

THE NEW SOUTH WALES
TECHNICAL
UNIVERSITY



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TECHNICAL UNIVERSITY**

**WHY NEW SOUTH WALES HAS ESTABLISHED
THE FIRST TECHNICAL UNIVERSITY IN
THE SOUTHERN HEMISPHERE**

November, 1948

Foreword

Increasing numbers of highly trained men are urgently needed to consolidate the rapid and extensive industrial expansion which has taken place in recent years in this State. Both scientific and technical manpower are needed—scientific manpower trained in research to extend ever wider the frontiers of human knowledge—technical manpower, adequately trained in basic science, but with specialised training to apply science to industry and commerce. The New South Wales Technical University has been founded to supply this technical manpower.

The graduates of this University, however, will be, not merely technical experts, but technical experts with a broad understanding of human affairs, for this University will be the first University in the British Commonwealth of Nations where there will be in all faculties compulsory courses in Language, Literature, History, Economics and Psychology. Such courses will avoid the handicaps which result from narrow specialisation and will help the graduate to take, in the life of the community, the leading place for which he is otherwise qualified. The New South Wales Technical University will offer also the usual activities of University life—sport, and societies dealing with matters of general interest, such as literature, art, music and public questions.



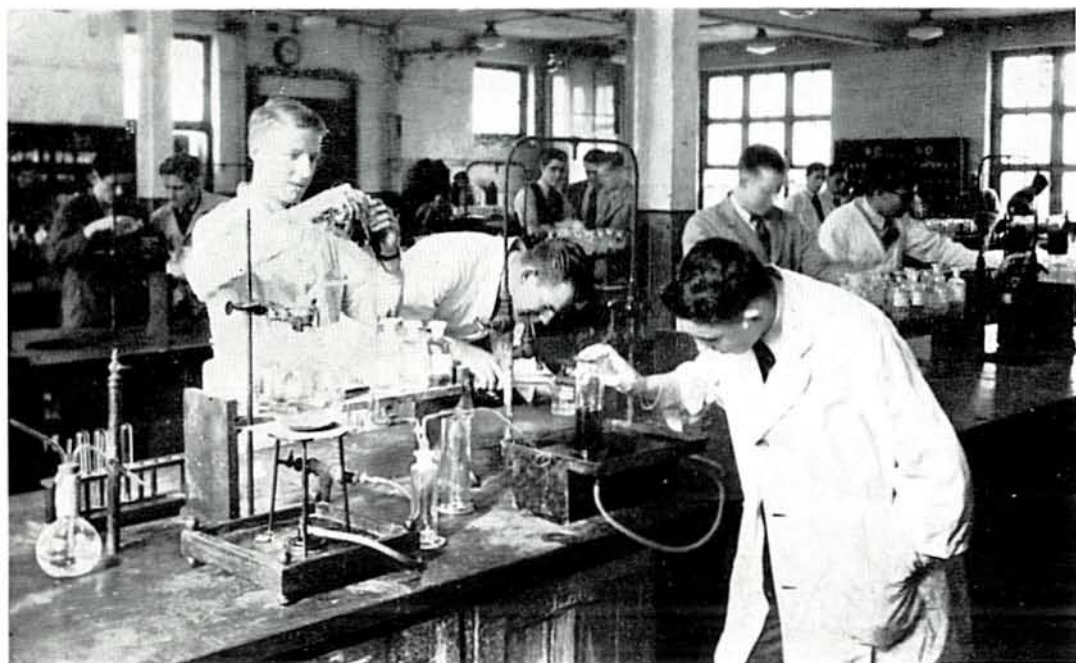
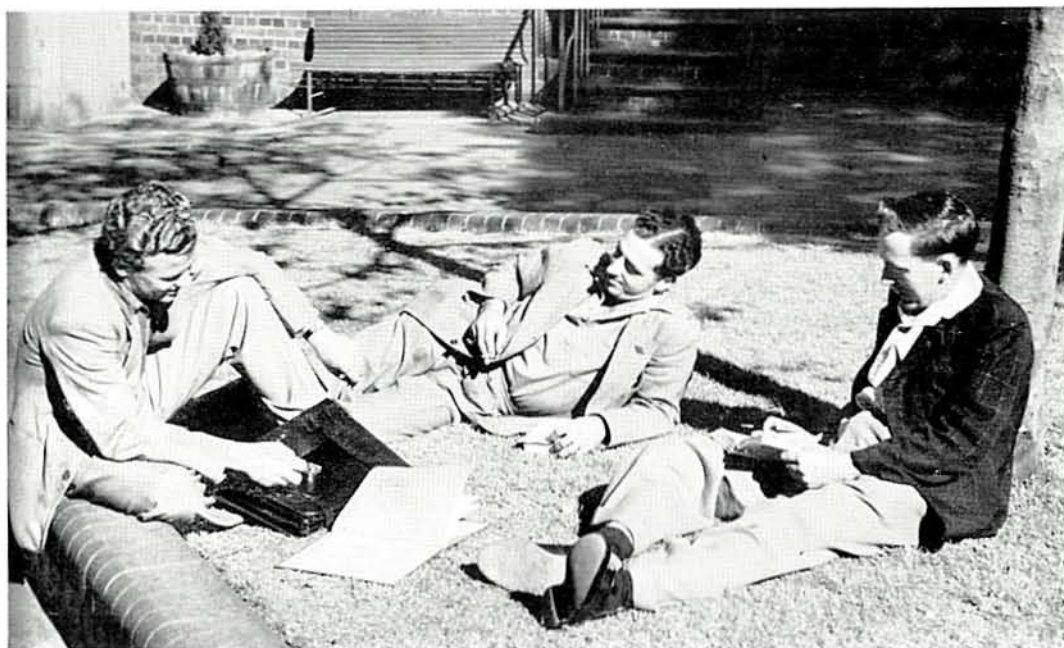
Students will have opportunities to work out in free discussion their ideas about human relationships and a way of life. In this way, by their own efforts and by conscious direction, men will be trained to make the best use of our national resources.

A handwritten signature in cursive script, reading "R. L. Jeffrey". The ink is dark and the handwriting is fluid and somewhat stylized.

Minister for Education.

A handwritten signature in cursive script, reading "A. Denning". The ink is dark and the handwriting is fluid and somewhat stylized.

Acting Director.





1. What is a Technical University?

A technical university is a university designed to meet the specialised needs of modern industry. Like the traditional university, it will award degrees in science and engineering, but the emphasis of its instruction will be mainly on the advancement, development and practical application of science in industry and commerce.

The New South Wales Technical University will provide, not only specialised instruction and advanced training in the various branches of science and technology, but will also pursue a programme of vigorous technological research to enable modern developments in science to be applied speedily to the benefit of industry and commerce.

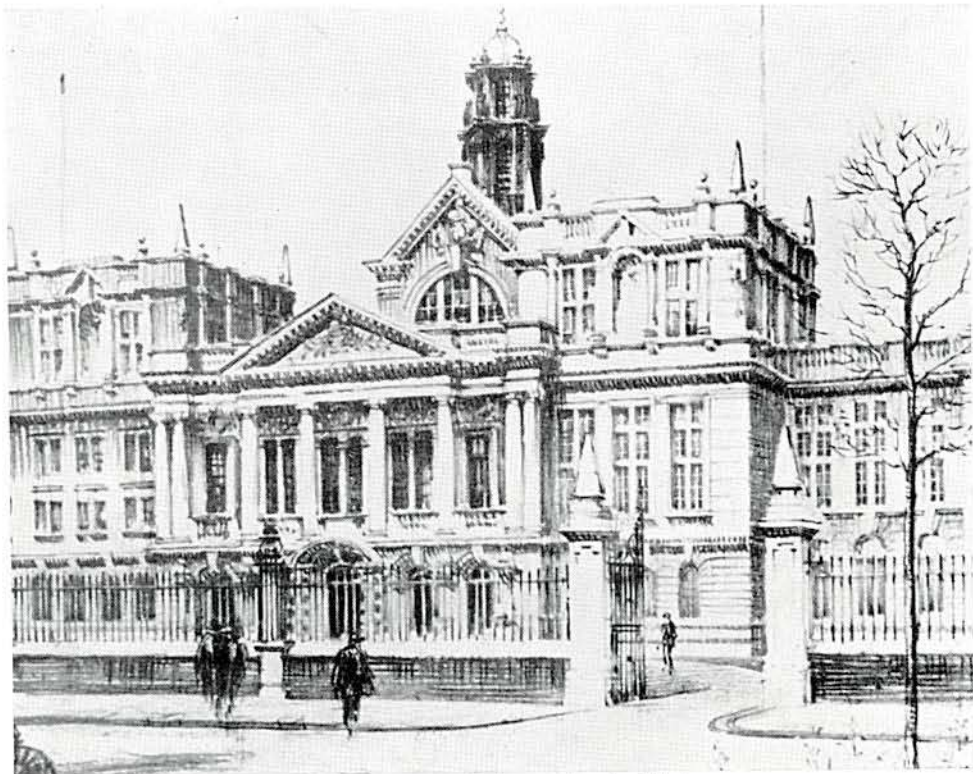
2. How Does a Technical University Differ From Other Universities?

Higher technological studies are found not only in technical universities, but to a varying extent in traditional universities. The outlook, however, of the technical university is different from that of the traditional university. The object of the latter should, in general, be the training of scientific manpower, whereas the object of the former should, in general, be the training of technical manpower.

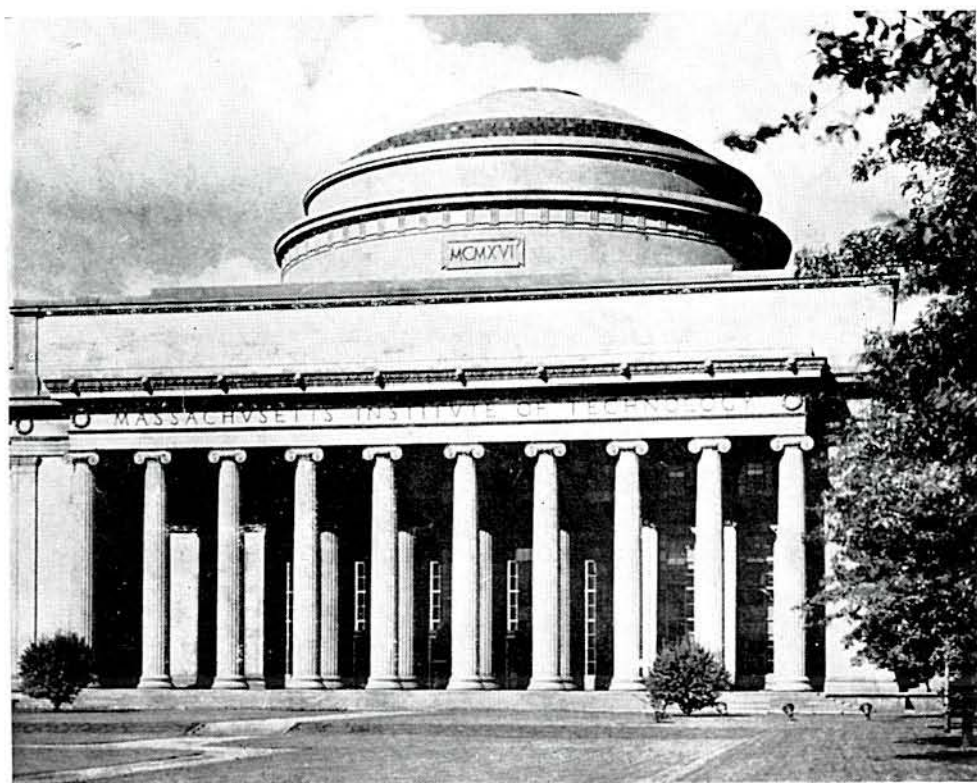
The New South Wales Technical University does not imitate a traditional university, but directs its courses to secure the fullest possible application of technology to industry, to provide appropriately trained and technologically qualified personnel for industry, and to train person-

nel for research into the practical application of science to industry.

In planning a career it would be wise to consider the essential differences in the training offered by a course at a traditional university and a course at the New South Wales Technical University. There is a sharp distinction between the work of these two types of university. In a traditional university, the scientist is concerned with the original contributions to principles and conceptions in essentials and pure research; in the technical university the technologist is concerned with the utilisation of scientific knowledge and experience for the solution of immediate problems.



University College—South Wales.



Massachusetts Institute of Technology.

Two years ago Great Britain sent a mission to Europe to find out the requirements of the various countries for scientific instruments, and although the object of the mission was not to report on technical institutions, there are references in the Report (July, 1946) to the building of new technical universities, the re-equipment of existing workshops, research on a semi-industrial scale, and lavishly equipped laboratories. Indeed, re-building and re-equipment of technical universities in the devastated areas of Europe have an extraordinarily

high priority, which is evidence of a strong faith in the contribution which these institutions can make toward rapid industrial recovery.

Hence, it seems that only by making adequate provision for higher technological education can New South Wales and any other country secure the benefit of technical and scientific achievements in the development of our industries, reach equality with our competitors in technical manpower, and gain a place of importance in overseas markets.

3. What Are Other Countries Doing?

The more advanced European countries, which have challenged Great Britain's industrial supremacy, have technical universities in which they place great faith. Their technical universities are buildings of magnificence and beauty. No effort seems to have been spared in making adequate provision for modern equipment and large libraries.

Great Britain led the world in discovery and invention, and consequently in industrial competition for the world's markets, until about 1850. After that date, foreign competitors seriously challenged and, in certain instances, surpassed Great Britain's manufacturing position by the rapid exploitation of modern technological

inventions and discoveries. Some foreign industries have been based on discoveries made, but not applied, in Great Britain. The industries concerned with the manufacture of dyestuffs, steel from phosphoric iron ores, synthetic rubber and plastics were first established abroad although much of the initial scientific foundation was laid in Great Britain. Street traction by cable haulage, electric trams, high speed internal combustion engines and the resulting automobile, ring spinning which weakened the position of the Lancashire cotton industry, electrical power utilisation, dairy machinery and aeroplanes, are largely industrial developments made, in the first instance, outside Great Britain.

4. Why Has New South Wales Established a Technical University?

Experience has shown that a special type of training is necessary to provide efficient technologists. Despite the impelling preoccupation of scientists with the technical problems of war, two or three years were needed for them to become efficient war technologists. In peace time, without the urgent impetus of war, an even longer period might elapse before the academic scientist could deal satisfactorily with technological problems of normal industry.

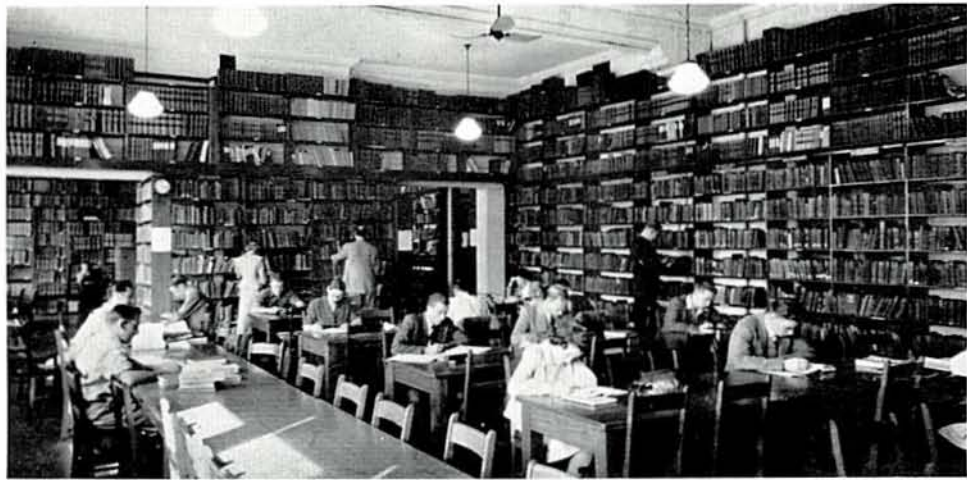
In the past, there has prevailed in certain quarters an unjustified belief that it was not appropriate to extend university recognition to technological studies on the ground that the content of the courses did not warrant it. Now, however, it is more widely appreciated that the study of technology necessarily involves a thorough groundwork in the pure sciences; for instance, a university course in engineering necessarily includes a training in the basic sciences of physics, mathematics and chemistry. Such training is just as essential to courses in other important branches of technology which are at present denied university recognition. It is, therefore, contended (a) that the

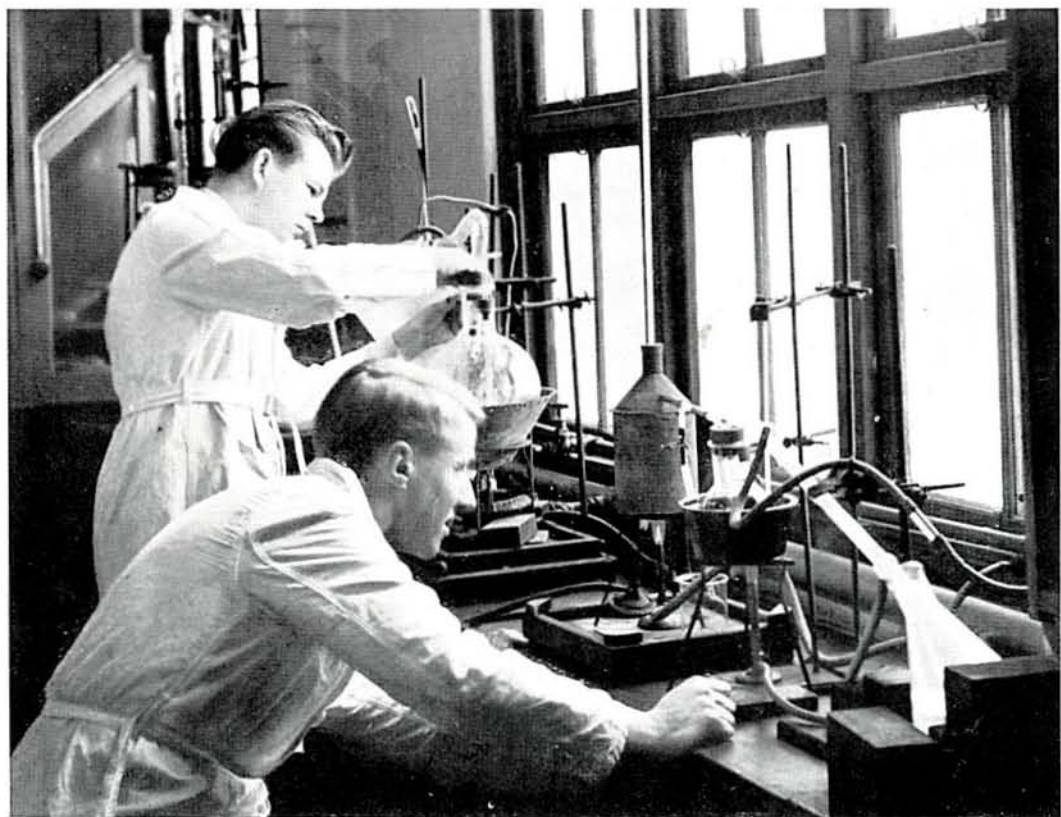
study of selected branches of technology presents a problem which cannot be solved by devoting to them a post graduate year at a traditional university and (b) that the study of selected branches of technology, together with the appropriate basic scientific foundation, should lead to the award of a degree at a technical university. Only an appropriate course leading to a degree will ensure the attraction of men and women with the capacity essential to technological efficiency.

In New South Wales considerable industrial expansion has occurred in the last ten years. Signs are that this expansion will continue and therefore, as a matter of national necessity, steps must be taken to ensure that this development will not be delayed on account of the absence of the trained technical manpower that only a technical university can provide. New South Wales as the leading industrial State in the Commonwealth may well be expected, by establishing the first technical university in the Southern Hemisphere, to give a lead in attempting to meet the inevitable demand for technical manpower which future industrial expansion will make.

If we are to reap the full advantage of the work of the pure scientists, five to ten times their number must devote their energies to the application of scientific discoveries in the various fields of human endeavour. Little real effort has been devoted to the full exploitation of scientific discoveries and knowledge for peaceful ends, though much has been devoted to the pursuits of war. The New South

Wales Government, realising the need for technological development in peace time, believes that the establishment of a technical university, providing efficient and profitable training of technological manpower as well as research facilities for both general and particular industrial problems, will enable the speedy application to industry of the latest developments in pure science.





5. What New Educational Facilities Will This University Offer?

The senior Technical Colleges in New South Wales provide part-time Diploma Courses of degree or near degree standard in many technological fields. While well-staffed and equipped in some sections to carry out research, no extensive development has been planned to provide post-graduate work in scientific technology in technical colleges to the extent necessary to meet the new demands. The importance of technology to the community demands that a fair proportion of our most able students should be attracted to courses in that field. Unless the prestige of such institutions is established, students in the right numbers and of the right quality will not be attracted. The establishment of the technical university, however, will permit not only the raising of the standards of instruction, but also the provision of research facilities necessary for the develop-

ment and expansion of industry in New South Wales. Moreover, it will attract staff of the right quality for advanced technological development.

Adequate opportunities will be offered not only to enable diplomates, already making major contributions to industry, by pursuing prescribed studies to convert their diplomas to degrees, but also to enable diploma students to transfer at appropriate stages to the degree course at the technical university.

In all matters the new university aims to co-operate to the fullest possible extent with the established universities, the present Technical Colleges, the Council for Scientific and Industrial Research, the Education Department and other Commonwealth, State and industrial institutions and laboratories.

6. What Contribution Can a Technical University Make to Industry?

To consider a technical university only in the light of industry's demand and possible absorptive capacity for technologically trained personnel is an erroneous and unsound approach. The law of supply and demand cannot be reversed to read the law of demand and supply. There was no general demand by the public for any of the new technological developments such as the cinema, radio and television.

From the supply of a few cinemas, radio and television sets, the demand arose. In the same way, industry cannot be expected suddenly to demand scientists and technologists. The Technical University will release into industry a greater number of trained technologists than has been possible in the past and as industry benefits by the contribution which men and women so qualified will make, so will its demand for them increase.

7. What is Being Done Now?

On 8th July, 1947, Cabinet approved a proposal submitted by the Hon. R. J. Heffron, Minister for Education in New South Wales:

- (a) For the establishment of a technical university in New South Wales.
- (b) For the appointment of a Developmental Council for the technical university under the Chairmanship of the Minister for Education.
- (c) For the Developmental Council to carry out certain investigations, to submit recommendations thereon, and also to draft legislation for the incorporation of the technical university as one which—
 - (i) provides technological courses at University degree and post graduate level;
 - (ii) grants degrees to those who complete its courses; and
 - (iii) carries out investigations aimed at adapting scientific discoveries to industrial purposes.

The Council is pursuing a policy of building up the technical university as an independent body, housed in its own buildings on its own site, possessing its own specialist staff of professors, and lecturers and equipped with laboratories and workshops not only to train its students but also to promote, direct and carry out research into technological problems.

Meanwhile, approaching the establishment and development of this technical university as a practical task, the Developmental Council recognised the particular difficulties which exist in this post-war period such as deficiencies of building materials, insufficiency of appropriate equipment and inability to meet the great demand for well-trained and experienced teaching staff. The Council has therefore decided that, pending the erection of its own buildings, it will use the existing organisation of the Technical Education system. This will make available immediately a sound administrative framework, the services of experienced staff, and tried and proved teaching facilities.

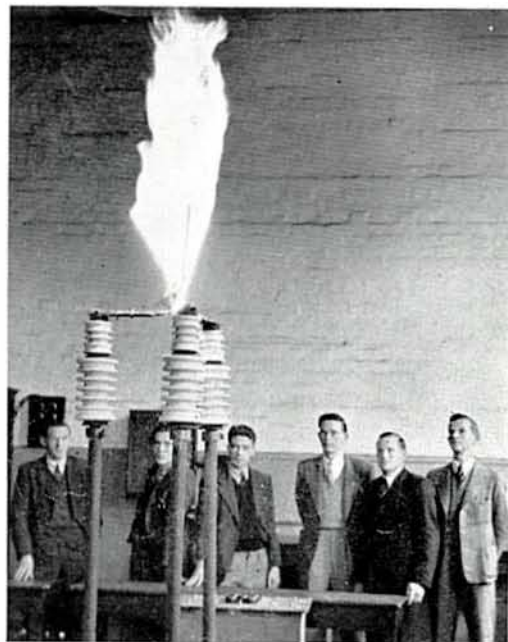
The courses of the Technical Colleges will undoubtedly be co-ordinated with those provided by the technical university, but the new university will be a separate and independent institution.

Specially designed courses leading to the award of appropriate degrees in Applied Science and in Chemical Engineering will commence at the opening of the 1949 session.

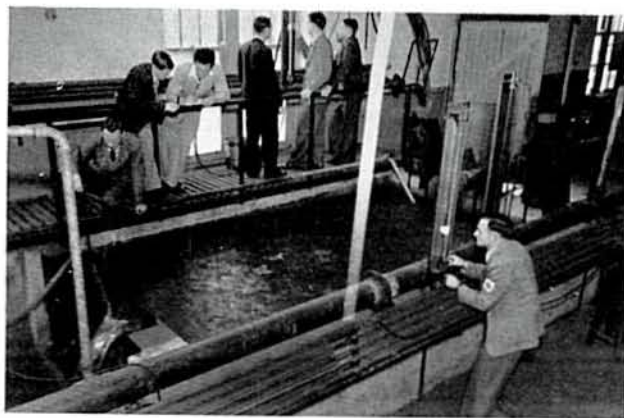
The following courses are already in operation:—

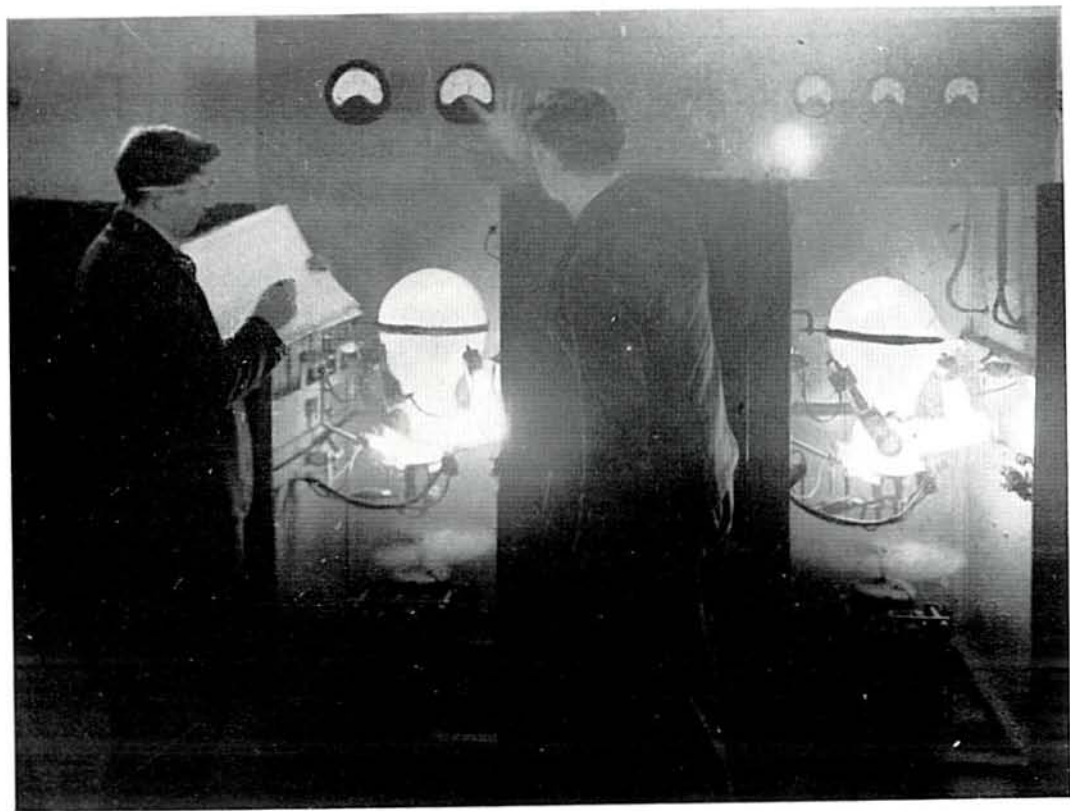
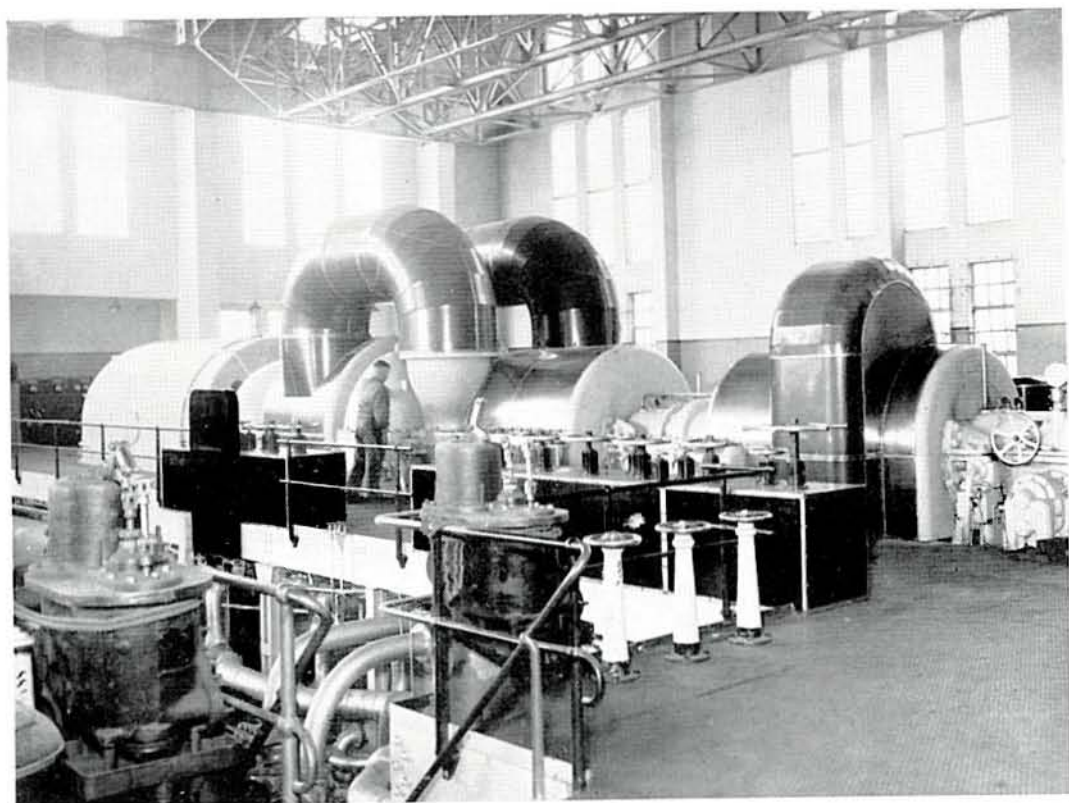
MINING ENGINEERING.
CIVIL ENGINEERING.
ELECTRICAL ENGINEERING.
MECHANICAL ENGINEERING.

These will be four-year courses. They are being organised on the system requiring approximately half a year from March to September, full-time day attendance at the New South Wales Technical University and practical experience of a planned nature in industry for the remainder of the year since it is probable that the most efficient plan is one that provides industrial experience concurrently with technological studies. This kind of course is unique in Australia. Students successfully completing the courses will become eligible for degrees conferred by the New South Wales Technical University and with the emphasis of the courses on the knowledge of industrial processes and other practical application, the successful students should be specially fitted to do valuable work in the fields of industry which they enter. Moreover,



the New South Wales Technical University, in the light of experience and subsequent industrial growth, will develop additional and alternative courses as the need arises or as it is felt that a lead into a new field should be given.





8. What Contribution May Industry Make?

If men and women of ability are to be attracted to the courses in technology in the technical university, the status of the technical university must be similar to that of other universities, and it must be developed into a responsible institution performing a national function. Industry can materially help the new university by—

- (a) sponsoring the training of cadets at the technical university; and
- (b) employing graduates of the technical university.

Already a number of scholarships are available in Mining Engineering, ranging

in value from £210 to £540 per annum over the four years. Other industries are invited to initiate similar schemes.

In addition, a number of Government Departments and industrial firms are selecting and paying the fees and salaries of cadets while they are attending such courses over the four years. Students who are not already in employment may be directed to such departments and firms as candidates for cadetships, where the choice is not restricted to existing employees.

9. Conclusion.

The establishment of a technical university is not some vague plan for some equally vague future. The New South Wales Government has anticipated the needs of industry in this State and has already founded the first technical university in the British Commonwealth of Nations. Industry knows that such a need exists and steps to meet it have now been taken. In its infancy the new university must meet and surmount many obstacles—a way must be pioneered step by step.

Educationists are ready to go forward with enthusiasm, but it is only with the sympathetic and effective co-operation of industry that they can hope to achieve the fullest success for this courageous venture.

Photograph 15 is of a unit at Bunnerong
and was kindly lent by the Sydney County
Council. (*The Editor, R.W.C.*)

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