1966

UNIVERSITY
OF
QUEENSLAND

VICE-CHANCELLOR'S REPORT

The Chancellor, the Hon. A.J. Forbes, M.C., B.A., Phil.D., M.P. (Commonwealth Minister for Health) and the Vice-Chancellor at the opening of the Virology Laboratory Building, Moggill, on 10th August, 1966.

VICE-CHANCELLOR'S REPORT, 1966

It is not always realized what a major contribution the University makes to investment in human capital by its training of high level manpower, or the extent of its obligation to ensure that all graduates attain standards compatible with the present stage of knowledge and with the increasing needs of the community; in this respect, particularly relevant are the words of the late President Kennedy, alumnus of Harvard and the London School of Economics, who, speaking to his people, said:

> "Our progress as a nation can be no swifter than our progress in education."

This is especially true of higher education which is closely geared to the economy of a country. What the new Asian and African countries most need today are the products of higher education. For the main factor in differences in living standards is not so much the resources that people have, but the *numbers* of *capable, qualified, imaginative people* turned out by their educational systems able to employ the available resources to best advantage.

Another striking example is the recovery and growth of certain European countries, particularly West Germany, after the War. They expanded their technological and technical schools and stepped up research in university institutions. The consequences, as any recent visitor to Germany will testify, have been striking.

During the past four years the University of Queensland has put into the pool of high level manpower almost 6,000 men and women, all with degrees, diplomas or certificates. If we add to this the 1,800 who will gain their qualifications in November 1966, or some, with a little further tension and anxiety, in March 1967, the numbers for the years 1962 to 1966 who have qualified, or will qualify, rises to over 7,800.

These figures become even more impressive when it is realised that we have granted more degrees, diplomas and certificates in the past four years than were granted by the University in its first forty years. Even more satisfying is that we are now awarding three times as many bachelor's degrees each year as we did a decade earlier.

Let us look briefly at some of the factors which have produced this result.

University education is popular in Queensland

The great surge of students to the University of Queensland is too well known to need documentation; but it is worth reminding you that over the past nine years, enrolments in the University of Queensland have increased by more than nine thousand students from a figure of 5,615 in 1957 to 14,821 in Brisbane and Townsville in 1966. This represents an average annual increase of 502 full-time, 426 part-time and 95 external students. Full-time enrolments have risen even more rapidly than the overall figure (from 2,298 to 6,814) a threefold increase over this period. This rate of growth is quite phenomenal and has stretched to the limit our resources of trained staff, accommodation, library facilities and equipment.

It is probably less well known that *a higher proportion of the population are enrolled in a university in Queensland than in any other state.* This is demonstrated in the latest report of the Australian Universities Commission which shows that in 1965 and 1966 Queensland ranked top in this respect (ahead of South Australia); Queensland's record is 50 per cent better than that of the lowest State.

As the following comparison indicates, our provision of university education has been achieved by efforts which have transformed the position of this State.

NEW STUDENTS AS PERCENTAGE OF 18 YEAR OLDS IN QUEENSLAND

	Year	
	1954	1966
Full-time students	2.4	6.8
Part-time internal students	1.5	3.7
External students	1.9	1.4
TOTAL	5.8	11.9

Our growing student body has reflected the bulging birth rate; but equally it has resulted from a growing awareness of the value of a university education.

In this growth, the people of Queensland owe a great deal to the vision and persistence of their able Minister for Education, the Hon. J.C.A. Pizzey, who over the past ten years, has brought a secondary school education within the reach of virtually every youth in the State. I have no doubt that many of those now coming to us from country districts would not in earlier years have been able to study for Senior.

Although the number of new students, and particularly the number of full-time day students, will continue to rise, it is unlikely that earlier dramatic growth rates (up to 19 per cent in a single year) will occur in the next decade. There will, of course, continue to be sharp rises in the number of post-graduate students.

Higher qualifications for admission

In the past we have undoubtedly admitted some students whose mental ability or whose vocational requirements were better suited to another form of tertiary education, perhaps not so lengthy, not so demanding, but

nevertheless affording a training vital to national needs. It has been wasteful to admit such students and to allow them to remain in the university for some years of intermittent failure and success only to be rejected later and at a point when it may have been difficult for them to start on another course. It would be sounder policy, and more considerate to the students themselves, to prevent their starting on a course for which they have not shown sufficient aptitude even at matriculation level.

In consequence there has been a gradually changing policy and, while decisions on new matriculation rules and on admission policy generally have already been referred to in the press, I felt that members of Convocation would be interested in more details of our revised policy, and an official statement of our present view of the changing role of our University in the community.

Ever since we began our studies of the factors related to successful performance in the university some fifteen years ago, I have been reluctant to support measures which would prevent a marginal student showing his capacity under university methods of study. Subsequent investigations have shown the wisdom of our decision that any quota should be based on results in the first year of university study.

There is however a level below which a student's chances of success are so slight that it is no kindness to encourage him to enter a university course. It became clear some years ago that this was above the "4C" pass then required by most faculties. The first step to raise entry standards was taken four or five years ago when a pass was required in five Senior subjects for admission to all bachelor degree courses and when students entering courses containing subjects such as Chemistry or Physics were required to pass those subjects in the Senior Public Examination.

In future, matriculants will also be required to pass in two subjects at a B standard pass or in one subject at A standard or, to use the new terminology, will be required to gain 22 points in the one examination.

Under the new scheme of assessing the results of the Senior Examination which will begin in the 1967 examination, a student's grade in each subject will be reported as a score between 7 and 1 where 6 is equivalent to the present A, 4 is similar to the present C and 3 to the present P; 7 will be reserved for those with very high marks in the examination.

Although the level set for matriculation is higher than at present and will exclude some who at present gain admission, there are other features that liberalize the present procedures. In particular, the rules now include a compensatory principle which permits acceptance of students with a deficiency which is offset by other strengths. Let me illustrate:

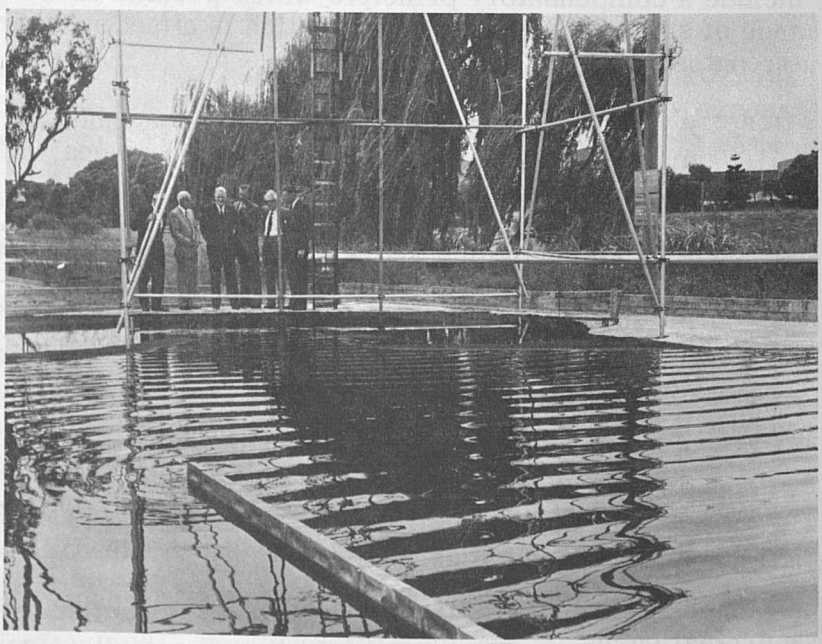
> A P "pass" is not at present acceptable for matriculation but under some circumstances will be acceptable in future.
>
> A candidate with a score of 28 in English and his four other best subjects may be granted matriculation by the Faculty of Medicine even if he has not reached the required level in all prescribed subjects.
>
> A candidate with a score of 24 or more but with deficiencies in prescribed subjects may be conceded matriculation if he meets certain requirements.

Teachers' estimates may be taken into account in marginal cases.

The new matriculation system introduces a welcome flexibility into our matriculation procedures and I should like to thank, along with others, Professors Shaw, Plowman and Leopold for their particular part in the reformulation of the matriculation rules.

Abolition of sub-graduate courses

Allied to the raising of entry standards has been the abolition of sub-graduate courses. In periods when standards of training for the professions were lower than they are at present, the university offered a number of diploma and certificate courses with entry standards below those required for matriculation. By 1960 one quarter of all our students were enrolled for these courses or as miscellaneous students.



Dr. Mackay and Professor Lavery demonstrate work on the Caloundra model to the Premier.

Let me show how the position has improved:

Course	New enrolments accepted for last time	Enrolments 1960	Enrolments 1966
Certificate in Education	1963	1276	79
Diploma in Public Administration	1967	190	104
Diploma in Commerce	1962	153	4
Certificate in Accounting	1963	119	19
Diploma in Physiotherapy	1967	78	122
Diploma in Divinity	1964	66	10
Diploma in Physical Education		62	115
Diploma in Journalism		47	65
Diploma in Architecture	1966	37	29
Diploma in Occupational Therapy		13	37
Diploma in Social Studies	1964	11	13
Diploma in Speech Therapy	1967	-	55
Articled Law Clerks Course		-	225
Other Courses		19	19
TOTAL		2071	897
Percentage of total enrolment		23%	6%

As the regular policy of the university is that a student who has been accepted for one of these courses should be given a reasonable time for completion, it will be five or six years before these courses disappear. However, the dramatic decline that occurs after the decision to abolish a course is well illustrated by enrolments in the Certificate in Education which fell from 1,483 in 1962 to 77 in 1966. In the same period enrolments in the new undergraduate B. Ed. course rose to 1,703.

As similar changes have followed the abolition of diploma and certificate courses in other faculties, it is clear that the abolition of sub-standard courses has not led to any reduction in enrolments but rather has strengthened the demand for entry to bachelor's degree courses.

The exclusion of failing students

With increasing numbers, increasing complexity and increasing demand, it has become imperative to exclude students with a record of gross failure from expensive professional courses in which close personal supervision by staff and expensive practical or clinical work is necessary and in which the cost of maintaining the department and of providing equipment is very high.

Many of these students continue to clog up classes, absorbing a disproportioned amount of tutors' and lecturers' time, and being a burden on our heavily stretched resources in laboratories and libraries.

We have of course markedly tightened our rules in all faculties to exclude those with a record of failure. The Dean of any Faculty can call on any student who in the previous three years has not succeeded in passing in two full years of the course to "show cause" why his enrolment should be accepted. In other types of course a

student is required to pass half the subjects undertaken over a period of two years. In other courses the student may not repeat the same subject on more than two occasions.

The costs of financing a first class modern university of our size are so astronomical that we should constantly review the progress of students in the various courses offered. If the quality or industry of students is such that failure rates are high, then university teachers are forced to spend more time than they should on unsuccessful students to the detriment of more able undergraduates.

Raising graduation rates

A further measure of the effectiveness of a university, but one intimately linked with its policy of admission, is the rate of graduation of its students. In all Australian universities, the proportion of students who graduate in minimum time, or even at all, is low.

Data gathered for the Committee on Higher Education several years ago revealed that only about one tenth of the *part-time students* who first enrolled in 1957 had graduated; only about one-third of the full-time students had graduated in minimum time.

Some figures assembled for the Senate Committee on Medical Undergraduate Education show why I am so concerned about this problem. For each successive intake who began their medical courses from 1950-57 (a few of whom are still proceeding with their courses) between 65 per cent and 81 per cent have graduated. Of those who began in 1960, 33 per cent graduated in minimum time and 39 per cent have discontinued their courses.

The most recent figures gathered by the Commonwealth Office of Education on full-time students who began their university courses in 1961 shows that *the University of Queensland ranks third (to a small university and one with quotas) in terms of the proportion of full-time students who completed their courses in minimum time*. For Australia as a whole, of all the new full-time students who enter, little more than two-thirds complete the degree. The remainder discontinue their courses after varying periods of study in the university.

There is evidence from other universities and from the United Kingdom that graduation rates will improve where the quality of prior preparation before entering university improves and where the matriculation standard is raised. But this of course does not absolve the university from maintaining the quality of its teaching and reviewing and revising the nature of its courses (particularly the student loads) in terms of student capability.

This will be one of the major tasks we will tackle in 1967. The Professorial Board has set up a broadly based committee of experienced members to make a searching examination of the factors related to student progress and to submit proposals for improvement.

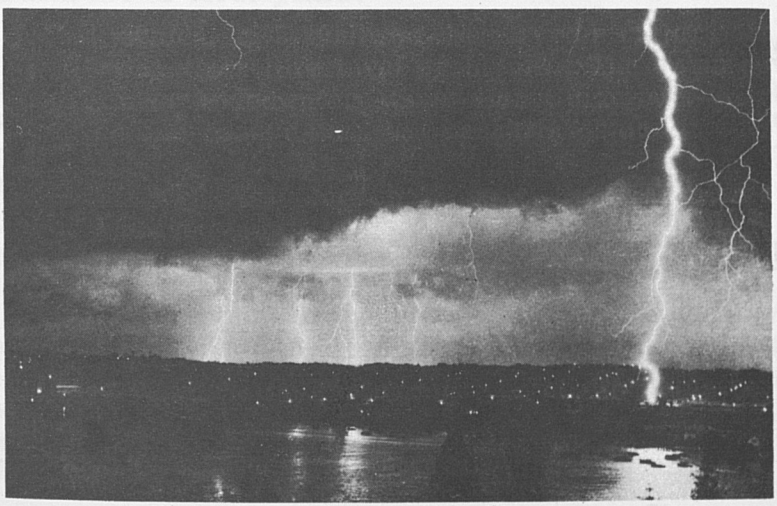
Past experience in other universities has shown that raising student quality by a quota or other means does not automatically result in a higher pass rate or a better performance by students. But, as the calibre of the student body rises, I hope we will create conditions that will permit faster progress, higher pass percentages and better graduation rates.

Development of a post-graduate school

Hand in hand with the strengthening of undergraduate studies has gone the development of vigorous

post-graduate schools. Traditionally universities have placed the search for new knowledge on a par with its transmission of knowledge to its students and many of the basic scientific discoveries have been made in university laboratories.

In the past decade demands for the expansion of post-graduate schools have been buttressed by the utilitarian argument that there is a great unfilled demand for people with the special skills developed in these courses. One source of demand has been the universities themselves faced with the need to secure staff to teach rising numbers; a second source has been Industry and Government which have been expanding their own research and development programmes. Education departments and other bodies concerned with teaching are increasingly aware that the staff member with a master's or an honours degree is better suited to prepare senior secondary students for university studies.



A record from lightning intensity studies of the Department of Electrical Engineering.

Six years ago the post-graduate schools of the University of Queensland were numerically weak; but this is rapidly changing.

POST-GRADUATE ENROLMENTS, 1960 AND 1966

Category	1960	1966
Ph. D.		
Full-time	21	133
Part-time	71	157
TOTAL	92	290
Master's		
Full-time	23	69
Part-time	107	241
TOTAL	130	310
Master's Qualifying		
Full-time	4	30
Part-time	22	146
TOTAL	26	176
Total		
Full-time	48	232
Part-time	200	544
GRAND TOTAL	248	776

The most gratifying features of these increases have been the growth in the number of -

- Full-time students
- Ph. D. students
- Master's qualifying students (who in many cases are teachers and others with pass degrees).

But the growth is even better than it at first appears. In the past two or three years we have tightened the supervision of higher degree programmes. Ph. D. candidates are required to work steadily towards a degree, they must consult supervisors regularly and submit half yearly reports. Similarly, more assistance is now being offered to master's candidates. The result has been a sharp increase in the number completing their degrees (10 Ph. D.'s awarded in 1964 and 31 in 1966). The indications are that there will be further marked increases in the next two or three years.

It was particularly pleasing to find that one major Australian company which formerly sent its best young staff overseas to study for the Ph. D. has now sent a medallist from another Australian university to study for his Ph. D. in Chemical Engineering with us.

Achieving new levels of excellence

The achievement of quality in the face of quantity was the task we set ourselves some years ago. The first phase of the campaign, to eliminate sub-standard courses and unqualified students, has been accomplished and further measures are an extension of this drive for quality.

We must now ensure that the content of our undergraduate and post-graduate courses and the quality of our teaching and research achieves a higher level.

FINANCE FOR THE NEXT TRIENNIUM

Members of Convocation may be interested in my current assessment of the financial outlook for the next three years. During 1965, the Australian Universities Commission received a carefully documented account of the likely expansion in the demand for university education in Queensland and an estimate of the resulting costs. A full inspection of our site was made and there was a preliminary discussion of our requests. During the following year, more detailed discussions on individual items were held.

In 1966, the Universities Commission reported to the Commonwealth Parliament on the necessity for financial assistance and help that should be given to each university for various purposes. Following decisions by Governments, the amounts were substantially reduced under the Commonwealth Act assented to in October.

The recommendations of the Commission on recurrent expenditure were reduced by $322,000 in 1967, $658,000 in 1968 and $982,000 in 1969.

The effect of these cuts will be felt in part in a higher student-staff ratio. The Commission's Report had explicitly stated in relation to Queensland:

> "the overall student/staff ratio in 1966 is still too high. The recurrent grants recommended for the 1967-69 triennium provide for improvement." (Page 87)

As student numbers are expected to continue to rise and as less staff than usual will be appointed, it is apparent that the student-staff ratio will rise and not fall.

There has also been a substantial cut in the grant for new buildings. The Commission recommended a grant of $15,278,000 for university buildings in Queensland; this was reduced to $10,296,000, the most substantial cut being $3,882,000 from the amount recommended for the St. Lucia campus. The large new Arts building to be erected on the site of the present bus terminal at the western end of the Main Building has been cut from $2,000,000 recommended by the Commission to $1,000,000; the large new building to house Chemistry and the pre-clinical departments of dentistry has been cut from the recommended $2,500,000 to $1,000,000. The completion of these buildings must await additional funds in the triennium 1970-2.

Although we are naturally disappointed that projects recommended after careful investigation by the Australian Universities Commission must be deferred, there will still be a substantial measure of growth. New buildings, of which Agriculture and Veterinary Science will be the first, will shortly be put to tender; new equipment is being ordered.

THE YEAR'S WORK

Post-graduate studies

In 1966 thirty-nine of our fifty-three teaching departments were undertaking the supervision of one or more Ph.D. candidates; these numbered 290, of whom 133 were full-time students.

Post-graduate work at Ph.D. level involves an increasing amount of time in planning, supervision and discussion on the part of senior staff if an adequate standard is to be reached in the theses presented. The theses are submitted not only to internal but to external examiners and it is one branch of university teaching

and research on which the quality of university departments is judged by outside universities. We have lately emphasised this point, and the conditions under which research for the Ph. D. is conducted have been tightened. Candidates and supervisors submit regular half-yearly reports on the work being done; where the reports have been unsatisfactory, candidature has been terminated by the Professorial Board.

The results of more intensive supervision are now beginning to appear. The number of Ph. D. degrees awarded has risen from 10 to 31 in the past two years and we expect an equally dramatic increase in the next year or two.

It is of some interest to notice the departments which are particularly active in the development of post-graduate studies. At the present time the Chemistry Department has a total of 46 Ph. D. candidates; 18 of its students have received a Doctorate in Philosophy. The departments with most students enrolled in 1966 are -

Chemistry	46	Mining and Metallurgical Engineering	14
Physics	23	Geology and Mineralogy	12
Biochemistry	15	Mechanical Engineering	10
Zoology	15		
Psychology	14		

Although the Arts Departments do not figure prominently in this list, the latest report of the Australian Universities Commission shows that the Arts Departments in the University of Queensland have a better record than the similar departments in other universities.

The number of Ph. D. degrees awarded in each department since the inception of the degree in Queensland to August 1966 is also of interest -

Chemistry	18	Psychology	7
Botany	12	Biochemistry	6
Zoology	11	Geology and Mineralogy	6
Physics	10	Mining and Metallurgical	
Agriculture	8	Engineering	6

MASTER'S DEGREES

During the past year the number of candidates for the Master's degree has risen by over twenty per cent to 300 students, of whom some 68 are full-time. The largest number of candidates are enrolled in the Master's degree courses in Arts (65), Science (64), Agricultural Science (55), Veterinary Science (26) and Engineering Science (24).

Smaller numbers are enrolled in the other fourteen available courses. It is particularly gratifying to notice the large numbers undertaking courses in Agricultural and Veterinary Science, two areas on which the prosperity of this State so largely depends.

During the eight years 1958-1966, a period in which the number of degrees awarded annually has risen from 17 in 1961 to 57 only four years later, the number of awards in each Department has been as follows -

Agriculture	31	Education	12
Chemistry	30	Geology and Mineralogy	12
Physics	21	Vet. Animal Husbandry	11
Civil Engin.	16	Zoology	11
Elec. Engin.	15	Mining and Metallurgy	11
English	14	Dentistry	11
Surgery	14	Botany	10
History	13	Mechanical Engin.	10

While the numbers of students who have graduated with a Master's degree or with a Doctor's degree have

been relatively low in recent years, the picture is changing rapidly. However, it is obvious that a University with some 12,000 full-time and evening students should be devoting a greater proportion of its resources to post-graduate studies, should be encouraging more students to undertake those studies, and should be graduating considerably more students in a period of two or three years. In this respect we should perhaps look at the United Kingdom where the post-graduate students are some 17.8 per cent of all full-time students. The Australian figure of 5 to 8 per cent does not compare very favourably.

A new higher degree of interest to graduates of the University is the degree of *Master of Political Economy* which is open to pass graduates with appropriate backgrounds and which is intended to provide specialized post-graduate training for those concerned directly or indirectly with government economic policy at all levels. The course is open to a graduate of any faculty who has an adequate background of studies in Economics. It may be taken on a part-time basis and involves three years of class-work with examinations as well as a thesis. This and other course developments within the Faculty of Commerce and Economics are intended to meet the growing need for graduates trained in the analysis of problems of economic policy and equipped to undertake advanced research in such specialized fields as transport, cost benefit analysis and regional economic growth.

A further indication of the new emphasis being given to higher education was the decision that a new honours course and a master's degree course in *Physiotherapy* should be introduced. These new courses (together with a new bachelor's degree course in physiotherapy) will come into effect in 1967 for the first time. In speech therapy, a three-year degree course is also commencing in 1967.

Undergraduate courses

The arrival of many new Heads of Departments in the past year and a half and the formal establishment of new Departments of Anthropology and Sociology, Government, Japanese and Social Studies, has been followed by changes in the undergraduate courses offered in these and related departments.

The Deputy Vice-Chancellor, Professor Ackroyd and the Registrar with His Excellency the Japanese Ambassador.

The most successful development during the year was the establishment of teaching in *Japanese*. Over 200 enrolments were received for the elementary course (Japanese A). This number was reduced to 120 by preliminary examinations; after dropouts due to illness and other causes, there were 99 candidates for the final examination. This department will provide advanced courses in 1967 and shortly will provide a full major for pass and honours degree purposes.

A growing awareness of the serious problems involved in raising, managing and investing the large capital accumulations that are necessary in today's mechanized age were reflected in the enrolment of over 80 students for the new course in Business Finance provided by the *Department of Accountancy*. The optional honours course in Electronic Data Processing for fourth year Honours students in Accountancy is a further indication of how the department is adjusting its teaching programme to meet contemporary needs.

The Department of English has now completed the re-construction of the course structure begun last year and now offers twelve one unit courses for undergraduates in addition to a variety of more specialized courses for honours students.

The subjects offered to pass students, in addition to the traditional subjects, now includes English IB (which is an alternative first year course designed for students whose interest in good writing is of a more directly utilitarian kind than that catered for in the purely literary courses). New specialities available for later year students include English Drama, English Poetry, English Prose, American Literature, Australian Literature, Critical Theory and Criticism. This variety of course offerings provides ample scope for the interests of the thousand and more students who begin their studies in English.

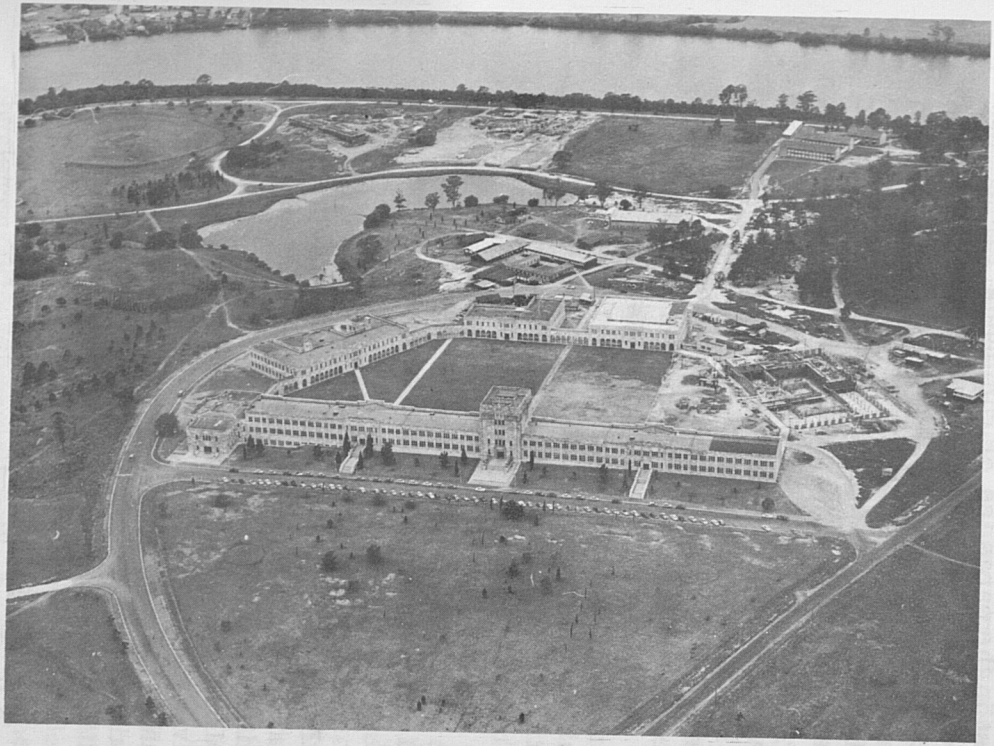
The Department of Parasitology will introduce two new courses in 1967. One of these will be a course in the Faculty of Science on "Parasites of Medical Importance" primarily designed for medical students taking the degree of B. Sc. (medical). The purpose of the course is to provide specialized tuition to medical, veterinary and biology students on protozoa, worms, insects, ticks, mites and venomous animals which are of importance in medicine and public health. The second

of these is a course in "Parasites and Parasitism in Grazing Animals", a one unit course in the Faculty of Agriculture for students who elect to enter the field of animal health. The purpose of this course is to stimulate more interest in the parasites of ruminants *per se* and to emphasize the role of parasites in the deprivation of potential nutrients from grazing animals.

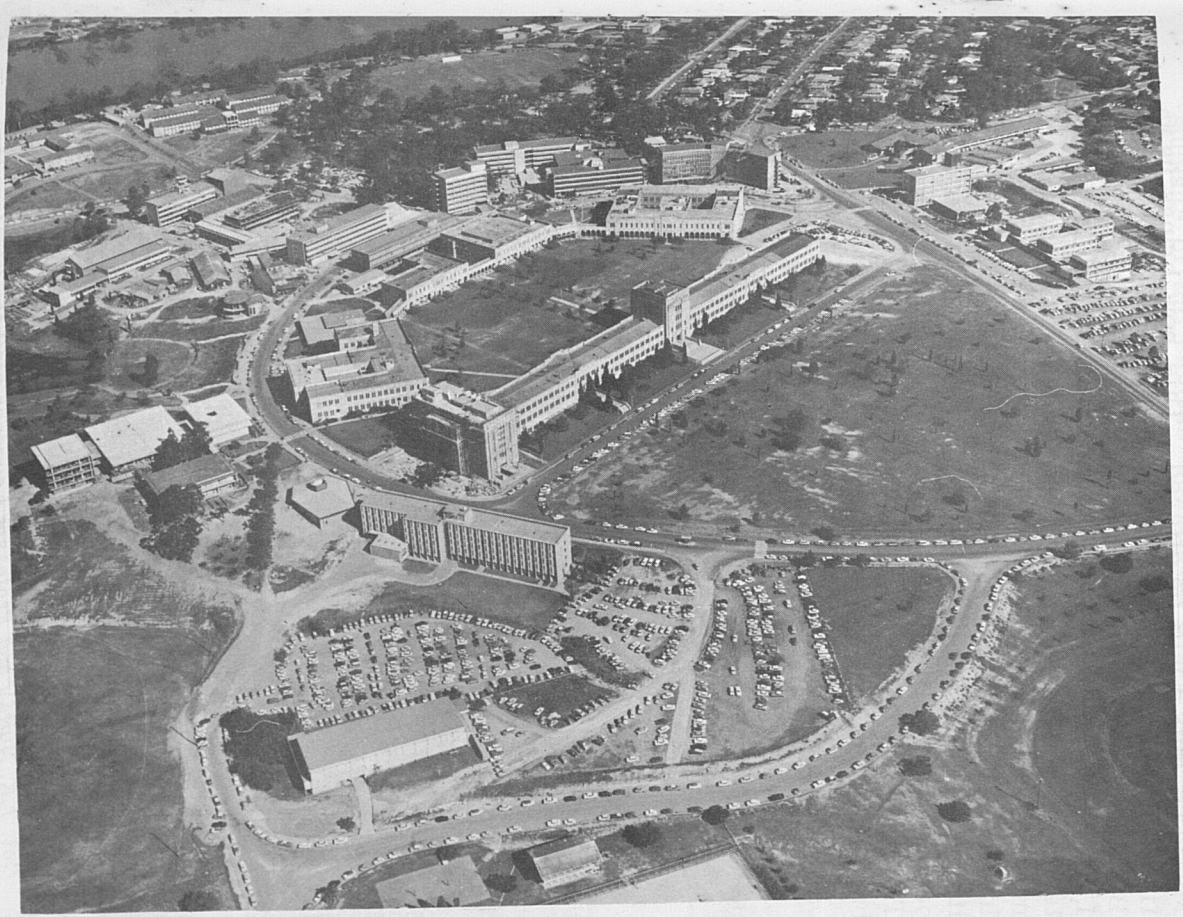
A different type of development has been reported by Professor Edwin Webb of the *Department of Biochemistry*. The revision of courses begun several years ago with a view to orienting the service courses more directly towards the special requirements for the large second year classes in Medicine, Veterinary Science, Dentistry and other fields, has continued. In addition to the existing two unit second-year course available for those requiring biochemistry as an adjunct for other subjects, there will also be a three unit course (Biochemistry IIH) for the student who is intending to specialize in Biochemistry in third year.

With the arrival of Professor Christa, the teaching aims of the *Department of Russian* have been redefined and its courses reorganized. The new policy provides for the more systematic instruction in the separate, though interlocking, disciplines of practical language training, linguistics, literature and background studies in Russian history, and the history of thought. More emphasis than was previously possible is being given to instruction in the spoken language. This language training programme will of course be expanded further when the new enlarged language laboratory facilities are available.

The arrival of Professor Noel Nickson, first *Professor of Music* in the University of Queensland, has been followed by a number of significant changes. In 1967, new courses will be available to students wishing to study music as part of a B. A. degree course. In



St. Lucia Site, 1957



St. Lucia Site, 1966

addition, a new course for the degree of Bachelor of Music (B. Mus.) will be offered. This now brings us in line with other Australian universities which offer a B. Mus. The new course will include, as well as Music I, II, III, other subjects aimed at the development of technique and the interpretation of well-established musical styles in the field of the student's chief musical interest (for example an instrument, singing or composition). A practical examination in the form of a solo performance will be required at the end of the year. The student will also be required to undertake a similar but lesser study in another field.

Col. J.K. Murray and Professor Lawrence visit the library with members of the New Guinea House of Assembly.

The year 1966 marked the graduation of the last students of the earlier combined course in Industrial Chemistry followed by *Chemical Engineering* and also of the first students of the new four year course in Chemical Engineering. The new course, although one year shorter than the old one, will reach a higher standard in Chemical Engineering and associated disciplines, introduced new material, and provides for some differentiation between honours and pass work in the final year.

Two new courses were offered by the *Department of Architecture*. The new post-graduate course in Regional and Town Planning commenced in 1966 with an encouraging enrolment of about 20 students. A general course of eighteen evening lectures on landscape architecture were also given. The enrolment of sixty indicates a demand for training in this important field.

The Department of Botany is another that has been radically revising its undergraduate courses. The aim of this revision is to provide a broad survey of the plant sciences to first and second year students with emphasis on experimental studies on cells, whole plants and plant communities. The interaction of Botany with other disciplines is emphasized and students are encouraged to develop these botanical studies alongside Chemistry, Physics and Mathematics. To provide these new courses, special staff have been appointed in the fields of agro-physics and a branch of biophysics concerned with the flow of gases and liquids through plants. Some of these are in fields novel to universities in Australia and the British Commonwealth.

The Faculty of Dentistry has also been undertaking major changes in the undergraduate curriculum; these will come into effect in 1967. The major result of these changes will be to increase the number of units

of credit for Dentistry I from a minimum of six to a maximum of eight for a student seeking to transfer to the B. Sc. degree at the end of his first year.

Teaching methods

One of the features of University teaching in Queensland during recent years has been the introduction by more departments of tutorial work for students in small groups. For example, Professor Gates reports that in the *Department of Economics*, despite the pressure of student numbers, efforts were made to provide more effective guidance for students at the first year level. A system of compulsory fortnightly tutorials in groups of about eight students has been introduced. This has involved associated assignment writing for all of the 750 internal students enrolled in Economics I.

A good indication of the greater provision of tutorials is provided by the *Department of French* where large classes have been divided into tutorial groups. The number of these groups rose from 26 in 1963 to 46 in 1965 and to 65 in 1966. New tvpes of practical work were introduced and the oral section of the annual examination was of a more personal type.

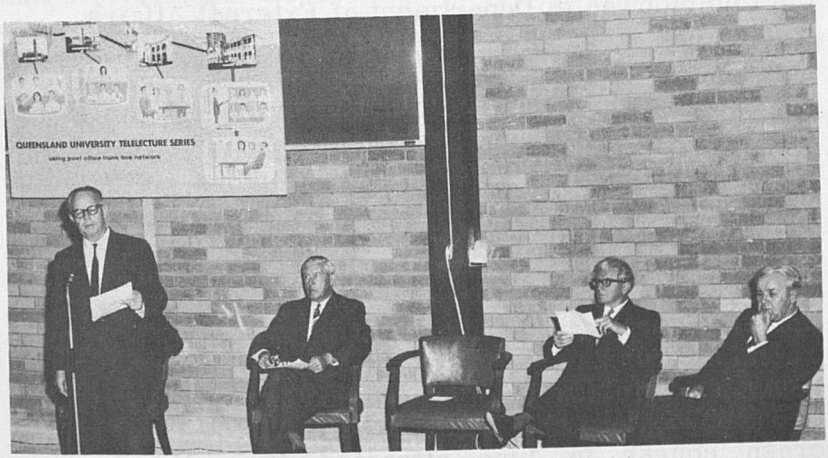
In addition to attendance at tutorials, the Arts student in many subjects carries a substantial burden of written work each week. In the major first year *History* subject *Europe to 1815*, each of the 420 students, in addition to lectures, attends one compulsory tutorial each week, must complete six 1,000 word essays and two 3,000 word essays during the year and must see his tutor at least twice each term for individual discussion of written work. Results in this written work count for one third of the final examination result.

The Department of Anatomy is developing an expanding segment of "self-teaching", especially in

Embryology where the use of multiple sets of models (mostly made in the Department) has greatly improved the opportunity for study. The effective use of this method depends of course on developing student initiative; it is pleasing to find that Professor Hickey believes this can be achieved by an increasing proportion of undergraduates.

A significant advance in the coordination of the teaching of medical students has been made by Professor Eric Mackay who has formed a *"Clinical School of Obstetrics and Gynaecology"* composed of all university and hospital staff members having student teaching contact. This body will meet several times each year to discuss teaching problems and advanced teaching techniques.

An interesting experiment in the teaching of external students was conducted during 1966. A special series of lectures in English, French, German, Education and History were relayed by trunkline telephone to Gympie, Maryborough and Bundaberg for the nine



Professor Basset, the Hon. A.S. Hulme (Postmaster-General), the Vice-Chancellor and Dr. I.G. Meddleton at the opening of the Telelecture experiment.

Monday evenings of second term. Students in these centres were linked in contact with each other and with Brisbane for each hour session. The students who took part in the experiment were enthusiastic about its educational benefits.

Service activities

A pleasing feature of our current activities is the increasing willingness of our departments to organize short courses for special groups in the community. I regard this as a particularly valuable means of disseminating recent findings.

Members of staff of the *Department of Agriculture* provided two such courses during the year. Dr. Joan Tully organized a two weeks' course in agricultural extension for officers not able to take the regular diploma courses. Other staff, in conjunction with the Cunningham Laboratory and the Queensland Agricultural College, presented a course in tropical pasture management for the Commonwealth Department of External Affairs.

The Entomology Department has provided two week courses in Brisbane and Townsville for the Health Inspectors' Association on mosquito trapping, insecticide resistance and the ecology of biting midges. In addition to providing lectures, laboratory and field work, an illustrated manual was specially prepared for these courses.

The Department of Japanese has conducted a variety of special intensive courses. One of these was to provide teachers for the initial secondary school course which will commence in Grade 8 in 1967. A crash course in June attracted 46 applicants from various walks of life; a similar course in December was intended for business men. The increasing commercial contacts with Japan make it important that those concerned take advantage of such courses.

The Engineering Departments have been particularly active in providing special courses and services for industry and for graduates. The Department of Electrical Engineering, in conjunction with the Institution of Engineers, has provided an external course in electronic circuitry throughout the year. The Department of Chemical Engineering offered a three month full-time course in process optimization which attracted both men from industry and graduate students.

A major activity of the *Engineering* Departments has been the provision of advisory and testing services, the revenue from which has enabled laboratories to be equipped with modern testing machines and measuring apparatus and which permits the employment of additional technicians.

The laboratories of the Department of Civil Engineering, for example, continue to be used extensively by professional engineers from government departments and other instrumentalities. This arises from the fact that Government Departments, Local Authorities and other bodies lack the specialized staff, equipment and laboratory facilities for advanced work in hydraulic testing, testing of materials and the testing of foundations for big new industries. In addition to such major studies being undertaken by the Department as the hydraulic investigation of piers for the Kangaroo Point Bridge or the model for the reclamation of the Serpentine Area for the Brisbane City Council, it is common at any time to find two or three former graduates now employed by government or industry using the laboratory to solve smaller problems. This work adds to the duties of academic staff, but maintains a valuable liaison with current engineering problems essential for the Department's teaching and research.

Similarly, the laboratories of the Department of Mining Engineering for certifying electrical equipment

as safe for use in collieries and for crushing and grinding tests on ores have been in keen demand by industry and government agencies.

The service activities of other departments are less extensive in scope; but they combine to form a varied and highly significant contribution to the development of the State.

NEW BUILDING ACCOMMODATION

A major addition to buildings was the near completion of the Main Library and of smaller areas to house departmental libraries. By August, all floors of the extended Main Library were in service. This doubled the number of seats available to readers and made the Library's contents much more accessible. It has now been possible to house the Australian and Rare Books collections under closely supervised conditions in the new Fryer Memorial Library.

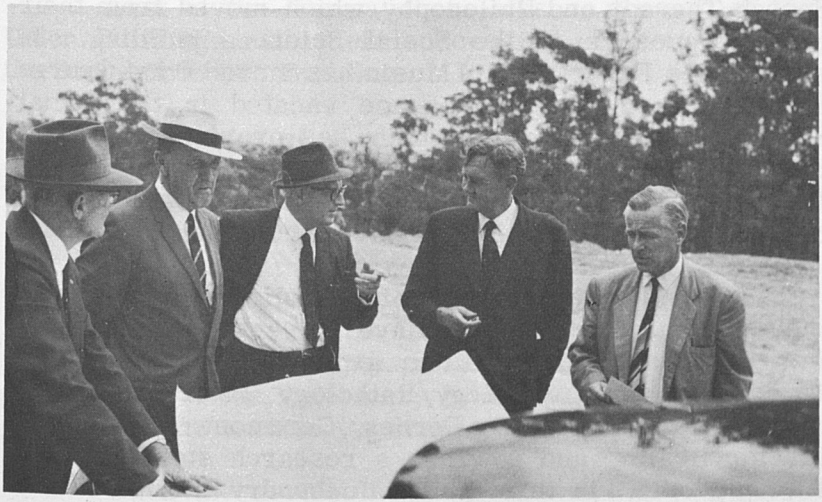
The University also has some thirty other libraries or library service points. Among the branch libraries rehoused during the year have been the Engineering, Law, Thatcher Memorial, Physics and Music libraries. In all of these cases there has been marked improvement in conditions for staff and students.

Another major advance during 1966 has been completion of the clinical sciences building in the grounds of the Royal Brisbane Hospital. The Department of Medicine, for example, in addition to having a compact set of offices, laboratories and tutorial rooms in its own building has direct access to ward 4C of the Hospital which houses the forty-five teaching beds. Ward 4C was then renovated by the removal of temporary laboratories and by repainting. The building of twelve student laboratories and tutorial rooms adjacent to

Hospital blocks 1, 2 and 3 will be a great aid to teaching by the part-time staff.

In December 1966, the Department of Psychological Medicine moved from its temporary quarters in Lowson House to its new quarters in the Clinical Sciences building. A full complement of seminar rooms, laboratories and group therapy teaching rooms will enable the course for sixth year students to be improved considerably.

The Department of Child Health has also benefited by erection of a building to provide accommodation for students living-in at the Children's Hospital. This new accommodation will enable students to be rostered for duty at night and at the week-ends. A much needed seminar room is also being constructed at the Mater Children's Hospital.



The Deputy Vice-Chancellor, the Chairman of the Australian Universities Commission (Mr. C.L. Hewitt), the Vice-Chancellor, the Minister for Education and Science (Senator J.G. Gorton) and the Secretary of the Commission (Mr. D. Dexter) inspect the site and roadworks at Mt. Gravatt.

Another major building which will be completed in the early months of 1967 is Stage 2 of the Mechanical Engineering Building behind the Engineering Administration Building at St. Lucia. Completion of this project will enable the department to be transferred completely from George Street to St. Lucia by the beginning of first term 1967.

Completion of the new Physics annex (opened in August) has greatly improved the laboratory facilities available to the Department and has accelerated progress in a number of demonstration and research programmes. When changes to the main Physics building are completed, the Department will be better housed than for many years past.

Completion of the remaining third of the J.D. Story Administration Building has provided additional space for the Departments of Economics, Accountancy, Speech Therapy and Philosophy which moved from their earlier quarters in the Social Sciences building. In addition the Department of Music has moved from George Street to St. Lucia. The space vacated in the Social Sciences Building and elsewhere has provided additional much needed facilities for other departments in the Main Building. Much of this additional space has of course been occupied by the new departments created in 1966.

During the past year the facilities available to the veterinary departments have increased considerably in areas away from St. Lucia. At the University farm at Moggill, a new Virology/Pathology laboratory was opened by the Hon. A.J. Forbes, Commonwealth Minister for Health, and now has a research staff of some fifteen people. In the Animal Husbandry section of the farm there have been a number of improvements to staff and student amenities, special animal facilities have been added and site development has proceeded. During the year the Department of Animal Husbandry's cattle

unit at Gatton was also improved with the addition of a first class set of cattle handling yards. As a result of a special grant from the Australian Wool Board, the sheep house at Moggill farm, used by the Department of Parasitology, was completed.

Immensity of building programme

The aerial photographs of our site, which appear on pages 22 and 23 of this report, show in graphic form the tremendous development which has occurred on our site in the past ten years. Let me draw your attention to some of the changes.

Site work had begun for Women's College and Duchesne but the site of St. Leo's College was untouched. The photo does not show the empty sites of Cromwell College or International House.

East of the library there was no thought of the Union Buildings with their successive extensions or of the Social Sciences Building.

The cluster of wooden huts behind Geology seem extensive until one remembers their dilapidated state. All the Engineering complex, Mathematics, Biochemistry, Physiology and the J.D. Story Administration Building then seemed far in the future. Even the Biology Building was not to be occupied by Botany for another four years.

Although the empty paddocks west of Mill Road are not shown, the Veterinary School and Anatomy were not even on the architect's drawing boards then.

When the development at Townsville, Moggill, Goondiwindi, Heron Island and other university sites are taken into account, the extent of our transformation in the past ten years becomes very apparent.

STAFF

During the year, members of staff and past students were saddened by the passing of Professor Walter Harrison who had served as Dean of the Faculty of Law since 1947, as Garrick Professor of Law, and as Head of the Department since its creation as a department. He played a decisive part in the development of the Law School which will long feel the effects of his influence, not only as Dean but as a very fine man of high principles, whose great human warmth, consideration for others, devotion to work and all round contribution to university life, has left the university much poorer by his untimely death.

Professor R.P. Cummings retired as Professor of Architecture and Dean of the Faculty at the end of 1966 after thirty years responsibility for the teaching of Architecture. After his appointment as lecturer in 1937 and particularly after his appointment as Professor in 1949, he gradually built up a school of over three hundred students. In addition, he played a major part as advisor on our architectural problems. The warm humanity and many sided interests of Bob Cummings will be widely missed. We send our best wishes on his retirement.

Associate Professor E.S. Edmiston, who has served for the past thirty-one years in varied positions in Industrial Chemistry, Chemical Engineering and Chemistry, was for a number of years largely responsible for the course in Industrial Chemistry which produced many graduates for the industries of Australia. We wish him continuing good health in his retirement.

Recognition of staff members

An interesting indication of the rising quality of the staff of the University of Queensland is the increasingly large number of members of our staff who are

being appointed to chairs in other universities. During the past year seven members of staff have accepted appointments elsewhere. These have included Professor F. White (Mining and Metallurgical Engineering) who is accepting appointment as Professor of Mining Engineering at McGill University, Dr. C.E. Gregory (Reader in Mining and Metallurgical Engineering) who has been appointed Professor at the Colorado School of Mines, Professor E. Sykes who has been appointed Professor of Public Law in the University of Melbourne, Dr. G.R. Morris (Reader in Mathematics) who has been appointed Professor of Pure Mathematics in the University of New England, Mr. B. Medlin (Reader in Philosophy) appointed as Professor in the University of Bedford Park, M. Chicoteau (Reader in French) who has been appointed to the chair in Waikato, and Dr. R.M. Butterfield who has been appointed to the chair in Veterinary Anatomy at the University of Sydney.

Other members of staff continue to gain recognition by other bodies.

The Prime Minister has invited Mr. W.R. Lane to become a member of the Commonwealth Grants Commission which is responsible for allocating additional funds to the states of Tasmania and Western Australia.

Professor R.L. Specht is both national and international organizer for the International Biological Programme and is making Brisbane a key training centre in this field. Professor Edwin Webb is continuing as Chairman of several international committees on enzyme biochemistry and is a member of national research committees.

Several members of staff have been invited to act as external examiners for other Universities: Professor E.J. Britten for agriculture in Malaya and Professor Hawker in Sydney and Melbourne. Professor Bassett

was invited by the U.S. University Council for Educational Administration to participate in an "International Intervisitation" Programme in the U.S.A. and Canada during October and presented papers on aspects of Australian education.

Professor V. B. D. Skerman was invited by UNESCO to convene an international meeting on Collections of Micro-organisms in Paris and also was elected chairman of the International Committee on Nomenclature of Bacteria for the next quadrennium and President of the I.A.M.S. Section on Culture Collections.

NEW EQUIPMENT

Principally as a result of assistance from the Australian Research Grants Committee, the University of Queensland has acquired a number of major pieces of equipment which are extremely useful for research studies. The Department of Chemistry, for example, has received three items to a total value of $118,000 from this source; these were a Laser Raman Spectrometer, a Roussel-Jouan Dichrograph and an Atlas Ch4 Mass Spectrograph, the last named of which was acquired in conjunction with the Department of Geology and Mineralogy.

The Department of Pathology has recently installed an Hitachi HS7S medium resolution electron microscope. This brings to six the number of electron microscopes now operated within the University of Queensland.

Clinical facilities for fifth year students in Dentistry have been improved by the rehabilitation of chairs and units and the installation of inter-chair partitions and central sterilizing facilities. Efficiency was increased and running costs reduced by providing standardized kits of instruments in all clinics and laboratories except the fourth year clinic.

The Department of Chemical Engineering is steadily building up its undergraduate teaching equipment. Almost all the second year experiments are new; the analogue computer was commissioned during the year and now represents a significant part of reactor design, process control and operations research teaching.

During the year the Zoology Department was able to commission the 38' trawler "WandererII" and, in spite of early problems, 60 per cent of all days since commissioning have been worked, against expectations of about 40 per cent. The trawler has naturally improved the opportunity for an extension of practical work in marine biology.

"Wanderer II"

Not all the new equipment has come from official sources. The Queensland Pharmacy Research Trust has provided an Infra-red Spectrophotometer at a cost in excess of $6,000. The Department of Surveying was able to install in its photogrammetry laboratory a Galileo-Santoni Stereosimplex IIc (the first to enter Australia) as a result of the generous financial support received in response to a widespread appeal outside the University. This instrument, in addition to partly meeting a long standing lack in the training of undergraduates will be extensively used for important research in the field of Non-topographical Photogrammetry and for assisting the research programmes of engineering departments. The installation of a second instrument, a Kern PG2L stereo-plotter, is imminent, again as a result of financial support from a non-University source.

The sub-department of Veterinary Anatomy has been able to provide additional tutorials in the use of the X-ray unit and the interpretation of X-rays. The extension of this training has been made possible by the provision of a Philip-Stanford Medio 20N mobile X-ray unit from special research funds provided by the Australian Universities Commission.

RESEARCH

The variety of university research is now so great and some of its facets are now so technical that it is not possible, in a brief review such as this, to do more than to select a few examples of the contribution members of staff are making to the extension of knowledge. Each year the university publishes a comprehensive research report which sets out in more detail information on the individual projects. Copies of these are available to members of Convocation.

Let me refer briefly to the work of the *Physics* Department. With the return of Professor Parsons, work on microwave refractive indices of gases has been stepped up, on both experimental and theoretical sides, and considerable advances are being made.

The "Whitehead Cross" antenna system is now under construction at Bribie Island. Considerable interest is being taken overseas in this development, which is receiving support from the Australian Research Grants Committee. Dr. Whitehead visited Vienna in May, at the invitation of the International Committee for Space Research, to lead a seminar on the Sporadic-E Layer of the Ionosphere. The International Union for Scientific Radio (U.R.S.I.) has invited Dr. Whitehead to prepare a special report on the theory of Sporadic-E Formation.

"Whistler" recording gear is now operating routinely at Bribie Island and, by courtesy of the School of Agriculture at the University of Melbourne, at Mt. Derrimutt near Melbourne. The Melbourne equipment is being used, in conjunction with our own backscatter sounder, to locate and identify ionospheric ducts. Thanks to the co-operation of the Radio Research Laboratories of the Japanese Ministry of Communication, propagation of long radio waves over a path of special geophysical interest from Japan to Brisbane is being studied.

The Astrophysics group has continued work on the physical processes effecting the formation of stellar absorption lines; this work has been stimulated recently by a grant from the United States Office of Scientific Research.

Extensive research programmes are now proceeding in a number of the departments of the Faculty of Arts. Linguistic research in the *Department of German*

has been greatly stimulated by the establishment of our Department of German as the headquarters of the new "Monumenta Germaniae Acoustica in Terra Australiensi" inter-University Linguistic Research Facility. Through the initiative of members of the department, the entire collection of language tapes of the Deutsches Sprach-archiv in Münster is being duplicated and will be held in Queensland. This material will also be made available to other Australian Universities for linguistic research.

Members of the *Department of Dentistry* are now becoming active in enquiries into anaesthetics. Late in the year, Professor Stephens was invited to discuss his work on the jet-injection of local anaesthetic solutions with research workers in this field in the United States and Europe. Another member of staff was invited to visit Sweden and the United States to discuss his work on local anaesthetic solutions with authorities in those countries.

The occupation of improved facilities in the Clinical Sciences Block has enabled several medical departments to further their research programmes. The *Department of Obstetrics and Gynaecology* is undertaking a major research programme into the study of genital cancer, especially that involving the uterus. The Department is particularly fortunate in having the close and helpful co-operation of the Queensland Radium Institute and the Pathology Department of the Royal Brisbane Hospital in this programme.

Other research programmes include the difficult problem of pituitary gonadotrophin assay, an estimation which formerly had to be done outside the State. These assays are of particular value in the study and treatment of infertile women. Another project has been directed to the study of the well-being of the foetus in utero, particularly in patients with hypertension and renal disease; the effects of different therapeutic measures are now being accurately studied.

The Department of Social and Preventive Medicine has now completed the first phase of its epidemiological investigations into skin cancer. A member of the Physics Department and a member of this department were invited to a conference on ultra-violet radiation held in Philadelphia and at Rutgers University to discuss their work. It is now proposed to move into other aspects of skin cancer research in a way which would involve a number of other medical disciplines.

As I mentioned earlier, these are merely a few of the projects being undertaken in the university at the present time. Members of staff are now using the better facilities and the more up-to-date equipment to undertake a wide variety of projects many of which will ultimately produce results of very considerable value for the people of this State.

STUDENT SERVICES

Counselling Services

During 1966 the University of Queensland Counselling Services continued to provide the students with assistance in obtaining residential accommodation, employment on graduation, educational and vocational counselling and counselling in connection with personal problems. In many cases counselling assistance was provided for students at times of crises in their lives, when immediate and important educational decisions were required or when prompt action was required to deal with personal problems arising during the processes of development towards adulthood and of adjusting to a new environment. Throughout the whole counselling process our aim is to assist students to attain realistic appraisals of themselves in relation to the academic and occupational opportunities available.