THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY

GUIDE

to

THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY

at

KENSINGTON

The buildings on the Kensington site are open for inspection and you are invited to view the range of scientific facilities with which the University is equipped.

J. P. Baxter,
VICE-CHANCELLOR.

THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY

The New South Wales University of Technology was incorporated in 1949. The two main objects are: to provide facilities for specialised instruction and advanced training in science and technology in their application to industry; and to aid by research and other means the practical application of science to industry and commerce.

Undergraduates may work for the degree of Bachelor of Engineering, Bachelor of Science or Bachelor of Architecture. Industrial experience gained under actual working conditions forms an essential part of most of the under-graduate courses of the University of Technology, and in providing this part of the student's training, close liaison is maintained with the co-operating employers.

As well as the full-time courses, the University provides part-time courses in a number of similar and related fields. Under an arrangement with the N.S.W. Department of Technical Education in 1951, the University administers twenty of the Department's diploma courses. Recognising the need for facilities by which the students might gain specialised training to degree level in science and technology by part-time study supplemented by concurrent practical experience, the University introduced twelve part-time courses in 1954. At the same time a number of diploma courses were revised, and where both diploma and part-time degree courses are offered in the same subject the courses have been integrated and in the early stages follow a common syllabus. This enables diplomates, after further study, to gain a degree.

Facilities are available for postgraduate work leading to the degree of Master of Science, Master of Engineering, Master of Architecture or Doctor of Philosophy. In addition to extensive research programmes initiated in the various Schools, the University undertakes, on request, special investigations or research on problems of applied science or technology. This is aided by the fact that many members of the staff have come to the University from high level research and executive positions with internationally known industrial organisations.

THE FIRST PERMANENT BUILDING

The first permanent building faces south, with a facade 450 ft. long and 61 ft. high at the main entrance. The entrance is emphasised by a break in the facade where a sandstone fin carries the mural sculpture.

This sculpture conveys the ideal that every student of the University should be to some extent an artist, giving due consideration to aesthetic factors in all his professional activities.

The commission was given to Mr. Tom Bass and the symbols of his design are:

The Horse, the emblem of industry, looks to the Falconer, who is the technologist. The Falcon is reason and the Tree is fertility, organic life, primary production. The Sun and Rain Cloud are the elements. The Sun is also a central linking symbol of enlightenment. The Arrow points to new directions of thought, and the Constellation symbolises research. The Dove is beauty. The form on which the Horse stands represents the earth.

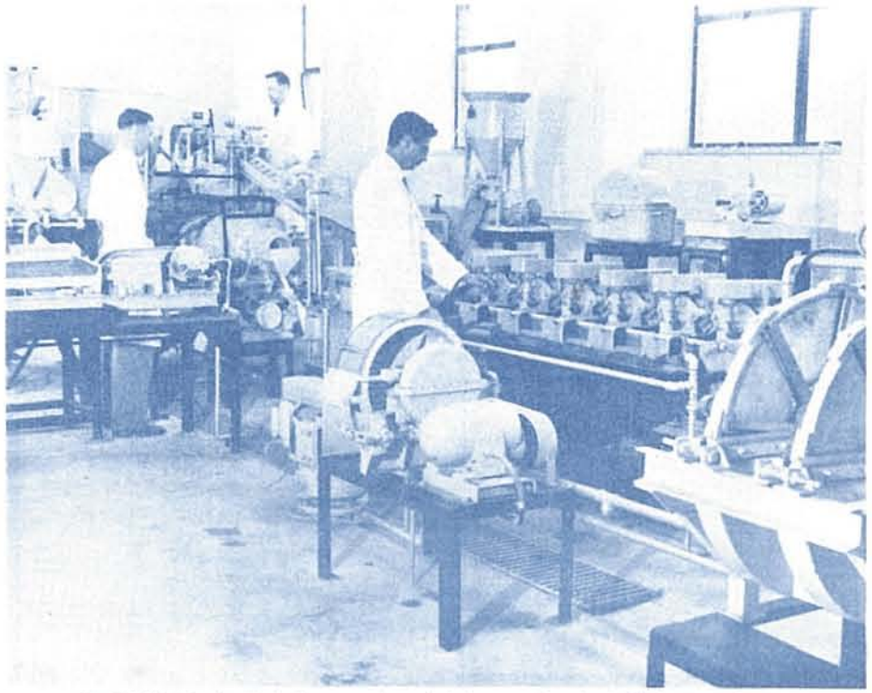
The rays of the Sun link the eye of the Falconer and the Dove, the Falcon and the Constellation, and the Tree and the Rain Cloud. Copper rods, representing the Sun's rays, connect the forms of the sculpture.

The building consists of three floors and a ground floor. Four wings run north and south behind the main block.

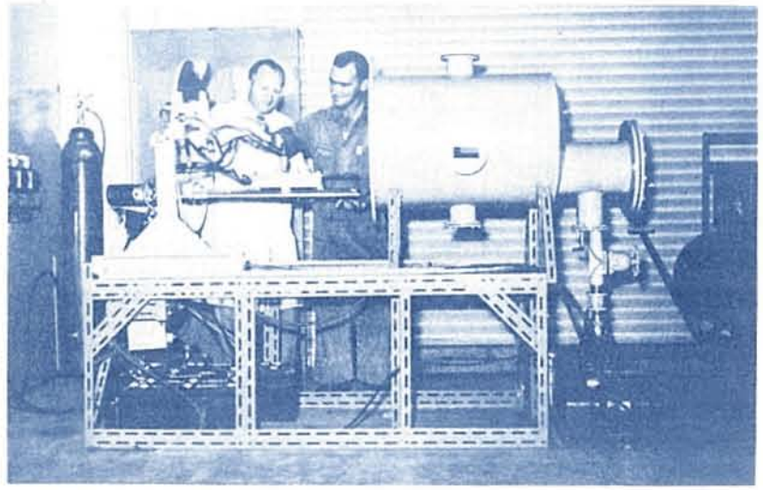
Brick was used because at the time structural steel in sufficient quantity was not available. The interior blends coachwood, in the panelling and furniture, with colour in the corridors and rooms.

The walls and ceiling of the foyer are lined with coachwood. The theatre, seating 300 and panelled with coachwood, recalls the shape of a Greek amphitheatre. The curtains carry an aboriginal design in blue-grey and purple-brown. As the projection room is equipped with two 35 mm. and two 16 mm. projectors, continuous showing is possible. The stage lighting system is of extremely high quality. Property room, dressing rooms and outside access make for smooth presentation of stage functions.

Walls and ceilings of the corridors are painted in contrasting colours, which broaden the vistas, creating a feeling of space and dignity. The corridor on the third floor is broken in its length by the Architectural Exhibition Gallery, and it has what is probably the most striking colour scheme in the building.

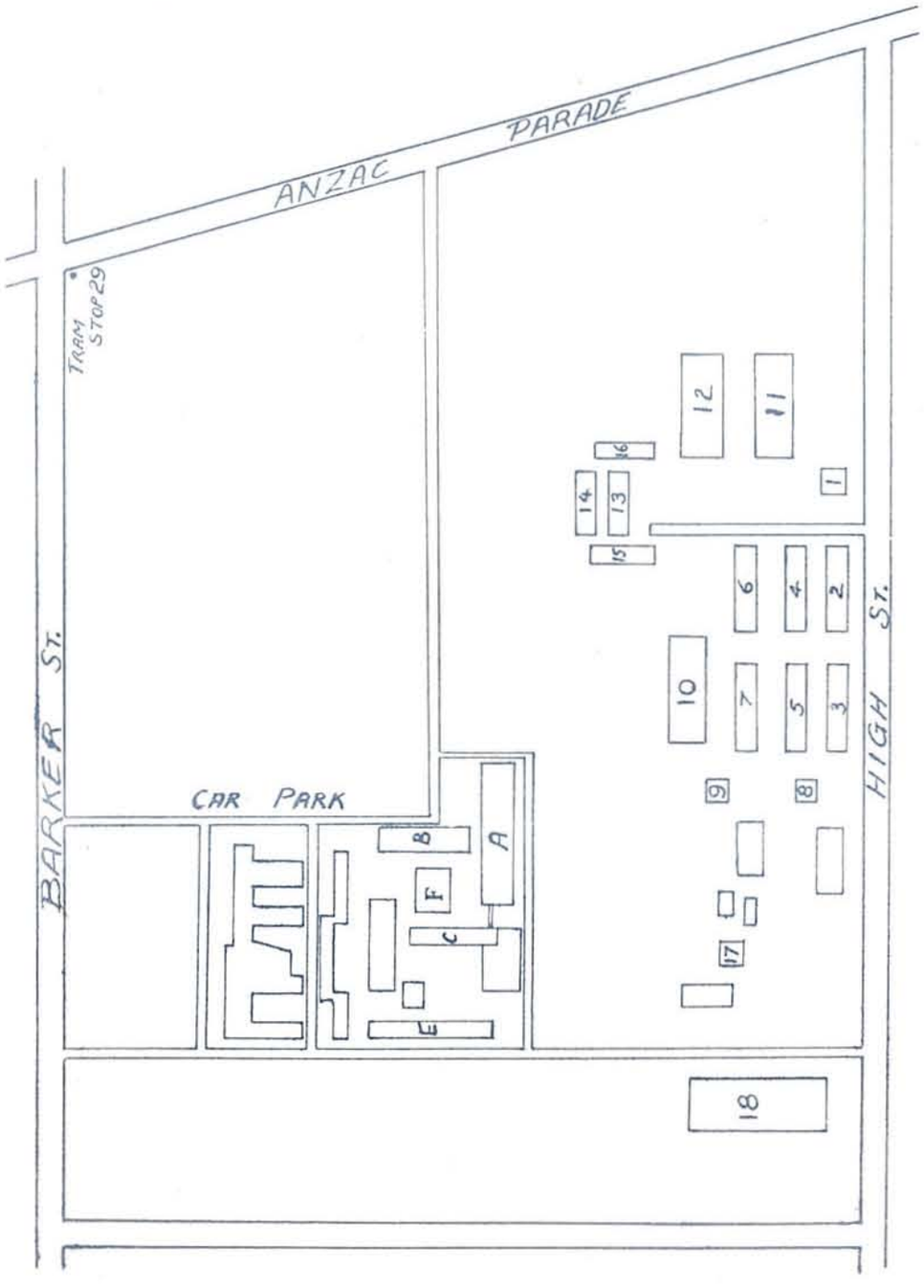


The focal point of geological prospecting and mining operations is the final separation of the economic minerals from the associated waste rock. Here is shown a laboratory size mill, or concentrating plant, in which the most suitable technique for the final separation process to be used on a particular ore may be determined.



A remote controlled experimental welding unit used in research on the welding of titanium. This was designed and built in the workshops of the University of Technology.

PLAN OF KENSINGTON SITE



KEY TO PLAN

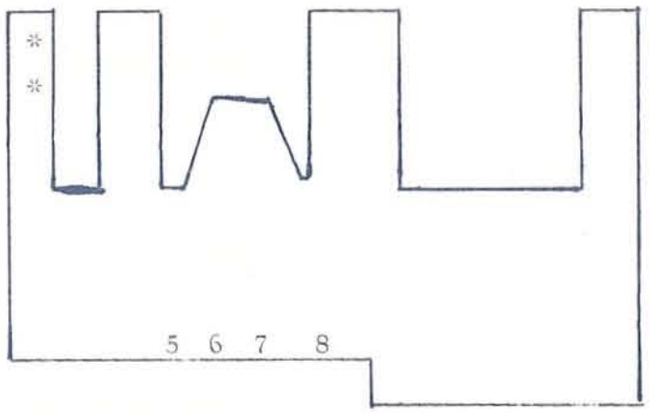
1. Administration
2. Food Technology
3. Food Technology: Industrial Chemistry
4. Workshops, store
5. Unit operation
6. Lecture Rooms
7. Plastics: Research
8. Cobalt 60
9. Solvent Store
10. Chemical Engineering Process Building
11. Electrical Engineering
12. Mechanical Engineering
13. Metallurgy Administration
14. Physical Metallurgy
15. Industrial Metallurgy
16. Chemical Metallurgy
17. Hostel
18. Residential College (future)

A.B.C.E.F. Future development.

The first permanent building at Kensington was officially opened on April 16, 1955. The School of Production Engineering and the Cafeteria are on the ground floor; Administration, the Library, the Theatre, and Mining Engineering on the first floor; Applied Geology, Applied Physics, and Humanities on the second floor; the Faculty of Architecture on the third floor.

Numbers of the rooms open for inspection are shown on the ground plans on succeeding pages.

GROUND FLOOR



Front

* Cafeteria

5. Metal Cutting Laboratory
6. Engineering Inspection Laboratory
7. Methods Engineering Laboratory
8. Metrology - Laboratory.

* * *

The Cafeteria fulfils a double function. In order to avoid duplication of staff and expensive equipment, the students in residence at the hostel have breakfast and dinner here, and are provided with cut lunches.

Sandwiches and light meals are also provided for the students and staff at lunch-time and in the evening.

THE SCHOOL OF PRODUCTION ENGINEERING

Production engineers in industry direct their activities toward the development, operation and control of processes like casting, forging, welding, die casting, stamping, moulding and machining.

They are responsible not only for the processes, but also for the materials, machines, quality control and cost control directly associated with these processes.

In addition, production engineers are concerned with functions such as those involved in planning production equipment, routing and methods of manufacture, with tool engineering involving jigs, fixtures, tool gauges and dies and with estimating and inspection.

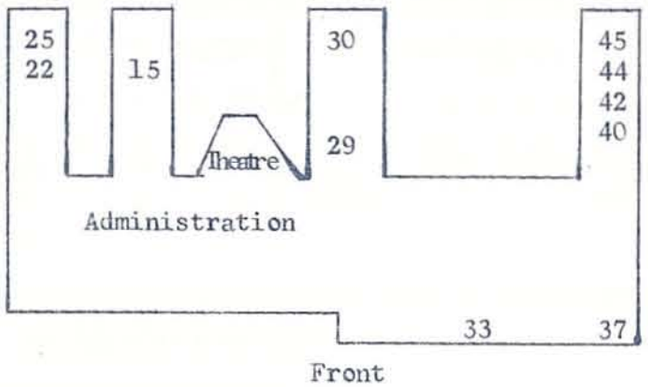
In the School of Production Engineering we have laboratories and teaching facilities which have been planned and equipped to enable the students to become conversant with the latest developments in these fields, and it is planned to engage in some original investigations into manufacturing problems of local industry.

The courses in Production Engineering offered by the New South Wales University of Technology and the Department of Technical Education have been systematically planned in close collaboration with the engineering industry.

The advisory committee recommended the establishment of two main courses in Production Engineering: a Certificate course and a Diploma course. Both are of five years' duration and begin at different levels of education.

There is a very large demand by our expanding Australian industry for young men trained in Production Engineering.

FIRST FLOOR



25 Physics Second Year laboratory

22 Lecture room

15 Library

30 Mine Machinery laboratory

29 Ventilation laboratory

33 Geophysics laboratory - physical properties of rocks

37 Rock Sectioning room - preparation of wafer-thin slices of rock

40 Mineragraphy laboratory

42 Geochemical laboratory - rock analysis

44 Mineral Dressing laboratory

45 Pilot Plant laboratory - model of a commercial scale plant

The library consists of two long narrow reading rooms, the second and smaller one being also a stack, with a work room and small staff room. It houses most of the books in the subject fields of the Schools now at Kensington (14,000 books). There is a regular exchange of publications between Kensington and the larger library at Ultimo (50,000 books.). It receives currently about 330 periodicals.

THE SCHOOL OF MINING ENGINEERING AND APPLIED GEOLOGY

As the geologist, geophysicist and mining engineer play complementary roles in winning valuable raw materials from the earth, these aspects of technology are linked in one School.

Degree courses in Mining Engineering or Applied Geology lead to the degree of Bachelor of Engineering.

Students obtain approximately 18 months industrial experience before graduation. This, coupled with their theoretical training in the fundamental subjects of science and engineering, and their practical courses in well equipped laboratories, should enable them upon graduation to rise rapidly to responsible positions within their selected profession.

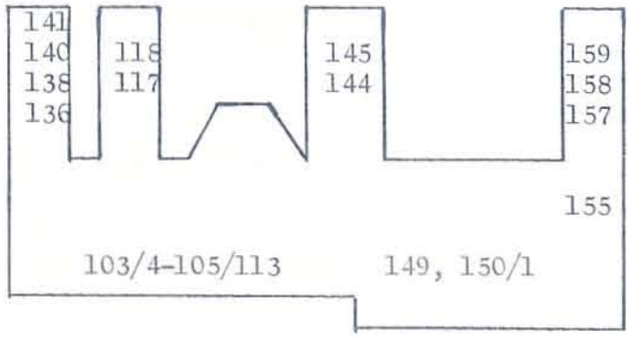
The Department of Mining Engineering is adequately supplied with laboratories and equipment for student instruction and for research for industry. The laboratories comprise two main sections, mineral beneficiation and mining machinery.

The mineral beneficiation laboratories consist of a crushing, screening and sampling section, in which the crude ore is prepared for the mineral dressing pilot plant. This pilot plant unit, which has a capacity of 100 lbs. per hour, is one of the most modern in Australia, and operates in a manner similar to the full scale industrial plants handling thousands of tons per day. Adjacent to the pilot plant laboratory are the batch testing, assay and mineragraphic laboratories, used for the study of more detailed problems in mineral beneficiation.

The mining laboratories provide facilities for the study of mining machinery and rescue operations, ventilation, lighting and photometry, gas, dust and fuel analysis, and surveying.

Research and student training in the Geology Department is directed toward the study of industrial raw materials, their source of supply and their commercial application and also to the important study of rock structures and properties of vital concern in major constructions works such as dam sites.

SECOND FLOOR



Front

141 First Year Physics Lecture room
140 First Year Physics laboratory
138 Teaching Dark room
137 Teaching Glassblowing room
136 High Vacuum / Class laboratory
103/4 Precision Optical Workshop
105 Vacuum Physics - Research
106/7 J. I. Carroll X-Ray Research
108 Electronics - workshop
109/10 Spectroscopy & Optics - Research
111 Workshop
113 Physics of Materials
117/8 Lecture rooms (Humanities & Social Sciences)
145 Building Science laboratory
144 Lecture Theatre (Architecture)
149 Geology laboratory - practical work
150 Lecture room (Applied Geology
151 Mineralogy laboratory - the properties of minerals
155 Lecture theatre (Applied Geology)
157-7A Research laboratories
158 Lecture room (Applied Geology)
158A Clay Research Laboratory - the nature of clays
158B Lecture room (Applied Geology)
158C Dark room
158D Differential Thermal Analyser laboratory - reactions of heat on clay
158E X-ray laboratories - determination of minerals and their structure
159 Geological Museum - specimens from all over the world.

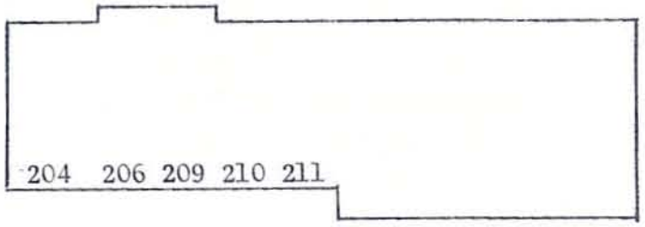
THE SCHOOL OF APPLIED PHYSICS.

The course in Applied Physics is designed to equip students for research in industry and in the field of applied science generally. The course, which extends over four years, provides a thorough training in the fundamentals of physical science and in mathematics, and particular emphasis is placed on technological applications. The practical training includes courses in physical techniques; for example, high vacuum, electronics, photometric photography, and courses in formal experimentation designed to train the student in research techniques. The extra-mural training includes substantial periods in industry in each of the second and third years.

THE SCHOOL OF HUMANITIES & SOCIAL SCIENCES.

All undergraduates of the University, whatever their Faculty, must take courses in the Humanities and Social Sciences, compulsory courses in English, History and Philosophy, and electives from the social sciences - Government, Economics or Psychology. The purpose of these courses is to broaden the education of the students. The University has the main function of training scientists and technologists, but it aims also at producing educated men. The courses in Humanities and Social Sciences attempt to provide the breadth of knowledge, the refinement of sensibility and the sense of values which will increase the student's understanding and enjoyment of life, make him competent in fields other than those in which he is a specialist, and enable him to recognise the human and social implication of his work, both as a scientist and technologist and as a citizen.

THIRD FLOOR



Front

204, 206, 210 - Studios for drawing and design work. Each desk has space for drawing board, storage of instruments and folio of drawings.

209, 211 - Lecture rooms.

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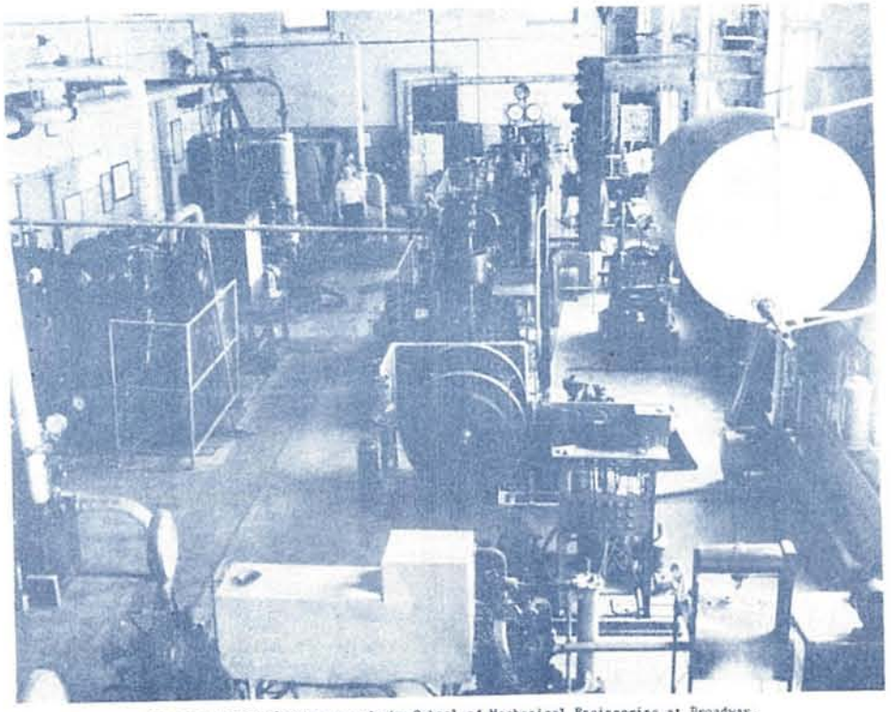
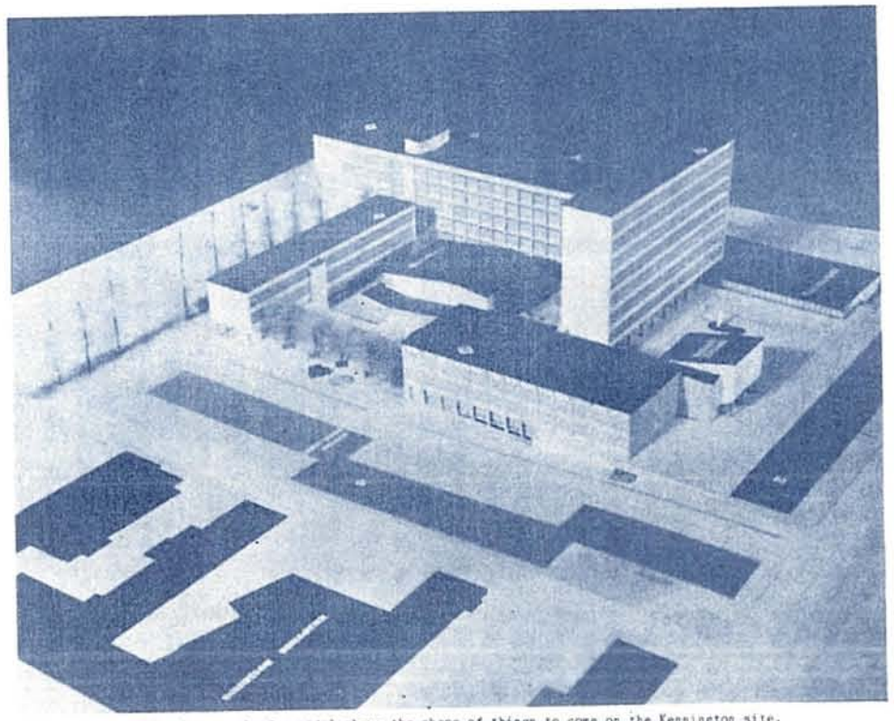
The courses conducted at Kensington are the degree course in Architecture for the degree of Bachelor of Architecture and the diploma courses in Architecture, Building, and Quantity Surveying for the Diploma of Associateship of the Sydney Technical College. The Architecture courses are of six-year duration, while the Building and the diploma courses are of five-year duration.

Our School of Architecture is the largest in Australia and one of the largest in the world. It has about 300 students training to be architects, 50 students training to be master builders or quantity surveyors, and 150 in the Building Foremen and Clerks of Works Courses.

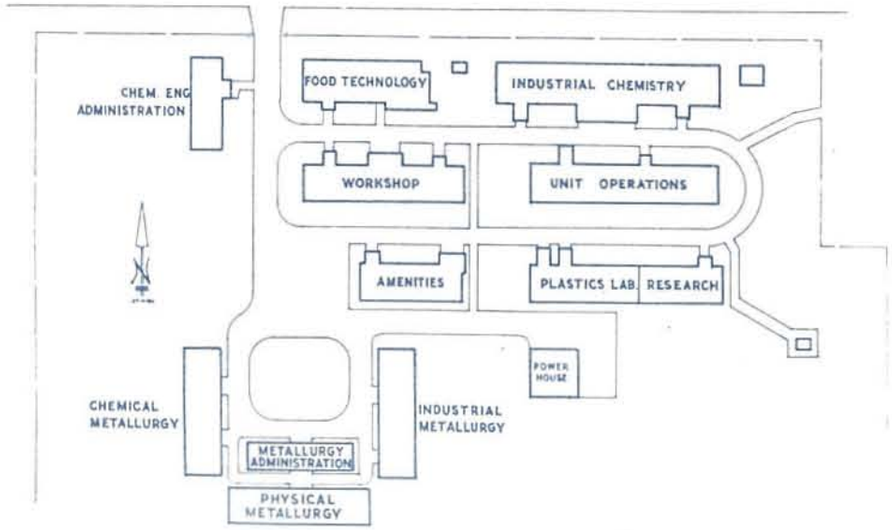
Throughout the whole course we keep in view that the ideal architect has to be an artist, a constructor and a business man, and the subjects of the course are balanced and arranged in conformity with the principle that architecture is both a science and an art.



The Heat Engine Laboratory of the School of Mechanical Engineering at Broadway.



This photograph of a model shows the shape of things to come on the Kensington site. The foundations for the long, narrow building are being laid. The black outline in the foreground shows the position of the first permanent building.



This group of buildings can be approached by the roadway leading north from the western entrance of the main building.

SCHOOL OF METALLURGY

This School is concerned with the study of metals. From the extraction of metals to the use of metals, we come up against problems relating to the refining, the working and fabrication of metals.

Certain basic scientific knowledge is necessary, so the first year of the full-time course in Metallurgy, and the first and second years of the part-time course are identical with those of the Applied Chemistry and Chemical Engineering courses.

In the fourth year of the course, the student must obtain six months' industrial experience. Provision is made for specialisation in the final year.

THE SCHOOL OF CHEMICAL ENGINEERING.

The School of Chemical Engineering is concerned with the training of Chemical Engineers, Industrial Chemists and Food Technologists.

Chemical Engineers are concerned with the design, construction, operation and maintenance of Chemical Plant. The course is offered on a full-time and a part-time basis. The early years are spent in obtaining a sound basic training in Mathematics, Physics, various branches of Chemistry, and also in the fundamentals of certain engineering subjects. In the latter stages of the course, students are given intensive training in Chemical Engineering.

The Industrial Chemist is trained for the process side of chemical industry. He is concerned with the operation of chemical processes on an industrial scale, and the economics of these processes. He also studies matters concerning the relationship between management and labour, such as industrial safety, the application of awards and so on. This course is offered part-time only and follows the part-time Applied Chemistry course for the first three years. It then branches into specialised training for the chemical process industries.

The interests of the Food Technologist cover the handling of fresh foods of all kinds, cold storage, canning, packaging, drying, dehydration and freezing of foods. His basic training is very similar to that of the Chemical Engineer, but in addition he receives a fundamental training in the relevant biological sciences.

The Food Technology Laboratories contain the major plant units required to carry out the basic operations on foods, including cold storage and freezing. These are being used both for research and teaching, and are of a size which permits work on a small pilot scale and thus simulates industrial plant operation.

The course is offered on a full-time and a part-time basis and in the latter stages specialised training is given in the various methods of food handling and preservation.

LOOKING AHEAD

The 70-acre site which is now being developed at Kensington was originally a race-course. This follows an Australian pattern, as just over a hundred years ago the University of Sydney also began to develop on the site of a race-course.

The buildings and equipment you have seen on this site represent only a portion of the New South Wales University of Technology.

During the war industry had grown tremendously, and it was clear that it would continue to grow. Not only is industry growing, but it is becoming more scientific.

After 1945, it was realised that the technological revolution of our day would call for more and more young people trained as scientists and technologists.

The N.S.W. University of Technology was founded to train people to higher levels of technological skill and to provide opportunities for advanced research. It was a development from the Sydney Technical College. Naturally, such a development could not take place overnight, so many of our activities are still maintained in the buildings at Broadway, where the Schools of Applied Chemistry, Civil Engineering, Electrical Engineering, Mechanical Engineering, Mathematics and Applied Psychology are located. The School of Wool Technology is at East Sydney Technical College.

These Schools are gradually being moved out to Kensington as more accommodation becomes available.

It is hoped that in your visit you have sensed something of this feeling of purpose and growth that animates this young University. The way in which the world is moving becomes increasingly clear. It is moving towards a nuclear-physical era, to which technologists will hold the key, and the staff of the University realises that if the students are to play a leading part in the future of this State and Commonwealth, they should have a broad understanding of the problems of society as a whole as well as specialized skills.

THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY

14th April 1956

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After the Graduation Ceremony, morning tea will be served in the Cafeteria, on the ground floor of the western end of the main building. Also, the buildings are open for inspection, and you are invited to view the range of scientific facilities with which the University is equipped. A number of demonstrations will be given in addition to those mentioned below.

* * *

MAIN BUILDING

TIME		Room	Floor
12.30 p.m.	Television Demonstration (Electrical Engineering)	22	1
12.30 p.m.	Films - Motion Study	Theatre	1
	CONTINUOUS		
Mechanical Engineering	U.T.A.C. (University of Technology Analogue Computer)	35	1
Physics	Optics - Polishing and grinding	105	2
	Vacuum physics. X-ray. Geiger counter.		
	Diffractometer for analysis of the structure of materials.	107	2
	Transients in Organ Pipes.	113	2
Mining & Applied Geology	Displays of mineral and rock specimens	159	2
	Mineralogy laboratory with microscope	151	2
	Differential Thermal Analyser	158D	2
Architecture	Displays of architectural drawings, sketches and models.		3

* * *

The road from the western end of the main building leads to -

THE NORTHERN GROUP OF BUILDINGS

Chemical Engineering:

Unit Operations Laboratory	-	Spray Drier
Research Laboratory	-	Production of pure uranium nitrate using a chromatographic column.
Organic Industrial Chemistry Laboratory	-	Production of perspex. Automatic control of fluorination.
Inorganic Industrial Chemistry Laboratory	-	Oslo Continuous Crystallizer. Predetermined Scaling Counter working on uranium nitrate.
Food Technology Laboratory	-	Demonstration of canning.

Metallurgy: High frequency heater and other equipment in operation.
Metal Melting and Rolling.
Remote Controlled Welding Machine.

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