History of the Department of Physics at UWA

Issue No. 12: "The New (Current) Physics Building"

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When Professor Charles John Birkett-Clews took up his position as the second Professor of Physics in 1952, he stated in his Inaugural Lecture that it was his intention to develop the research, and hence postgraduate, activities of the Department. He said this after acknowledging that the Department had already achieved a well-deserved reputation for its undergraduate degree courses and some research was already being carried out. At that time, Physics was still housed in the mirror-imaged Physics/Chemistry Building first occupied in 1935 (see Issues 3 & 4), which contained only about four moderately-sized rooms in the Physics section that could be devoted to research, apart from some additional space in the basement (which already housed the Department's Workshop and an elaborate photographic Dark Room).

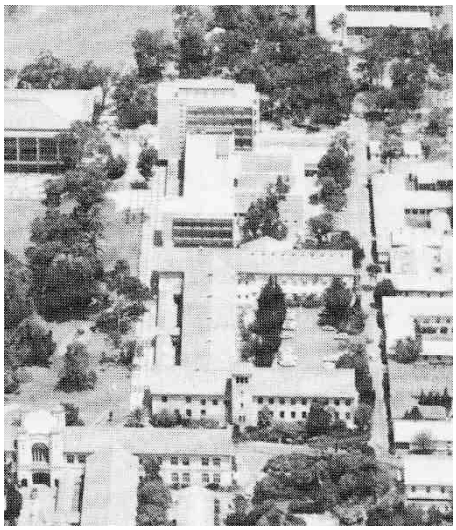
During the period from 1952 to 1962, enrolments in the Faculty of Science rose from 381 to 724 (numbers specific to Physics are not readily available). Clearly, with this nearly doubling of enrolments, and an increasing proportion of postgraduate students, there was a growing need for a separate new building for Physics and Professor Clews, together with the Laboratory Manager, Mr D.W. Everson, devoted many years to planning just such a building. The new building that eventuated is that which is still occupied by Physics today (2009).

The decision to construct a new building for Physics was not taken lightly or speedily. A new file (No. 268), titled "Physics: Proposed New First Year Laboratory and New Building" (now held in UWA Archives) was created in July 1955 and it shows the torrid gestation of the plans. Over the next four and one half years there was voluminous correspondence setting out the desperate need for more space for the growing Department and the range of temporary alternatives that were being offered. These alternatives included building a new Workshop in the car park or building a new 1st Year Laboratory on the site already allocated for a future new building, which would allow research to be carried out in the space thus released in the old building. Finally, by December 1958 there was a Senate decision that Mr Marshall Clifton and the University's Principal Architect would jointly prepare a design for a new building, i.e. the design would not be put out for competition. By December 1959 a large report on the proposed Physics building had been submitted, including a plan. The final decision was to build a first stage of this plan which was effectively the current (2009) building but with the 6-story block only one half of its current length and without the current west wing and central components, which will be discussed in a future Issue. Incidentally, by September 1982, the original file had grown to become seven thick files, Nos. 268 Pts 1 to 7.

The New Physics building had a number of architectural features that departed dramatically from those used on previous buildings. Firstly it was to be 6-stories high (7 with basement) which was then, and still is now, much higher than any other building on campus. Also it was not to be faced with the traditional limestone blocks, which would presumably have been excessively expensive and non-functional for such a tall building. In addition it was to have a flat roof, breaking away from the traditional red terracotta "Stephenson" roofs that had become a trademark for campus buildings. Perhaps this was because it was thought unlikely that anyone would see the roof of such a high building or else there was some idea of the

space being used later for astronomical research. As it turned out, the roof was plagued with leaks for nearly three decades and only recently has a small telescope been mounted on it.

UWA Campus. Aerial view from north, 1963.
Reid Library in centre of picture.



Enlargement of the New Physics and former Physics/Chemistry buildings.

In the old 1963 aerial view of the campus shown here (UWA Archive Photo UWAA 5658P), the New Physics building can be seen directly to the right of the Reid Library which is central in the picture. Also shown is an enlargement of the area containing the New Physics and the adjacent former Physics/Chemistry buildings. The shorter-than-current length of this first stage of the building is obvious although the fact that the basement containing the Physics Workshop was full length right from the start is less obvious. It is also interesting to note the cluster of old native trees which graced the southern side of the building from 1962 until about 1971, when most were removed during the building of the Department of Mathematics, the Weatherburn Lecture Theatre and the Mathematics and Physical Sciences Library.

View from top of Winthrop Hall Tower showing the impressive new Physics Building,

Photo taken in February 1963 whilst the Reid Library was still under construction. (Archive Photo 546P)

To the architect's credit, a deliberate attempt was made to integrate this new building with its neighbour. To achieve this, the colonnade that swept along the front of the former Physics/Chemistry building was extended, albeit with different style and materials, across to, and along the front of, the new building. The two pictures of the colonnade shown here were taken in 2009. The slabbed walkway beside the colonnade is known as the Gillett Promenade.

Colonnade seen from new Physics Building through to former Physics/Chemistry Building

View of New Physics Building with former Physics/Chemistry in the distance.

The new building consisted of two sections. One was a three-story section (four with basement), running north-south, and this was connected to the lower levels of a six-story section that ran east-west, as can be seen in the photograph taken in 2005 (Photo credits 2005, 2009: J.L. Robins). The three-story wing was primarily for undergraduate teaching. It housed two major lecture theatres each with seating for nearly 200 students, which even today service large classes from all faculties. These theatres, one above the other, are entered from the colonnade through an impressive, tiled-floor entrance hall (the Atrium), the centre-piece of which is a striking bronze statue "Apoxyomenus", gifted to the Department by the University of Rome (see Issue 13). There are extensive lecture-demonstration preparation facilities behind these theatres, which, together with the related unique lecture bench construction, will be reported on separately. There was also a Lecture Room, with seating for about 45 students, a number of tutorial rooms and, of course, the undergraduate Teaching Laboratories for 1st, 2nd and 3rd Year. The transfer of teaching laboratory equipment between the floors was facilitated by a dumb-waiter hoist, dedicated to this service.

Physics Building viewed from northeast, 2005.

The other six-story wing of the building was primarily for administration, staff offices, a library and the research activities of the Department. This wing contained two lifts, one for passengers and the other for goods, which effectively serviced both wings. The very extensive Departmental Workshops, both mechanical and electrical, were in the basement and as the service road dipped down to this basement level for ease of delivery of equipment, materials and stores, the building was effectively seven stories high when seen from the south. This lowered roadway also permitted windows along the full length of one wall of the Workshop, ensuring copious natural light in the work-space. The tops of these windows can

be seen in the photograph shown here, which shows the building from the southeast. (Archive Photo 4591P) Other features which are strikingly different from the current view are the limited length of this first stage of the building and the wide steps, part of which have now been converted into a ramp. Back in the 1960s and '70s, when this photograph would have been taken, these steps formed a troublesome barrier, not only for people in wheelchairs, but also for the north-south transport of goods on trolleys, carts and other wheeled vehicles. The full-length window with miniature balcony on the fourth floor is in the Head of Department's office.

New Physics Building seen from the southeast, possibly about 1970.

Originally, rooms at the eastern end of the top (5th) floor housed the Physics Library. Such libraries were common until about 1971 when the Mathematical and Physical Sciences Library (MPSL) was constructed, after which many of the departmental libraries were closed down. As the MPSL was situated adjacent to Physics, this Department was less affected by the centralisation than were some other science departments. It was also a feature of the original plan that rooms for Readers (a rank that would later be replaced by Associate Professor) would be twice the size of those for Lecturers and Senior Lecturers, i.e. would have two windows. However this was promptly changed and the double rooms were each partitioned into two separate offices, resulting in room-numbering such 5.4 and 5.4A where the number before the period, together with G and B, designated the floor level whilst the number following the period referred to a specific room.

The eastern end of the 4th floor contained three large rooms. The two large rooms on the southern side were intended for the Professors of Physics and Theoretical Physics, each with access to a room between them occupied by two secretaries, sitting at mirror-imaged desks. In fact, there was no appointment of a Professor of Theoretical Physics until 1964 when Michael Buckingham was appointed. It is generally believed that the large room on the northern side of the corridor was for the Laboratory Manager (initially Mr Don Everson). However, following the retirement of Mr Everson in 1963, the subsequent laboratory

managers, and their equivalents, chose to have an office on the Ground floor in order to be closer to the Workshop and technical staff in the Basement. This 4th floor room thereafter was used primarily for visiting staff and by Professor Alan Boyle when he returned to the Department from 1978 to 1983 between periods of service as Deputy Vice-Chancellor. In 1975 the university abandoned the concept of permanent Heads of Department in favour of three-year terms of office renewable up to a maximum of six years of continuous service. Whereas the role had previously been automatically vested in the Departmental Professor until his retirement, after 1975 Heads were appointed by the Senate on the recommendation of the Vice-Chancellor after he had sought the advice of staff members. In accord with this policy, Professor Williams, who had been appointed as the Professor of Physics in 1980 and served three terms as Head with two Study Leaves between terms, relinquished the Headship in 1990 and thereafter chose to occupy this room north of the corridor leaving his previous office to the successive Heads of Department who needed close access to secretarial support.

Also on the 4th floor there was a double room across the western end. The northern side served as the tearoom for the academic staff whilst the southern side, which could be partitioned off with a curtain, was used for the Honours lectures and staff meetings.

The 3rd floor was used principally for staff offices except for the two rooms at the eastern end, which were initially research labs. Later, the one in the northeast corner was converted for use as an alternative room for Honours and other small lecture groups and meetings.

The 2nd and 1st floors were used exclusively for research laboratories. It should be noted that in those earlier years, each staff member chose his own research topic and usually supervised only one or two postgraduate students at a time with perhaps one Honours student. Usually, with just one major item of research equipment, only a single room was required for a research laboratory. As groups grew in size and/or more research equipment was obtained, an additional room would be allocated and, if it could be arranged for this to be an adjacent room, a doorway would be made through the common wall to allow freedom of movement without going back and forth via the corridor. These rabbit-warren-like structures still exist in the older parts of these floors.

The area immediately adjacent to the entrance on the Ground floor was used as an office for an accountant/bookkeeper, a receptionist/secretary for the Laboratory Manager, who occupied an adjacent room, and the receiving of mail and small store's items. The remainder of the floor was used for research.

It should be noted that various Centres, used by researchers across the university campus, grew up within the Department, usually because they developed around the expertise of a specific member of the Physics staff. Two of these were the Crystallography Centre and the Electron Microscopy Centre. These occupied various suites of room at different times and will be discussed separately.

The Physics Department Workshop has always been acknowledged throughout the University for high standards of workmanship, the breadth of tasks it could handle and the expertise and versatility of its staff. As mentioned above, in the new building this workshop occupied the basement level but had windows along the full south side. The range of the research being undertaken within the Department required a continual development of new skills amongst members of the staff of the mechanical workshop. For example: when the research required extremely low pressure environments the workshop technicians developed

the appropriate argon-arc welding fabrication techniques required to build the necessary ultrahigh vacuum chambers; when a need arose for minute completely sealed metal capsules containing specific pure gases, the workshop developed skills of fabrication using diffusion-bonding of titanium; when cryogenic conditions were required, the workshop learnt how to build both liquid nitrogen and liquid helium cryostats with the experimental devices inside. Indeed, they developed techniques not available elsewhere in Western Australia or even Australia. The importance of such expertise for researchers in a university which, at that time, was so utterly remote from other such institutions and from major equipment manufacturers, cannot be over-emphasised.

The Department also supported a large electronics workshop. In those days most electronic equipment was designed and constructed in-house and all repairs were carried out there also. This facility was maintained for very many years, even as transistors replaced radio valves and integrated solid-state devices replaced transistors. However, during the 1990's, when the purchase of highly intricate research equipment included the equally intricate control electronics, and when the improved financing of research allowed the purchase of purpose built electronic components, the electronics workshop all but disappeared.

That part of the basement area which extended north under the teaching wing was initially considered of little use other than for storage. However, just before the building was opened, Melbourne University agreed to donate their old 33 MeV electron synchrotron to Physics for use by Dr. Hans Thies in his research on photo-induced nuclear disintegrations. Accordingly, this basement area was cleaned out and the synchrotron, complete with massive concrete and solid paraffin blocks to afford radiation protection, was installed therein.

Mention was made above of Readers and it is interesting to consider this further. As universities developed in the UK, the status of Reader signified that the academic staff member was trained in research and carried out research, in contrast to devoting the major part of their time to teaching. Thus, when UWA announced its intention to replace the academic title of Reader by Associate Professor, there were some who opposed the change, claiming that they were losing their recognition as researchers. Thus, when the change was finally introduced at the end of 1970, the University agreed that those already holding the title of Reader would be given the option to retain that title or adopt the new form. It is interesting to note that of the five Readers in Physics in 1970, only one, Sydney E Williams, took the new status and title, whilst the other four, P.M. Jeffery, W.C. Macklin, E.N. Maslen and J.B. Swan, chose to retain their status as Readers and continued to be referred to as Dr.

The new building had a floor space of 80,000 square feet (approx. 7,400 square meters), which was about two and a half times that of the previous building. In addition, all of the services and the details of the fittings and fixtures had been designed by Professor Clews and Mr Everson. The result was perhaps the finest purpose-built Physics Department building of its time. It is somewhat ironic that, after working tirelessly for so long to bring this building to fruition, by the time it was occupied at the start of 1962 (the official opening was on the 17th April 1962, see Issue 12) Professor Clews had already just completed ten years of service as Professor of Physics and Head of Department, and had taken up his new appointment as the University's first Deputy Vice-Chancellor. Nevertheless, he could feel justifiably proud that he had promoted the development of a very strong postgraduate program and that he was leaving the Department with the best possible facilities to allow it to continue to make its mark in the field of international research.

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