restrained less by money then by Titterton's relentless, but commend-

June 17 1971



June 26 1971

August 5 1971 *September 6 1971*

The tower, from a hole in the ground to the assembly of the support structure for the pressure vessel (tank).

November 30 1971

April 5 1972

May 9 1972

able quest for economy. The Department of Nuclear Physics was awarded a grant of $2.2M in 1969 by The Tertiary Education Commission to upgrade accelerator facilities. With that grant, Titterton managed to purchase the 14UD accelerator — then the highest voltage electrostatic accelerator contemplated by a commercial manufacturer and a 26 MeV negative ion cyclotron injector for the EN tandem, with a sufficient balance left over to cover the building costs of the tower to house the 14UD and the associated target area. He drove hard bargains with all parties concerned, though he was aided during the latter part of the operation by the substantial (and unwise) revaluations of the Australian dollar by the new Whitlam Government. So much so that the final major expenditure of the venture, the purchase of the Enge magnetic spectrometer that proved to be a remarkably successful research tool, was funded entirely from currency profits.

July 19 1972

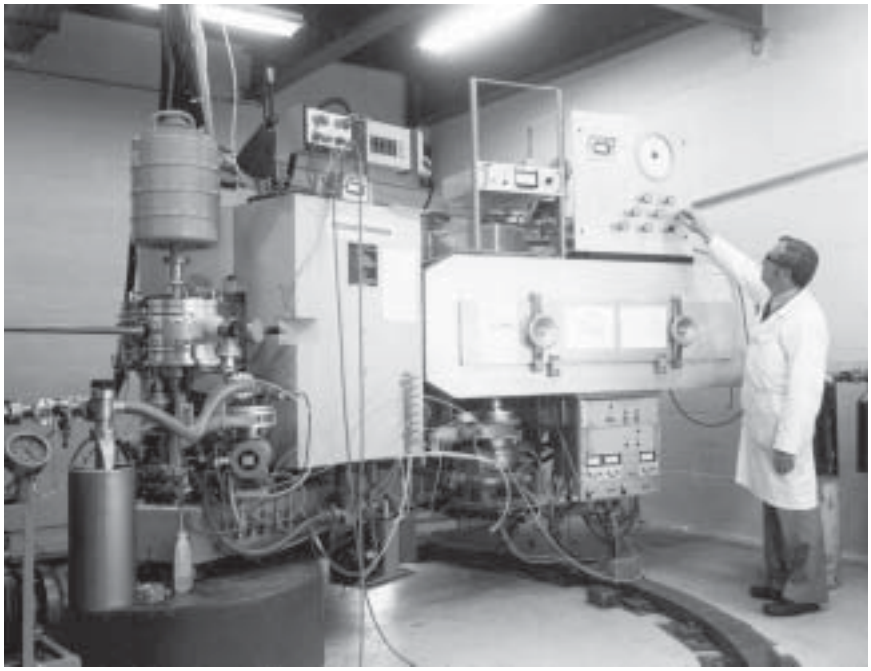
Demolition of the HT laboratory began in December 1970. By April 1972, the pressure vessel was in place so that the tower could then be built up around it.

November 21 1972

Fortunately, there was only one accident during the potentially hazardous operations involving assembly of the pressure vessel and subsequent construction of the tower. That occurred during the removal of internal scaffolding when the tower was virtually complete. A portion of the scaffolding collapsed and two riggers fell some distance with it. They suffered only minor injuries, which was just as well since the ambulance summoned got lost on the campus. However, it did not join the apocryphal fire engine that entered the campus some years before during a traffic survey, but failed to leave again according to the survey records. The ambulance arrived only some ten minutes late.

From tank to tower (1971-1972).

With the tower complete, assembly of the accelerator could go ahead, while the target area and the link bridging it to the original tandem building were being built. The first components for the 14UD arrived in June 1972, thereafter good progress was made enabling the first voltage tests in February the following year. Not only did Titterton get value for money, but he pushed the builders, Civil & Civic, to stay closely to schedule — a no less remarkable achievement in the



◅ *The Enge split-pole spectrometer with Gerald Clarkson pretending to operate the detector gas system. In the rich language of astronomers, the spectrometer, fitted with detection instrumentation designed and built in the School, would rate as "one of the world's classic scientific instruments". It first operated on October 13 1976.*

light of earlier construction projects. One essential item did fall behind schedule. The lift, predictably the cheapest and therefore the slowest model available, was not installed until much of the assembly of the accelerator had been completed. Technicians carried many of the components, some quite heavy, up as many as 206 steps. What was done with gusto and macho virility at 8 am became much more dutiful plodding by the end of each day.

A small extension, the so-called Enge-hüs, was added in 1975 to house the magnetic spectrometer. Location of the 20 ton spectrometer was by no means straightforward. The 14UD target area was to be serviced by as many as seven beam lines. The relative merits of each line, mainly from the viewpoint of beam optics and access, were considered. Only one line, number 5, was eliminated in a preliminary evaluation allowing the first major piece of experimental equipment, a 51 cm scattering chamber, to be assembled on that line. Thereafter, it became clear that none of the other lines could provide adequate access consistent with the required beam optics. Line 5 was the only one where the problems could be solved conveniently with a longer beam line directed into an extension. Philosophically but efficiently, the existing beam line and equipment were transferred to line 6.

A building for Solid State Physics, the Computer Centre and a 230-seat theatre was finally available for occupation in 1976 after delays due to "conditions in the building industry and inclement weather". Later named the Leonard Huxley Building in 1987, its erection had been opposed by JCSMR because views of the distant Brindabellas and the lake would be blocked. In fact, virtually all the offices in the John Curtin were located in a way seemingly designed to avoid the view. The building went ahead.

The Computer Centre had remained in the Cockcroft Building after being established as a separate reporting unit in 1967. The heavily overloaded IBM360/50 was supplemented in May 1972 with a Univac 1108 that was installed in the basement of the R.G. Menzies Library. Thus the programming and operations staff were inconveniently separated from the academic staff at Research School of Physical Sciences until the Huxley Building became available.

The Final Decade

Thereafter, there was a long hiatus in building activity, imposed largely by Commonwealth Government funding policies. Finally though, the Director, John Carver, managed to initiate the building of a link between the Cockcroft and Oliphant Buildings[3]. Such a link had been envisioned for several decades - certainly Titterton had proposed it while Director and it may well have been mooted before then. Extensive refurbishment of the Oliphant Building was also undertaken, in particular a more imposing entrance to the School was devised on the southern side in place of the previously less than attractive wall of windows. The ground floor amenities area provided a focus previously lacking in the School.

In 1992, Nuclear Physics negotiated an agreement with the SERC in the UK for the transfer to the

The completed John Carver Building.

ANU of a super-conducting linac, then at Daresbury, in exchange for access rights by UK research groups. The formal agreement was signed by Carver on behalf of the ANU in September that year. The ground floor of the accelerator wing was refurbished to accommodate the linac and the extensive associated beam transport lines. A ceiling, one metre thick, was required for adequate radiation shielding if daily use was to be made of the upper levels. Since the slab was ideal as a stable base for laser physics laboratories, the original plan was to provide two levels as a first stage, with later completion of a third level. The School paid for the first stage from reserves, created at least in part by sales of Nuclear Physics accelerators (the EN tandem and the cyclotron injector) years before. Attracted by the cost savings possible if the builders stayed on site and continued directly with the second stage, such an option, with the addition of yet one more level, was chosen. The extra floor required raising the roof and the budget deficit! The ground floor became available to Nuclear Physics in April 1993; the remainder was completed the following year. At an opening ceremony on June 9 1994, attended by Senator Peter Cook, the accelerator wing was named the John Carver Building.

The raising of the roof during refurbishment of the accelerator wing.

Carver had retired in 1992. His legacy to the in-

coming Director, Erich Weigold, was a splendid School, extended and refitted to ameliorate its factory-like grimness of the past — and hefty mortgage payments.

Laboratory facilities for Weigold were provided in the old pit area. The concrete stanchions that had supported the 136" magnet were removed surprisingly quickly with a jack hammer. Now, instead of the hoped for GeV protons, electrons with energies some million times lower are used for experimental measurements.

1. Titterton was not alone in his efforts to cut operating costs. In 1964, the School Committee (as Faculty Board was then known) became concerned at the rapidly increasing costs of Xerography, telephones and airmail. A memo was sent to all staff in Nuclear Physics urging responsible use of telephones and airmail and noting that:

"The School Committee has decided that Heads of Departments must sign all requisitions for Xerography.

To minimise this chore, the rule will be that no copying of current papers or publications will be authorised. Staff should request a reprint from the authors concerned - special cards exist for this - this costs only 5d as compared to 9d per page (for Xerography)."

Quaint and amusing perhaps, but the Canberra Times of September 7 1996 reported that the Faculty of Law had decided to limit interstate use of telephones and fax machines to the Dean's Office and that "staff photocopying will be individually monitored". Plus ça change, plus c'est la même chose!

2 One evening, Robert Shamu, a Research Fellow in Nuclear Physics, rang the bell to gain entry into the Chifley Building that housed the IBM 1620. A tall, white-haired gentleman opened the door with the question "who are you?" Never having seen Oliphant before, he responded "Shamu and who are you?"

3 The change from the Chifley Building to the Oliphant Building occurred in 1970, when the undergraduate library was named the J.B. Chifley Library.

A view across the roof of the round house toward the refurbished accelerator wing and Black Mountain (1995)