UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

TO: Members of the Council and Senate,
University

N. Domaes

Draft report for submission to the
Commission of Enquiry into Universities

I enclose a draft copy of the report to the Commission of Enquiry into Universities containing the proposed text of the following sections of our submissions:

1.1 to 1.2, 1.5 to 1.9, 2.1 to 2.4, 2.6 to 2.9, 2.11 to 2.18,
3.1 to 3.3, 4.4 and 5.1 to 5.8 and provisional index

A draft copy of the remaining sections will be forwarded as soon as possible.

The draft report will be submitted to the Co-ordinating Committee, which consists of representatives of Council, Senate, Convocation, the Staff Association and the Students Representative Council, on Wednesday, 24th September, 1969 and thence to Senate on the 30th September and to the Executive Committee of Council on 2nd October.

If you wish to submit proposals for the amendment of the draft text, it would be helpful if you would let me have these as soon as possible and in time for the preparation of a working paper for submission to the Co-ordinating Committee at its meeting next Wednesday.

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PROVISIONAL INDEX

This provisional index includes the following sections of our submissions: 1.1, 1.2, 1.5 to 1.9, 2.1 to 2.4, 2.6 to 2.9, 2.11, 2.12. 2.14 to 2.18, 3.1 to 3.3. 4.4, 5.1 to 5.8.

1.1 NATURE AND FUNCTION OF THE UNIVERSITY

The university ideal of a self-governing community concerned with advancing and disseminating knowledge derives from the corporation of masters and scholars of the Middle Ages.

Universities are, however, part of the social fabric and their nature and functions respond to the changing needs of society and the vital ideas of the age. In the middle of the nineteenth century Cardinal Newman in "The Idea of a University" saw the provision of liberal knowledge as the primary function of a university. Society, he said, required some other contribution from each individual besides the particular duties of his profession, although Newman recognised that every art was improved by confining the professor of it to that single study. He recognised too that the acquisition of professional skill contributed effectually to the accumulation of national wealth. He considered however that "a university training is a great ordinary means to a great but ordinary end; it aims at raising the intellectual tone of society, at cultivating the public mind, at purifying the national taste, at supplying true principles to popular enthusiasm and fixed aims to popular aspiration, at giving enlargement and sobriety to the ideas of the age, at facilitating the exercise of political power, and refining the intercourse of private life. It is an education which gives a man a clear conscious view of his own opinions and judgments, a truth in developing them an eloquence in expressing them and a force in urging them. It teaches him to see things as they are, to go right to the point, to disentangle a skein of thought, to detect what is sophistical, and to discard what is irrelevant."

Over a century later Clark Kerr, a former president of the University of California, wrote:

"Today, more than ever, education is inextricably involved in the quality of a nation. It has been estimated that over the last thirty years nearly half of our national growth can be explained by the greater education of our people and by better technology, which is also largely a product of the educational system. .....

Knowledge/

Knowledge has certainly never in history been so central to the conduct of an entire society ..... and the university is at the centre of the knowledge process ..... The university has become a prime instrument of national purpose."

We agree with Flexner's viewpoint that a university should be "..an expression of the age as well as an influence operating upon both present and future." We should not like to see South African universities derive their character from pressures of their environment or become prime instruments of national purpose committed to the service of technology. We should not like to see economic advantage exalted at the expense of human values. We see the need today as Newman did over a centry ago for a liberal education which develops "the quality of judgment or the power to grapple with any subject and to seize the strong point in it." These are the qualities of good leadership needed as much today as in Cardinal Newman's time. Their development forms part of the often neglected process of character building.

For a thousand years universities have provided training for entry into the recognised professions and as Clark Kerr put it "..a profession gains its identity by making the university the port of entry." Universities will continue to respond as new professions arise, but we should like to comment on the acceptance of vocational newcomers. Sir James Mountford (former Vice-Chancellor of the University of Liverpool) wrote,

"Any subject taught in a university must have a definite and substantial content of fundamental knowledge, must be in an area where further advances in knowledge are possible, and must not be predominantly a training in skills and techniques."

We concur with these views and consider too that the aim of a university training in a vocational field should not be to produce mere specialists in the skills of a profession, but men and women who understand the fundamentals and have the mental readiness to adapt themselves later to a new approach as the old becomes out of date. Universities need to produce graduates who will modify and develop the practice of their professions as the needs change.

Research is as much part of a university function as teaching is. In a subtle way teaching is enlivened by the teacher's participation in research. The spirit of university research should be the disinterested extension of knowledge. Utility or easy access to financial support should not be its mainspring although many topics for research will have a close relationship to practical application and may often be conducted in partnership with industry. It is the opportunities for contributing to the advancement of knowledge by research and for training young people in the methods of research that attract persons of intellectual distinction to a university career.

We consider too that universities have an important rôle to play in the general cultural life of the communities in which they are situated and agree with the Robbins report (paragraph 28) that a proper function of universities is the transmission of social habits which rest on a background of culture.

We have attempted to define the nature and functions of a university in the following terms:-

> In its essential form a university is a community of scholars dedicated to the search for truth and to the instruction of others in the general intellectual heritage of mankind, in the application of analytical thought to the solution of problems of all kinds and in the application and development of professional skills.

No two universities are cast in the same mould. Each has a character or personality of its own determined largely by the emphasis it gives to one or more of the plurality of functions.

1.2 UNIVERSITY AUTONOMY

(a) Academic freedom

We consider that university autonomy means the right of the university to determine its own policy in regard to:-

(1) the admission of students;

(2) the appointment of staff;

(3) the content of courses and the design of the curricula;

(4) the standards of degrees and to whom degrees may be awarded;

(5) the allocation of its income, including that received from government sources.

On this foundation of university autonomy the principle of academic freedom ensures the right of a university itself to decide what to teach and to whom, of the students to decide what to study and where to study and of the academic staff to teach, carry out research and publish the results of scholarly work in the interests of truth and the advancement of learning alone.

Not all of these rights within the principle of academic freedom can be absolute. Students are free to select their courses only within practical and organisational constraints and within limits imposed by the requirements of professional bodies which recognize the degree as a qualification for professional practice. There are restrictions which come about because of the character, size or the aims and emphasis of the university and because of financial limitations. Universities also forego part of their autonomy for the common good when, for example, external examiners are appointed to share in setting academic standards.

Within the practical and some self-imposed constraints, we recognise that a South African university enjoys autonomy in respect of its academic standards, curricula and the allocation of its income to a degree as great as most universities in the West, and to a greater degree than many. Conflict has, however, arisen in the/

the freedom of a university to choose who shall teach and who shall be taught and this is of the very essence of university autonomy. In this respect the South African university probably suffers under more restrictions than any public university in the free world.

A university is not only organized for teaching, learning and research. It is also an institution based on certain universally acknowledged ideals and traditions which are part of the way of life of the free world today. Although no two universities are alike, all are united in an international fraternity based on these common ideals and traditions. When a university is obliged to depart from these accepted standards and to yield against its judgment there is a serious interference with its autonomy, and its standing in the world community of universities is diminished.

This University takes the greatest care to observe the law of the country and will continue to do so. From this point of view our position is no different from that of universities in any other country. But it is one thing to apply the normal laws of the land to the functioning of a university and quite another for legislation to be enacted which is aimed specifically at curbing the freedom of action of a university. While observing all laws the University maintains its right and duty to protest against those which encroach upon university autonomy and interference with academic freedom. Each university should be free to determine its own policy in matters in which it is autonomous and not coerced into a departure from the principles in which it believes and has established for itself. The principle in which we believe is that a university is a place where men and women without regard to race and colour are welcome to join in the acquisition and advancement of knowledge. We state our view emphatically that the admission of students to this University should be on the basis of their academic qualifications alone and that once admitted all students should be treated exactly alike. Equally emphatically, we assert that we should be free to make appointments to our academic staff from those who are academically best qualified without regard to race and colour and we regard constraint in doing so by the threat of legislative enactments as an improper inferference with out autonomy. We would

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with the same emphasis defend the right of any other university to determine its own ideal in a way which does not coincide with our own convictions.

1.2 (b) University responsibility

We recognise that the concept of university autonomy should not be extended so far as to rule out the national need to ensure a policy of co-ordination among universities and the proper use of resources. In this connection, we concur with the following statement made by the British Committee of Vice-Chancellors to the University Grants Committee in 1946:-

> "The universities entirely accept the view that the Government has not only the right, but also the duty, of satisfying itself that every field of study which in the national interest ought to be cultivated in Great Britain is, in fact, being adequately cultivated in the university system, and that the resources which are being placed at the disposal of the universities are being used with full regard both to efficiency and economy.... The universities may properly be expected not only individually to make proper use of the resources entrusted to them, but also collectively to devise and execute policies calculated to serve the national interest."

Universities are part of the society in which they have their being and must pay attention to the needs of that society, more particularly when it is the direct subvention of the taxpayer which enables them to exercise their functions. At the same time universities must respect the imperatives of knowledge itself in their teaching.

Universities have the responsibility of adapting themselves to the changing emphases which are the consequence of the growth of knowledge. They have the responsibility of educating increasing numbers of students in response to the national needs for trained intelligence on an unprecedented scale and at the same time, as Clark Kerr put it, ".. preserving a margin for excellence, an aristocracy of intellect, in a populist society."

Universities must plan and organise their own research and co-ordinate it with social needs and those of government and planning bodies taking into account their own special capacities and resources so that they do not become mere agents of national scientific and social policies. It is a university responsibility to emphasise the importance of fundamental research and at the same time to give attention to applied research. It must establish its own priorities between free and planned investigation in a dialectic, which marks a living university operating within departments and faculties, its central organs, and in its relations with the government and statutory councils.

Universities are the bulwark of intellectual liberty, freedom of thought and expression. It is their duty to society, in the words of Sir Eric Ashby ".....to reflect and observe without prejudice and to criticise without fear." Autonomous universities have the further responsibility of educating the national political conscience and without engaging in the party struggles to give attention to the political options which determine the future of the country.

Note: The use is acknowledged of material contained in the report of the Working Party on University Administrative Systems of the International Association of Universities, Paris.

1.5 RELATIONSHIPS WITH OTHER HIGHER EDUCATION INSTITUTES

(a) With colleges for the training of teachers

The position of this University is unique in South Africa in the matter of teacher training. It has never undertaken ordinary teacher training and the function of its Department of Education has been to provide postgraduate education for teachers who were already qualified professionally and academically. Teacher training for English-speaking students in the Transvaal has been carried out by the Johannesburg College of Education with which the University, since its inception, has had a special relationship. The University's function in this relationship has been conceived to be the provision of the academic content of the education of teachers rather than the provision of professional training in competition with the College.

Section 23 of the University's Private Act No. 61 of 1959 makes provision for the affiliation with the University of an institution, which has for its objects the carrying on of any branch of higher education. Students of an institution so affiliated could be admitted to any examinations and degrees, diplomas and certificates of the University on conditions prescribed by the statutes or in rules made by the Senate and approved by the Council of the University.

We consider that the objectives of the National Education Policy Amendment Act, 1969 could best be achieved in the case of this University by the affiliation with the University of the Johannesburg College of Education under the existing provisions in our Private Act.

As a consequence of this proposed affiliation arrangements could be developed in which members of the College staff, having appropriate academic qualifications, would be recognised as University teachers having, for certain purposes, the standing and functions of University staff, but remaining under the administrative control of the College. Similarly members of the University staff might participate in certain aspects of teacher training which would be undertaken in the College. We consider that in this way an integrated system of teacher training could evolve in which the staff resources of both the University and the College could be utilised to the best advantage.

We consider that secondary school teachers should have a high level of training in the particular subjects which they intend to teach. Ideally, it is desirable that the academic qualifications of teachers should be at the level of an honours degree. We recommend therefore that teachers be encouraged to proceed to an honours degree and that the existing obstacles to doing so in the facilities provided by the Provincial authorities for teacher training be removed.

1.5 (b) Relationships with colleges of advanced technical training

Colleges of Advanced Technical Education and Training were established under Act No.40 of 1967. Five institutions have been declared to be such colleges: The Cape Technical College, Natal Technical College, Pretoria Technical College, Witwatersrand Technical College and the Vaal Triangle Technical College.

We consider that the primary function of these colleges should be the provision of vocational training (primarily to produce technicians) for students not normally qualified for university admission. However, a proportion of students registered at these colleges do hold qualifications of the standard required for university entrance and in the national interest we consider that they should be afforded the opportunity of following degree courses. We are not able to estimate the number of students at Colleges of Advanced Technical Education who hold qualifications entitling them to university admission, but we do know that of the 148 students registered for the National Diploma in Surveying 109 were so qualified.

Students who are intellectually able to profit from a university education are often diverted to a College of Advanced Technical Education for financial reasons by the attraction of employment opportunities which offer a salary and payment of fees while registered as a student at one of these colleges. Such opportunities are provided by the Public Service Commission and we recommend that more generous bursaries be awarded to encourage persons, of appropriate intellectual calibre, to enter a university rather than a College of Advanced Technical Education.

In consultation with the Colleges of Advanced Technical Education in the Transvaal, we have explored ways in which students of real promise could be admitted to a degree course at the University and granted recognition for work completed at a College. The University has now agreed that selected students at a College who have achieved a high standard in the first-year examinations may be permitted to write the University examinations at the end of the second year of study. Those who are successful in these examinations would then be awarded credit towards a University degree in respect of subjects passed in the University examinations in second-year courses as well as the first-year courses passed at the College.

1.6 RELATIONSHIP BETWEEN UNIVERSITIES INTER SE

(a) Recipricol recognition of courses and grades

The reciprocal recognition of courses completed at South African universities is governed by section 18 of the Joint Statute to the Universities' Act, No. 61 of 1955.

The Joint Statute requires residential universities to accept as part of the attendance of an undergraduate, periods of attendance as a matriculated student at another residential university in the case of recognised courses, and as far as may be practicable, certificates of proficiency in any subject issued by another residential university. A residential university is not required to, but may also accept as part of the attendance of a student a period of registration of not more than one year as a matriculated student of the University of South Africa, provided the student has also successfully completed a prescribed number of first-year courses. The Joint Statute further prescribes that a student, whose attendance at another university has been accepted as part of his attendance, shall in addition attend approved courses at the university conferring the degree for a period which, with two exceptions, is not less than the final two years in the case of a degree for which the prescribed period of study is less than six years and the final three years in the case of a degree for which the prescribed period is six years.

These provisions for reciprocal recognition of courses completed at another South African university are satisfactory in respect of the recognition of first-year courses. In the case of some subjects, however, difficulties arise in the recognition of second-year courses where the content of the syllabuses at the two universities is not the same. A student granted exemption in these subjects from second-year courses in such subjects may be espected to find difficulty in his third-year of study due to deficiencies in his earlier year of study.

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In general a graduate with a bachelor's degree of any South African university is accepted for admission as a student for an honours degree subject only to his attainment of a sufficiently high standard in his first degree. The Senate of this University recognises an honours degree or a master's degree of all other South African universities for the admission of a candidate for a higher degree, but reserves to itself the right to decide upon the suitability of the candidate and his proposed field of research.

1.6 (b) Mobility between universities - lecturers and students

Academic relationships between universities are intended to facilitate the movement of students from one university to another with as little loss as possible of credit for work that has already been completed successfully. These formal relationships should enable students who are seeking training for higher degrees to move within the community of universities to the postgraduate centres which are best equipped to train them. Student mobility is certainly desirable and it could be attained by standardizing curricula and regulations throughout the country. This, however, would destroy university individuality which is an important quality that universities throughout Europe and America have striven to develop. A good university seeks to develop a personality of its own - derived no doubt from the community it serves, the students who attend it, and the benefactors that support its special fields of excellence. It follows that most universities will not grant degrees to students who have not been in attendance long enough to be influenced by the personality of the University, to have felt the intellectual stimulus of its environment and to have identified themselves as members of the University.

1.6 (c) Library exchange

The newer universities have been and are likely to continue to be dependent on the stocks of the older and larger university libraries. The library at this University, for example, lends at a rate which is five times that at which it borrows under inter-library loan arrangements. Each year the loan traffic increases. The reason for this is that it is generally the older works which are required on loan and even if more funds were available, the new libraries would not invest their resources in older works. However, the effect of this is that staffs dealing with the inter-library loan at older universities are employed principally in the interests of users not connected with the university. Our library is providing material for scholars and research workers throughout the country. If the requirements of non-university readers continue to increase at the same rate as they have in the past it has been estimated that within ten years our own undergraduates might become a minority of our readers.

We do not wish to discourage the further development and extension of inter-library exchange facilities which we recognise as a rational and economical way of meeting the need for a wide collection of books and periodicals within the country. However, we wish to urge that financial recognition be given to the service which an older university library, such as that of this University, is rendering to the community of university scholars and the reading public as a whole. At the same time, we draw attention to the fact that the users of our library already greatly exceed the number of students at the University on which the library subsidy is based.

The provision of photocopies does facilitate the inter-library supply of material contained in journals, but in the case of books, where the whole work is usually required, the book itself needs to be sent to the library requesting its loan. This is not always possible either because of its irreplaceability if lost or because of the book being in heavy demand by University readers. We consider that scholars and researchers, who are within reasonable distance of the library, should be more prepared as their confrères in Europe and America are, to visit and work in the collections of the library in which the research/

research material required is housed. We consider that library exchange arrangements should be available for meeting only the exceptional demands and not be the normal way for a scholar to obtain material which he requires.

For rapid communication between libraries for arranging inter-library loans for reducing correspondence to a minimum and enabling more information to be obtained when that supplied initially is inaccurate or incomplete, we recommend that university libraries and all other major libraries be in communication with each other by Telex.

1.7 FUNCTION AND STATUS OF THE COMMITTEE OF UNIVERSITY PRINCIPALS

(a) Present situation, and

(b) Possible expansion of function and status

Act No. 61 of 1955 which consolidated and amended the law relating to universities, provided for the establishment of a Committee of University Principals (C.U.P.) as a successor to a former joint committee of University Vice-Chancellors. The same Act also established a University Advisory Committee, at least one member of which is nominated by the Committee of University Principals. Neither of these two committees was given statutory powers of any significance, and in their relations with the Minister of National Education both act principally as his advisors - the Advisory Committee "on such matters relating to the universities as the Minister may refer to it", but the C.U.P. may "consider and make recommendations to the Minister on any matter that it considers to be of common interest to the Universities".

The "Holloway Commission" of Enquiry into University Finances (1951) recommended the appointment of a University Grants Commission as a statutory body with functions partly executive and partly advisory and with two full-time members, a chairman and a secretary, and three part-time members. The acceptance of the Holloway Commission's formula for subsidising South African universities introduced a new system of quinquennial financial and academic planning into the administration of the universities, but unfortunately the idea of a University Grants Commission did not find favour and the 1955 Act established what are virtually two advisory committees.

The Committee of University Principals soon found itself pre-occupied with problems primarily of a financial and administrative character. Its rôle in higher education policies suffered and the Committee became aware that it could be more effective. To be effective, however, the Committee must establish the means whereby a university view could be expeditiously formulated and expressed, e.g., on the establishment of new universities, in regard to which the C.U.P. has not been consulted and which, in the opinion of many, would further erode the standard of our teaching and research. A regular and accepted pattern of consultation with the Minister of National Education

should be established.

Perhaps the C.U.P. should also be more representative, since as now constituted it is singularly lacking in contact with academic opinion - it should seek such contact through a consultative committee structure. (The British Vice-Chancellors' Committee has five divisions, each with its own area of activity.)

Some aspects of its present lack of status and the absence of a modus vivendi with the Advisory Committee can undoubtedly be overcome even within its present circumscribed powers and functions. The C.U.P. should take positive steps to enhance its status as an advisory body on the needs of the universities. It should seek to afford the means by which universities can act collectively in matters of national policy relating to the universities and so develop into an active instrument for the presentation of the views of the universities to the government and other bodies. It could, at the same time, provide the government with a vehicle of communication with the universities as a group. The Committee should also serve as a clearing house of information about higher education in the Republic.

If the C.U.P. is to achieve a greater measure of initiative than hitherto in preparing and presenting to the government and other bodies, studies and recommendations on matters of common university interest and policy, it must effect a radical revision of its structure and a substantial strengthening of its secretariat. It is, in fact, at present examining its functions and organisations.

It is of interest to note that the chief national association of the Canadian universities, known as the Association of Universities and Colleges of Canada, had a budget of 0.5 million dollars in 1967 - staff salary expenditure of $ 300,000 and membership fees on the basis of $1.60 per full-time student amounted to $380,000. The Committee of University Principals of South Africa has a part-time secretary (who is a full-time Registrar of one of the member universities) and an annual budget of R5,500 (salaries R2,000). The Canadian Association regards its two main functions as:-

"(1) studying the problems of higher education in Canada so that member institutions can see their individual tasks more clearly in the light of the total problem and in the light of what others are doing, and

(2) acting as an advocate for higher education with the federal government and as the universities representative in representations to the various departments of government."

In other words, it is devoted to serving the needs of the universities. In addition, there are scores of inter-university organisations in Canada which are devoted to particular aspects of university work, both academic and non-academic.

The Committee of University Principals should place itself in a position to meet the challenge of the greater public interest in university affairs and a possible greater measure of public accountability for the use of university resources which may flow from the substantial increase in both public and private funds placed at the disposal of the universities.

1.8 THE FUNCTION OF THE UNIVERSITY ADVISORY COMMITTEE

(a) Present function, and

(b) Any possible change or expansion

The recommendation of the Holloway Commission for the appointment of a University Grants Commission should be revived and brought up-to-date by reviewing the constitution and functions of the existing University Advisory Committee. The Holloway Commission, having devised a subsidy formula, realised immediately that its scheme for giving financial aid to the universities would function effectively only if its operation was kept under constant surveillance on the basis of direct contact with universities. Initially, the U.G.C. would have had under its control limited funds to help with advanced research, special library needs, and the acquisition of movable assets. It was also to be entrusted with certain advisory functions "to assist the smooth working between the universities and the State".

These functions of the proposed U.G.C. have undoubtedly been carried out by the successive chairmen of the University Advisory Committee, but for one man to carry this burden is patently impossible.

In the United Kingdom, where there has been "a permanent advisory body making grants to colleges" since 1904, the main warrant for the activities of the University Grants Committee has been "the preparation and execution of such plans for the development of the universities as may from time to time be required in order to ensure that they are fully adequate to national needs".

To ensure that the universities remain aware of these needs, the U.G.C. in Britain has a system of quinquennial visitations, which begin in the third year and which are regarded as an invaluable part of the procedure for determining grants. It may be argued that the subsidy formula for S.A. universities renders such "visitations" unnecessary, but the discussions with staff, students and even governing bodies which should be part of them would provide the essential/

essential background information for the revision of the formula. If members of the office of the Secretary for Higher Education were to accompany the U.G.C. on such visits, most valuable links could be forged between the responsible government department and the universities.

We are convinced that the present degree of independence enjoyed by the universities in academic planning will be consolidated and enhanced by "a committee independent of politics and not subject to ministerial direction". Such a committee could serve as a buffer between the Government and the universities.

1.9 FUNCTION OF THE JOINT MATRICULATION BOARD

(a) Control of standards

The main function of the Joint Matriculation Board, which is a statutory body, is to lay down the minimum legal requirements for university entrance in South Africa. These requirements can be met either by obtaining a pass in the Board's own examination or (more usually) by satisfying the Board's conditions for the recognition of other examinations. Universities are empowered to frame regulations of their own for admission to a course of study in any particular subject or to a course of study for a degree. Such regulations may prescribe "the attaining of a specified standard in specified subjects at the matriculation examination" or its equivalent as recognised by the Board. For the rest the universities are legally obliged to admit any applicant who satisfies the Board's minimum requirements. The sole exception to this rule is that where facilities are inadequate for the training of all students who seek admission, the universities may apply their own selection procedures.

Comment by members of the academic staff of the University on the high failure rates among first-year students often suggests that one cause of a high failure rate is the presence in the universities of large numbers of students who have no business to be there, in the sense that they lack the basic skills for successful work at university level. If this diagnosis is correct the proper remedy is the introduction for the country as a whole, of a higher standard for admission which could be achieved through a reform of matriculation requirements. There is some criticism in the universities of matriculation standards in individual subjects, but it is difficult to deny that there is an effective correlation between the overall or aggregate performance of candidates in the matriculation examination and their subsequent performance as first-year students.

Since the representatives of universities command a majority on the Board the universities could conceivably carry their view on this question of a higher standard of admission. The only prerequisite is that they would have to agree amongst themselves on what they wanted in advance and this agreement might be difficult to obtain.

This University is not in a position to introduce its own selection procedures, by raising the standard in specified subjects at the matriculation examination for university admission, substantially beyond the limited way in which this is at present prescribed in its regulations because of the financial implications this would have on the government subsidy. Any such general reform of the current requirements would have to be introduced in all universities, and account taken of the effect of such a measure on the payment of government subsidy.

It may be of interest to the Commission that in a recent survey conducted by the students themselves at this University 32 percent of second year and more senior students considered that the entrance qualifications were too lax and only $3\frac{1}{2}$ percent considered that they were too strict. The main objective of university representation on the Board should be to ensure that the academic standard required for university entrance is suitably high. The presence on the Board of the departmental directors of education or their alternates introduces certain non-academic considerations. Having a responsibility for the education of school-leavers as well as university entrants, the spokesmen for the education departments are prone to draw a distinction between 'opvoeding' and 'onderwys'. The former concept emphasises the character-forming and training for citizenship aspects of education. However important 'opvoeding' may be, the task of the university representatives must be to ensure that the over-riding criteria for university entrance remains essentially academic in character. The shortage of qualified manpower has generated pressures from the community for a lowering of university entrance standards. The view of the university representatives must surely be that the Board should resist such pressures. Where no lowering of standards was in question, the Board has in the past demonstrated an appropriate flexibility. Provided that this flexibility is retained in the future, there can be no reason for any loss of confidence in the Board on the part of the universities.

1.9 (b) Advantages and disadvantages of the present system

(1) Multiplicity of matriculation examinations

Apart from the Board itself, there are five other bodies in the Republic whose public examinations normally qualify for exemption; the four provincial education departments (University Entrance Examinations) and the Central Department of Education (National Senior Certificates). A recent addition to this structure has been the matriculation project of the Transvaal Education Department in terms of which standard ten pupils from twenty high schools can earn exemption without taking the public examination. The multiplicity of examinations clearly impedes the Board in its function of ensuring the application of a common standard in the country as a whole. In all the public examinations (including the Board's own) the question papers and a sample of scripts in the individual subjects are scrutinised and reported on by moderators appointed by the Board. Representatives of the Board also serve on the examination committees of the other examining bodies. For the rest the Board has little control over the examining procedures of these bodies whose annual requests for permission to continue examining are automatically granted.

(2) Recent moves towards a more uniform standard

The examinations of November-December 1970 and subsequent examinations in the Section A (academic subjects including mathematics, the physical sciences and languages) are to be based on common basic syllabuses as approved by the Board. These syllabuses are intended as a minimum basis, in the sense that the education departments may add to them but may not otherwise depart from them. In mathematics and the natural sciences the Board has authorised the preparation and issue of guides to teachers which are based on these syllabuses. At the time at which the introduction of the common basic syllabuses was under consideration, a move was also made to reduce the number of subjects examined in the matriculation year from six to four. Largely as a result of opposition from the provincial education departments this proposal fell away. The proposal that is under consideration at present is that as from 1970 common papers should be taken in the offical language (both grades), one science subject and mathematics or a third language (i.e., the four Section A - or academic subjects).

This proposal, which would have the effect of making some comparison of the standards in the provincial examinations possible, as well as furthering the application of a uniform standard, has been referred to the committee of the departmental heads of education for comment.

The proposed introduction of a 'national education policy' has so far not affected the function of the Board in any way, although one of the objectives of such a policy might well be to substitute a single matriculation examination for the many that are held at present. The departmental heads of education are at present considering a proposal for 'national differentiation' in school education. This seems to envisage a uniform policy in respect of the distinction between examinations for ordinary school-leaving (B:stream candidates) and those for university entrants. The implications of this proposal have so far not been laid before the Board.

2. UNDERGRADUATE TRAINING

2.1 Ensuring Effective Training

(a) Methods of imparting knowledge and insight to students

The basic purpose of a university education is to teach the student to think for himself. Undergraduate training to be effective should be directed not primarily to the accumulation of factual information, but to the development of the student's mind and to his method of approach to the solution of a problem. To achieve this objective lectures should be supplemented by practical laboratory classes (where these are appropriate), tutorials, seminars and the regular assignment of written work properly integrated into the programme of formal work. It is submitted that these are all essential components for ensuring effective undergraduate training.
It is often asserted that lectures are outdated as text books are available. We do not agree with this view and submit that the formal lecture has a rightful and useful place in university training and that if fulfils the following functions:-

(1) transmitting information which the student must know to comprehend his subject, in an orderly, balanced, systematic and economical way with the advantage of oral explanation of difficult points;

(2) affording a framework for further reading and guidance on what to read;

(3) presenting theoretical insights and advances in knowledge;

(4) kindling, stimulating thought and awakening a critical attitude.

A well constructed lecture should impart knowledge on a specific topic in a way which leads students to think about it critically and hence we do not consider that the dictation of notes should take place in the lecture nor do we subscribe to the view that students should be provided with printed summaries of lectures. One of the advantages of the formal lecture/

lecture is considered to be the mental exercise afforded by the assimilation of the spoken words of the lecturer and their committal to paper in the form of a summary of the essential features for subsequent visual recovery. The complete process aids the retention of knowledge which neither spoken nor written words alone can afford. Apart from this the mental effort of selection in assigning importance to what is recorded is in itself an exercise of educational value.

The formal lecture may not afford opportunities for dialogue between the lecturer and his students, and has this important weakness as a sole method of teaching. The need for the provision of adequate opportunities for personal contact between the lecturer and his students cannot be too strongly stressed. Student participation in academic discussion in small groups is considered to be another essential component in the effective training of undergraduates. . .

The purpose of discussion is to afford opportunities for personal contact between teacher and students to elucidate misunderstandings and difficulties and to encourage students to develop for themselves an ability for critical examination of the subject matter of a course. This can best be done by students hearing each other discuss selected topics in the presence of and with the help of an experienced person. Although only some students may participate in such discussions, the non-contributors benefit from being present and hearing the discussion.

The frequency and precise form which small-group teaching should take depends greatly on the nature of the subject. In Mathematical subjects it may take the form of tutorial classes for gaining experience in the solution of problems with teachers present to resolve difficulties. In some disciplines it may usefully take the form of the presentation of prepared work by students and its discussion among those present. Whatever form such classes take, it is essential that the group itself should be small and its activities well planned and integrated with the concurrent course of lectures and reading. The subject material should be chosen to develop the critical powers of students or designed to promote the exposition and discussion of selected topics.

Practical classes also serve the function of bringing students and staff together and so provide opportunities for informal discussion of the subject. Apart from this function practical classes serve the following purposes listed in the Hale report on University Teaching Methods:-

(1) to train the student in manipulative skill;
(2) to introduce him to a range of techniques and instruments;
(3) to illustrate, supplement and emphasise points from lectures and private reading;
(4) to train him to write an experimental report, based upon a properly kept laboratory notebook;
(5) to give him some sort of critical awareness of the nature and organisation of a well-designed experiment.

Another important method of ensuring the effective training of undergraduates is the regular and frequent performance of written assignments in the student's own time. This exercise teaches him to work on his own and think for himself. Projects of this kind, which require the student to study the literature, train him also in coherent thinking, the use of language and the communication of his ideas to others in written form. The most beneficial results from written exercises of this kind are to be derived only when the work is marked promptly and subjected to criticism and discussion with the student either on his own or in a small-group class.

These four components - the formal lecture, practical classes, small-group classes and written assignments completed in the student's own time, are all complementary to each other and collectively provide the basic methods of training undergraduates in a University of this kind. The formal lecture provides for the orderly presentation of the framework of the subject, the practical class (where applicable) trains the student in experimental techniques, the small-group class helps to develop his power of critical examination and establish (as in the case of the practical class) personal contact between teacher and student.

The/

The written assignment develops his ability to work on his own and affords him practice in the written communication of his ideas to others. The underlying object of all should be to develop the student's ability to think imdependently for himself.

2.1 (b) Methods of inculcating sound study habits

Sound study habits should begin at school but the transfer from school to university usually requires an abrupt adjustment to new methods of study. This transition comes, as the Hale report puts it, "When the student has often attained an appearance of maturity which conceals the continuing immaturity of the mind."

Too many first-year students enter the university assuming that a university education is a continuation of school and that the methods of study used successfully in negotiating the matriculation examination will serve them well enough as undergraduates. This is the attitude of mind which motivates students to ask for duplicated lecture notes. Although, as the Hale report remarks, advice on how to become a university student cannot change a schoolboy into a university student we consider that prospective university students should receive advice and some introduction at schools to the study methods to which they will have to adjust at the University, including, in particular, practice in taking notes at lectures and for making notes on assigned reading. We suggest that a few lectures be incorporated into the Standard 10 curricula at schools and that carefully compiled notes be provided to schools for preparing these lectures to ensure that sound advice is imparted and that emphasis is placed where it is most needed.

We also advocate that prospective students from schools make contact early with universities not only to discuss their curricula but also to learn what is expected of them as undergraduates.

Inculcating sould study habits among first-year undergraduates at the university depends almost entirely on the availability of staff for arranging small-group classes, setting and marking regular exercises and/

and providing guidance in personal consultations. More personal contact than has hitherto been possible is the essential requirement and with some 2500 first-year students at this University the magnitude of the problem may be judged.

2.1 (c) Essential aids to the successful training of students

We consider books and journals to be the most important equipment needed for training university students. Students are expected and encouraged to build up their own libraries of prescribed and other books, but the preparation of written work usually requires, and should require, reference to books and periodicals which students could not reasonably be expected to possess. When large numbers of students are engaged in the same projects libraries need to hold a reasonable number of copies to meet the simultaneous demand for some books although in a well conducted course written assignments should not impose unreasonable demands on library resources. We therefore stress the need not only for a library with extensive reference material to meet the needs of staff, postgraduate and undergraduate students but to provide sufficient copies of material undergraduates will need for completing their written exercises as well as preparation for seminars and other discussion-type classes. The library of a university is central to teaching in all departments and a well equipped library is vital to effective university training.

In addition to good library facilities, students need space in which they can work without being disturbed. As well as library reading rooms we should like to be able to set aside rooms for study which are not required for other purposes. As present this is not possible and students have difficulty in finding suitable places for study at this University.

Apart from the conventional aids to teaching there is a growing array of mechanised teaching aids. These include the various forms of audio-visual aids, the equipment for language laboratories, printed or mechanised programmed instruction and computer-based instruction.

We consider that these developments in the field of Educational Technology have considerable potential and an undoubted future in increasing the effectiveness of university teaching. However, we believe that such media cannot be introduced and expected to function successfully without the guidance of a group of persons specially skilled in the use of these devices and their application as part of the whole learning process.

As soon as financial resources permit, this University will establish, under the direction of a person having technical competence and experience, a unit to be responsible for the introduction and co-ordination of teaching aids as a central service. We foresee the need for carrying out a good deal of research into the most useful ways of introducing these new media into universities in South Africa and advocate that a special allocation of funds be made to enable this research to be effectively carried out at, say, two universities and the results made available to all others as has been done by the University Grants Committee in Britain.

2.1 (d) Selecting and placing students according to aptitude and interest

In section 2.9 of these submissions, we have advocated the introduction of facilities for offering guidance to prospective students in the choice of fields of study while in their later years of study in High Schools.

In some faculties e.g., the Faculties of Medicine, Engineering and Dentistry in which only a limited number of students can be admitted, the selection of applicants for admission from among those who have fulfilled the entrace requirements is carried out on academic performance on the basis of the results of the matriculation examination and in the case of the Faculty of Architecture, on an aptitude test and interview. In other faculties e.g., the Faculties of Arts and Commerce all applicants who have met the matriculation requirements are in practice admitted, except that in some departments in which the number of places is limited by lack of space or other essential facilities applicants are selected on academic merit. In the case of admission to the first course in Psychology and Sociology the selection is based on the results of an aptitude test conducted before the beginning of the academic year.

Apart from the limitations on numbers imposed by the available facilities in some faculties and departments we do not apply any selection procedures and all applicants who have obtained a matriculation certificate or a certificate of full exemption and have met the standard required in specified subjects in the matriculation examination, where the rules so stipulate, are registered as University students. There is thus very limited selection and certainly no placing of applicants by aptitude for admission. Those who cannot be admitted to a faculty or department with a limitation on numbers are quite free to make their own choice of an alternative course.

In the Faculties of Arts and Science a wide choice of subjects is available within the framework of the rules and the class time-tables have been structured to enable students to plan properly integrated curricula.

2.1 (e) Attention to first-year students

See also sections 2.2(a), 2.3(d) and 2.9(b)

The academic year at this University is preceded by an orientation programme for first-year students aimed at assisting them to adjust themselves to the new environment socially and academically. This programme occupies most of one week.

The University Tutorial Unit provides introductory courses for prospective first-year students taking Chemistry, Mathematics and Physics during the long vacation. These courses begin about 19th January and the applicants concerned are informed that these introductory courses are available and may be attended without payment of a fee. The introductory course in Mathematics comprises two hours a day for four weeks and those attending are required to perform written exercises. The attendance at this course this year was 180. Chemistry and Physics are combined into one course of three weeks' duration which was attended by 80 prospective university students in these subjects.

The large numbers of first-year students in many departments make adequate personal contact with staff impracticable. There are 46 first-year courses with more than 100 students, 23 with more than 200 and 10 with more than 400 students. With courses of these dimensions/

dimensions first-year students become virtually unknowable to the academic staff at a stage when some form of personal contact is most necessary. In addition to the need for more small-group classes we consider that every first-year student should be accountable to a member of staff who should be kept informed of the student's performance in written work and class tests, and meet each student at regular intervals. This might best be achieved by allocating a small number, preferably less than 10, students to each tutor but the system could only operate effectively with the aid of a centralised computer for conveying information on performance in all the courses for which the student has registered to the tutor to whom he is accountable.

2.1 (f) Competence of lecturers

See section 2.1(b)

2.1 (g) Motivation of students

Most students enter a university with the object of obtaining a qualification which will lead to an advantage in employment opportunities or which will equip them for admission to a professional career. Many come to a university because it is part of the conventional pattern of life and are influenced in doing so by their teachers at school, parents, relatives and family friends. Very often the decision about a course of study and the curriculum to be followed is made at the time of registration for university entry, and it is apparent from the very vague ideas which are common that little prior thought can have been given to this major decision. We consider that too many prospective students are motivated by the attractive financial rewards which accrue on the attainment of some professional qualifications and that as a consequence able students are being lost to other fields of work for which they may be intellectually better equipped. In our view more attention needs to be given to encouraging able young persons to undertake a general academic training as a qualification for administrative appointments in which prestige and personal satisfaction, rather than a high financial reward is the motivation.

Adequate motivation for selecting and pursuing a course at a university is considered to be one of the most important factors in ensuring effective training. In section 2.9(a) of these submissions the need for providing better guidance at schools is advocated and this need is again emphasised here. We consider that too many young people make career decisions on the basis of inadequate information about opportunities available not only in universities but elsewhere.

There is a good deal of divergence between these views and those determined by a survey conducted by the Education Committee of the Students' Representative Council. Replies from 2090 students in the second or more senior years of study in all faculties, excepting that of Medicine, showed the following results in reply to the question "Why did you choose your particular degree?"

(1)	Interest	45.5 percent
(2)	To get a higher education qualification	26.7 percent
(3)	Financial gain	11.3 percent
(4)	Parent/social pressure	2.1 percent
(5)	None of these	7.4 percent

In answer to another question, 63.9 percent of students replied that their interest in the course of study selected had been maintained. On the other hand, 62.5 percent considered that they would have liked to have had more guidance on the selection of a degree course.

2.2 TRANSITION FROM SCHOOL TO UNIVERSITY

(a) Special problems of first-year students

The transition from school to university requires the student to make a rapid adjustment to the pattern of life and work at a university where, for the first time, he finds himself freed from continuous supervision and the restraint of school discipline. He has to accommodate himself to independent study, sensible disposal of his time and the much faster pace of university learning and do so abruptly without being able to acclimatize gradually to the new conditions. If the student does not succeed in adapting himself to the new pattern as soon as the academic year starts he is likely to fall behind in his studies and this may very well prove to be the beginning of an unsuccessful end to his first year at the university.

The Hale committee on University Teaching Methods gave a good deal of attention to the introduction of students to university life and devoted the whole of Chapter IV of the report to this aspect. The Committee was particularly concerned about the effectiveness of ways of bridging the gap between methods of study at schools and universities and in a quotation from a memorandum of the National Union of Students referred to the "deep gulf" between school and university teaching methods. However deep this gulf may be in Britain, it is likely to be deeper in South Africa. University entrants in Britain are required to hold the General Certificate of Education qualifications at the advanced level which can be equated with the standard reached on completion of the first year of study at a South African university. Although the content of the course is covered more slowly at school students reach the university with a higher intellectual maturity and capacity. More importantly, there is strong competition for university places in Britain and not nearly all of those who meet university entrance requirements can be admitted. Those who are successful are therefore more properly motivated to a university training than the majority of South African entrants who are admitted without having to face competition for a university place. A substantial number of South Africans seem to enter universities without any better motivation than conformity with the educational pattern followed by those whose parents

can/

can afford to provide their sons and daughters with a university education. The academic quality of students admitted to South African universities therefore covers a much wider range than those admitted to similar universities in Britain and this must be remembered when the failure rates in Britain and South Africa are compared.

A student in his first year at a university is normally required to complete not less than four courses if he is to obtain his degree after the minimum number of years of study. It may be of interest to assess the workload of a first-year student. A science student registered for Mathematics, Applied Mathematics, Physics and Chemistry attends 18 lectures, 7 tutorials and 2 practicals a week. A first year Engineering student has the same number of lectures and tutorial classes, but one more practical class per week. A first year medical student attends 16 lectures, 4 tutorials and 4 practicals a week. The average duration of formal tuition for students in these courses of study amounts to about 27 hours per week. In addition a student of average ability who wants to do well should spend at least twice as long as the duration of a lecture working up his notes, ensuring that he understands them and looking up references. In addition he is required to complete written assignments. It is estimated that he would spend in all about 30 hours in private study making a weekly total of 57 hours in formal and private study per week without making any allowance for time spent in travelling to and from University or unusable time between lectures. This is a heavy commitment for a student who should also participate in the social and cultural activities which form part of the life of a student at a university and allow himself time for physical recreation. In our opinion the serious student has a very heavy commitment to academic work. One of the main problems facing a new student at a university is the sensible disposal of his time and the new experience of disciplining himself to its proper use.

All first-year students at this university attend courses in a number (usually four or more) of different independent departments and responsibility for guiding students does not become that of any one department. When the choice of subjects is wide it is also not possible/

possible to achieve co-ordination of his written assignments in order that he may have a similar commitment for private study in each week. Further it is impracticable to arrange a class time-table so that the student will not have unprofitable periods between lectures.

A difficulty in the university structure is the very large preponderance of students attending first-year courses in some departments. This arises because of the obligatory requirements in some of the large faculties for students to complete first-year courses in particular subjects. In the Department of Physics, for example, there are 1103 first-year students of whom only 61 intend to complete the major course in Physics. In the Departments of Chemistry, English and Mathematics there are respectively 1017, 1286 and 954 first-year students. Such large numbers of first year students, in what may be called "service" departments, make it difficult to provide instruction in small-group classes with any semblance of individual attention to first-year students at a stage when they need it most. In a department having such a preponderance of first-year students staff appointments become unattractive because of the heavy commitment to first-year teaching unless the department has an active research programme.

Reference has been made to the wide range of academic quality of first-year students. Formal instruction based on a lecturing programme can proceed at only one pace which may be too rapid for the weaker student and too slow for the able student. If the pace is adjusted to the weaker student the better student is not extended and the standards of the better student fall. If it is adjusted to the better student the failure rate will increase. In a university such as this, where particular importance is attached to maintaining high standards among its best graduates, there appears to be no way out of this dilemma without separating the weaker students from the stronger and extending the course of instruction for weaker students over a longer period of time. One way of doing this has been suggested in section 2.6(b) of these submissions. Such a procedure, or other alternatives for assisting weaker students, might be introduced more/

more hopefully if there could be greater confidence that more of these weaker students were better motivated to university study and potentially able to benefit from the assistance afforded.

The Hale report on University Teaching Methods (Chapter IV) has stressed the need for more personal supervision of first year students by the appointment of advisers of study and the provision of opportunities, which he does not have to make for himself, to discuss his academic problems with a member of staff who is not a stranger to him. (Paragraph 118). It is undoubtedly true that many students would benefit from the mere fact that someone within the university was concerned and informed about his progress - someone he would meet regularly and from whom he would receive guidance, encouragement and criticism. He would have more sense of belonging and not be anonymous, as it is at present unavoidable, as a member of large classes in a large university

2.2(b) Selection of matriculated students

See also Section 2.1(d)

Students are selected for admission to courses of study in which the number of applicants exceeds the number of places. For admission to some courses a minimum standard in certain subjects in the matriculation examination is prescribed for admission. Apart from those exceptions, all applicants who hold a matriculation certificate or a certificate of full exemption are admitted as students.

As has been pointed out in Section 2.2(a) the existing matriculation certificate admits students with a wide range of academic quality many of whom have not the intellectual potential for university training even if they are strongly motivated. Our experience is that a high percentage of first year students who fail to complete the number of courses prescribed in our regulations as the minimum requirement for the first year of study, hold only marginal matriculation passes. We are therefore altogether opposed to any lowering of the minimum standard of entry to a university.

We consider also that some students qualify for admission to the university without the kind of preparation which the university is entitled to expect, particularly in regard to their method of approach to study at university level. There appears to be insufficient continuity between school and university teaching.

Although students are being admitted to the university who are unlikely to profit from a university education we are concerned, on the other hand, that men and women, intellectually capable of university study are being diverted for financial reasons to intellectually less demanding courses of training at Colleges of Advanced Technical Education by the inducement of a salary and payment of their fees while they are in attendance. This is not in our view in the national interests. The available manpower is likely to be put to better use in the national interests by providing facilities which would enable those of the right academic quality to undertake a university training.

2.2(c) Differences between school and university standards

We have referred elsewhere in these submissions and particularly in section 2.2(a) to the difficulties of bridging the wide gap between the school and university. We consider that the attainment of continuity between school and university should not be a function of the University. At the same time, the aim of university study cannot be achieved unless some such continuity can be attained. The University will continue to ensure that its own standards are not lowered in the effort to achieve this continuity and the high failure rate of first year students will remain a necessary part of the selection mechanism until the continuity between school and university teaching which we seek can be attained.

A matter about which we are particularly concerned is the generally low standard among university entrants of language as a medium of communication. There is a general inability to write English correctly and fluently and in addition, inadequacy of expression seems to be deeply rooted in an inability to use language which is internally logical in statement and organization. This is a matter which should be put right in schools and we urge that much more serious/

serious attention and more time be given in language teaching at schools, to exercises in composition, the precise referential meaning of words and systematic presentation of material. The capacity to use a language in a serviceable and meaningful manner is a prerequisite for success in a university. Although it is an aim of university education to improve the student's skill in communication we consider that he should enter the University with a more adequate training in the use of language as communication than is at present the case.

The widespread communication inability may well be a consequence of methods of teaching at schools aimed at achieving matriculation successes through the reproduction in examinations of memorised factual information without proper attention to the application of this knowledge.

We welcome the experiment being carried out in selected schools of the Transvaal Education Department which permits the award of a matriculation exemption certificate on the basis of work done and tested within the school. The greater freedom which exists in these "project" schools might make possible a co-ordinated attempt for improving the use of language. We hope that teachers in these schools will be encouraged and provided with resources to enable them to prepare pupils more adequately for university admission by training them to think for themselves in the application of the knowledge gained and introducing them to university methods of study.

2.2 (d) Guidance on methods of study

See also section 2.2(a)

"Advice on how to be a university student, given either before or immediately after the student's arrival at a university cannot of course by itself change him from a schoolboy into a university student. It cannot do more than warn him that he has a great change to make and of its general nature." (Paragraph 103 of the Hale report on University Teaching Methods.)

Preparation of students for university methods of study should begin at school and we feel that schools should take more direct responsibility than at present for providing such preparation. General guidance with advice on study methods and the use of the library is given to students at this University during the orientation week which precedes the beginning of the academic year.

If students have become used to methods of study at school it is not easy through advance and guidance (which is all that can be given at university level) to change bad study habits into good ones. If study habits at school are bad, one reason for this (and we concur with a view expressed by Dr. E.G. Malherbe) is the way examination questions are framed. He considered this to be the biggest single factor in determining methods of study and methods of teaching in schools. Questions in a History paper, for example, framed in such a way as to invite answers that take the form of straightforward and uncritical narrative lead to concentration on the construction and learning of model answers as the principal way of preparing for examinations. Pupils raised on such methods at school expect them to be suffessful at the university as well.

2.2 (e) Contact between student and lecturer

See section 2.2(a)

2.2 (f) Contact between teacher and lecturer

We presume that the title of this section refers to contact between teachers at school and university lecturers in subjects which are common to schools and universities.

We recognise the value of contact of this nature as a way of informing high school teachers of University requirements and of obtaining information on what is being taught at schools and the Senate of this University has encouraged departments concerned with first-year teaching to arrange meetings with School inspectors, High School teachers and the staff of the Johannesburg College of Education and to organise one or two lectures a year to which the same group of persons would be invited.

2.2 (g) General approach to youths at school and university

See sections 2.2(a), 2.2(c) and 2.2(d) of these submissions.

2.2 (h) Competence of lecturers of first-year students

The Hale report on University Teaching Methods (paragraph 105) commends the tradition in Scotland that lectures to the first-year ordinary classes should be given by the professor himself. We agree that experienced teachers are required for students in their first year of study.

With the present unfavourable student-staff ratio a particular difficulty which exists is that first-year classes are often very large and we have referred to the strain some lecturers experience in lecturing to large classes, although they are recognised as good lecturers and do not have any difficulty in lecturing to, or in handling, classes with smaller numbers of students.

We are conscious of the need for some men and women of outstanding teaching ability who are masters of their subject and have a broad knowledge of what is happening in their subject the world over and who are able to awaken interest and instil enthusiasm among first-year students. Such persons are rare and their ability as lecturers for undergraduate courses should be recognised in their professional advancement. While teaching and research should be inseparable functions of a university, it is important that a concentration on research and graduate instruction should not result in inferior concern for undergraduate teaching and what has been referred to as the "subtle discounting of the teaching process".

2.2 (i) Effect of military service

In 1968, 696 students who had completed their initial military service were admitted to the University and in the same year the number of male students who had not completed any military service was 950. An analysis of the first-year examination results of groups of students in each of these two categories leads to the conclusion, with 99 percent confidence, that there was no significant variation between the students who had undertaken military training and those who had not. The average/

average mark in all courses in all faculties was 46.1 percent in in the case of students admitted after military service and 45.4 percent in the case of others. In the Faculty of Engineering the average marks were 53.0 and 46.8 percent respectively and some significance may be attached to the higher average mark attained by those who had completed their initial military service.

2.2 (j) Effect of age of admission

An analysis of the results of the first-year examinations of 589 students admitted to the University shows that with 99 per cent confidence there is no significant variation in the results attributable to age of admission of students, although there is a significant variation in examination results related to age between the faculties. In the Faculty of Science, for example, the mean marks of those aged 17 or less and those aged 20 or more were significantly lower that the mean marks for students of 18 or 19.

2.3 HIGH PERCENTAGE OF FAILURE AMONGST UNDERGRADUATES

(a) Failure figures for different faculties

The following table shows the failure figures for first year students by faculties in the summer examinations in 1968:

Faculty	Students who failed in one or more courses.	Students who failed to obtain credit in sufficient courses to proceed to the second year of study.
Arts	59 percent	23 percent
Science	68	51
Medicine	39	39
Engineering	57	32
Commerce	66	40
Dentistry	35	35
Architecture	68	42
All faculties	60	36

Credit requirements for promotion from the first to the second year of study differ considerably. The following examples are given:

Degree	Minimum number of courses for credit
B.A. and B.Sc	2
M.B., B.Ch. and B.D.S.	4 (all first-year courses)
B.Sc. (Eng.)	2 (other than Descriptive Geometry)
B.Com	3 (of five courses in the General Group or six in the Legal Group)
B.Arch	4 (of six courses)

Although the credit requirements for the degrees of M.B., B.Ch. and B.D.S. are the most demanding, the relatively low failure rates are attributable to the fact that students for those degrees are within highly selected groups.

The following three demands which the community appears to be making on universities are contradictory and impossible of simultaneous fulfilment:

(1) that universities maintain high standards;
(2) that the requirements for university admission be relaxed;
(3) that university failure rates be reduced.

We consider that first-year students fail for three main reasons:

(1) they lack the intellectual capacity for university study;
(2) they are inadequately motivated;
(3) they are ill-equipped in their general approach to learning and particularly in their ability to communicate what they know.

Elsewhere in these submissions we have expressed the view that the present qualifications for university entry are not effectively eliminating prospective students who have no innate ability to benefit from a university education. While this situation exists we can see no alternative to the elimination of such students in their first year of study at the university and the reflection of the position in a high failure rate. There is a borderline category of students who could produce far better results if there were more opportunities for giving them more individual attention, but there remains a substantial number of students not considered capable of succeeding under any system of teaching at university level.

2.3 (b) Content of syllabuses

See section 2.4(a).

2.3 (c) Control of attendance at lectures

The control of attendance at lectures for large classes is virtually impossible. Attendance registers are notoriously unreliable and there is no other way in which attendance can effectively be enforced. With the reduction in the maximum size of classes, which we hope may become practicable, more effective control of attendance would be possible, particularly in first-year classes. However, we consider that enforcement of attendance at lectures should be kept to/

to a minimum but that attendance at practical classes, tutorials and other small-group classes should be controlled with insistence on the submission of written assignments.

In a recent survey conducted by the students about 60 percent of those who responded considered that attendance at lectures should not be compulsory, 50 percent considered that attendance at tutorials should not be compulsory, but only 11 percent opposed compulsory attendance at practicals.

2.3 (d) Study period in residences

There are no prescribed hours of study for students in residence as we feel that the imposition of arbitrary rules enforcing study periods must inevitably undermine the spirit of self-reliance that is inseparable from genuine intellectual and personal development which we hope to encourage.

However, a tutorial scheme was introduced in one of our residences in 1968 and is being extended. The main features are:

(1) Seven or eight graduates are accommodated in the residence on the understanding that they will assist and direct the studies as tutors of some 45 to 50 first-year students.

(2) Six or seven first-year students are allocated to each tutor who makes it his business to get to know them and their problems.

(3) Each tutor is on duty in rotation, on five nights a week. The tutor on duty may, however, be consulted by students other than those allocated to him.

Tutors are selected for special competence in the three subjects which cause students most difficulty, namely Chemistry, Mathematics and Physics.

The following features of the tutorial scheme are believed to have been of help to first-year students:

(1) Personal association: tutors and first-year students become known to each other.

(2) Personal interest: tutors and first-year students derive encouragement from the interest shown in their studies, even when these are in fields outside the special competence of tutors.

(3) Leadership: tutors are able to help ensure the minimum effort needed by checking over-confidence and the tendency to leave intensive effort until too late. They are also able, by supporting the morale of the student who becomes discouraged, to ensure that he persists in study. Above all, the emphasis placed on rational and regular study is of great pedagogic value.

(4) Academic emphasis: tutors form a rallying point for students who do not excel at games or stand out in other ways.

2.3(e) Extension of degree courses to four years for weak students

In effect the rules for obtaining credit, in the case of most first degrees, permit the weaker student to extend the period of study for the degree. In the case of the degree of B.A. or B.Sc., for example, a first year student who passes two qualifying courses obtains credit for these courses and may proceed to the second year of study. He would, however, be unable to complete all the requirements for the degree within three years but could do so in four years. A first year student would normally register for four qualifying courses and if he has difficulty with this number he might be well advised to concentrate on two or three courses and aim at obtaining the degree after four years of study.

In the Faculty of Engineering the rules for the degree of Bachelor of Science in Engineering make provision for the four year course to be completed in three parts. Part I can be completed in two years of study, but the weaker student could proceed more slowly and aim at completing the requirements for Part I of the curriculum in three years of study, but not more than four.

Under the rules for the degrees of B.A., B.Sc. and B.Com it is permissible to plan a curriculum extending over four years instead of the normal period of three years. Weak students might be advised to proceed more slowly on the basis of the matriculation results or on the results of the tests completed at the end of the first term, when he could discontinue one or more courses in order to concentrate on passing the remainder.

2.4 EXTENSION OF THE DURATION OF STUDY FOR A FIRST DEGREE

Introduction

The curricula for degrees which lead to professional qualifications cover four or more years of study and the extension of the duration of study for these degrees at present appears to be undesirable. With the rapid extension of knowledge in many fields syllabuses will, however, need to be constantly appraised to keep them up-to-date and kept within the capacity of a student working for an academic year.

The following arguments in favour of extending the duration of study for a three-year degree to four years have been advanced:

(1) Such an extension would make it possible to provide a foundation course for new students who would as a result be better equipped than they are at present to select their particular fields of study and more able to carry out the work expected of them at university level.

(2) Provision could be made for the better students to qualify for an honours degree in the same time as that taken by the less able students to obtain an ordinary pass degree. In this connection, it may be mentioned that in the Faculties of Arts, Science and Commerce more than half of the graduates take more than the period of three years prescribed as the minimum for completing the requirements for the first degree.

We are not in favour of extending the duration of study for a first degree for all students. The abler student is able to meet the requirements within three years and there is sufficient flexibility under the rules for these degrees to permit the weak student to proceed more slowly.

2.4(a) Content of syllabus

"The challenge to the present-day university teacher comes not only from the increased numbers of students ..... but also from the growth and complexity of knowledge. One effect of the growth of knowledge is that first-degree courses tend to become overloaded with fact ..... The danger is that the student will spend too much of his time on memorising facts, and will have insufficient time to master the principles underlying his subject and to develop his powers of thought. If, as we believe, the most important purpose of a university education is to teach the student to think for himself, this is a serious danger ....." (Extract from paragraph 28 - Hale report on University Teaching Methods.)

The report goes on to refer to the increasing tendency to institute postgraduate courses of instruction and suggests that if this tendency continues undergraduate courses might come to be designed and taught as a preliminary to work for a higher degree. The committee deplored such a development and considered that the essential purpose of the first-degree course is to give the student a preparation for his professional life which does not depend for its value on the addition of a postgraduate course (Paragraph 30). These remarks refer to a university system in which the first degree is normally of honours standard and we concur with the views expressed. The content of syllabuses in many fields needs to be kept constantly under review in order to eliminate redundant and obsolete material to ensure that overloading does not occur.

With the present departmental structure in our University, syllabuses for courses in related subjects have often to include similar material needed for the study of each of these related subjects. As an example genetics, physiology and some aspects of biochemistry are included in the syllabuses for both Botany and Zoology. One way of avoiding such duplication would be by the establishment of "schools" of study within the University consisting of a group of departments teaching subjects which are related as disciplines. An individual department might of course form part of a number of schools in this system.

If the schools system of organization were introduced students would select their major subjects from those offered by departments in the school. Knowledge in related fields could be provided in three ways:

(1) lectures on related topics could be given as part of the major subject of study by the department teaching the major subject or if there were more than one major subject by one of the departments to avoid duplication;

(2) special sets of lectures on particular topics could be given by members of departments not belonging to the school. Such lectures would be specially designed, extend over only part of the academic year and form part of a major course of study;

(3) special ancillary courses could be provided by departments not belonging to the school.

The advantages of the schools system we have in mind are:

(1) it would provide a range of integrated curricula designed to enable the student to study his major subjects in greater depth and to provide him with essential knowledge in other relevant cognate subjects without requiring him to cover aspects of those subjects unrelated to his own field of interest; and

(2) in this way the student would be adequately prepared for more advanced work and generally better motivated.

(These two factors would contribute to an increase in the number of students doing postgraduate work.)

(3) it would lead to greater co-operation between departments in building on each other's work and cutting out over-lapping between courses offered by departments in the same school;

(4) it would encourage inter-disciplinary studies: it has been suggested that in certain subjects the most fruitful areas of new thinking are at the peripheries of the subject where it overlaps with other related disciplines.

A disadvantage of the "school" system is that it diminishes the freedom of choice of subjects for a curriculum which has become a traditional feature of the Faculty of Arts in particular. We consider that there may be sound academic reasons in principle for the introduction of a schools system on the lines indicated. However a major difficulty which has prevented us from giving full consideration to the proposal is that in some faculties the payment of the government subsidy is based on "student courses".

As the schools system envisages the inclusion in the curriculum of component sets of lectures each extending over only part of the academic year, the number of full courses required for the degree would be reduced with a corresponding reduction in the payment of government subsidy. This difficulty would be removed if the unit of subsidy were the "full-time student" in all faculties.

The submission we wish to make here is that the decision as to whether the introduction of the schools system would be a desirable development should be based on academic considerations alone and not determined by the subsidy formula. The present structure of the subsidy formula has in fact prevented us from giving full consideration to the proposed introduction of a schools system particularly in the Faculty of Arts where there is considerable support for the proposal.

2.4(b) Standard and status of a B. degree
(c) Usefulness of the present three-year degree

Some Bachelor degrees afford the basic qualification for admission to professional practice and we do not propose to refer here to the standard, status or usefulness of the degrees which provide such professional qualifications.

The curriculum for the degree of Bachelor of Commerce covers a wide range of subjects of use in the business world and although the degree itself is not a professional qualification, it has a good deal of value to a graduate embarking on a career in business.

The three-year degrees of Bachelor of Arts and Bachelor of Science provide a reasonably advanced education around the central core of the major subjects. The graduate emerges with insight in a number of subjects, but could not be considered to hold a specialist qualification without acquiring an honours degree. The graduate with a three-year degree acquires a training in the approach to a problem even if it is outside his field of study through his exercise in independent thought. The degree thus affords a preparation for taking responsibility in a career which does not require a specialist qualification.

In Britain the three-year degree is preceded by an entry qualification which, it is found by experience can satisfactorily be equated with the standard attained on completion of a first-year university course in South Africa. Most students in Britain graduate with a three-year degree equivalent to that of an honours degree in this country. As a result the South African three-year degree has a lower status than the corresponding degree awarded by universities in Britain and in many other overseas countries.

The three-year degree is acceptable as a basis for entering the teaching profession and in science the degree is being used as a qualification for a technical post in industry, government service and in research institutes. The possession of an honours degree is an acceptable minimum qualification for appointment with professional status in research or other organisations requiring staff with specialised qualifications.

2.4 (d) Effect of the length of the academic year

See section 2.5 of these submissions.

If the academic year is to be extended it is not intended that the existing syllabuses would be amplified. The content of the qualifying courses would therefore not be increased in any way which would affect the standard, status or usefulness of the degree.

2.6 USE OF VACATIONS

(a) Activation of students to academic work during vacations

Apart from students in faculties other than those in which vacation work is prescribed in the rules for degrees, e.g., Engineering and in others in which the academic year has already been substantially extended, e.g., Medicine and Dentistry it is undoubtedly true, as a broad generalisation, that most students do not use their vacations, and in particular their long vacations, for academic work.

In section 2.5 of these submissions proposals are set out for revising the structure of the academic year in a way which would help to ensure that students use their vacations for academic study.

We agree that proper use should be made of the long vacation for the completion of independent written assignments and reading programmes. However, the existing arrangements in which two successive academic years are separated by the long vacation make the achievement of this objective almost impracticable for the following reasons:

(1) students (particularly the weaker ones) are not sure of the courses they will follow in the subsequent year of study because the results of examinations cannot be made available before classes cease;

(2) even if a student knows that he is proceeding to the next year of study in a subject, it is difficult to give adequate direction to his reading or written work at a more advanced level before he has done any work at that level;

(3) students who fail one or more of the November examinations may be given an opportunity to rewrite at the end of the long vacation. Such students will have work to do during the vacation and an incentive to do it.

We concur with the view expressed in the interim report on "The Use of Vacations by Students" to the University Grants Committee in Britain:

> ".....apart from reasonable holidays, the vacation should differ from the term in the type rather than in the intensity of the students academic activity, the term being the time when he takes full advantage of his teachers' availability, the vacation that when he learns to work on his own, and to work effectively on his own is perhaps the most important thing that he should use his university course to learn."

If the difficulties arising from the present structure to the academic year can be overcome a student should be required to hand in written work and sit tests on his reading when he returns and the assessment of his vacation work should be contributory to the final mark awarded at the end of the year of study.

2.6 (b) Summer schools (for candidates who have failed)

This University has established a tutorial unit to assist the weaker students attending first year courses in Chemistry, Mathematics and Physics. The services of this tutorial unit are available during the long vacation to students who have failed their first-year examinations in these subjects and particularly those who have permission to rewrite the examinations at the end of the long vacation.

The provision of these tutorial services undoubtedly assists students in passing the special examinations in February and the extension of the tutorial facilities to other subjects might enable more students to complete the requirements for a degree without the loss of a year of study. However, the provision of tutorial facilities in a wide range of subjects will be costly and make further inroads on the time of academic staff at a time of year when they are now free from teaching commitments and able to devote themselves to uninterrupted research.

In a recent survey conducted by the students themselves, 61.7 percent answered "Yes" in reply to the following question: "Would you like the University to conduct during the summer vacation a series of courses on specified topics?" In the Faculty of Arts 75.2 percent answered this question in the affirmative.

2.6 (c) Professional training during vacations

The rules for the degree of Bachelor of Science in Engineering require students to undertake vacation practical work connected with their professional training. At the end of the first year a three-weeks' workshop course is prescribed and in each of the other long vacations students are required to spend eight weeks in an engineering office. The rules for the degree of Bachelor of Science in Industrial Chemistry provide for six weeks of practical training in industrial chemical laboratories and there are similar provisions for science students having Botany, Geology or Archaeology as major subjects. In the Faculty of Architecture, students reading for the degrees of Bachelor of Science in Building and in Town and Regional Planning are also required to undertake practical work during the long vacation.

We consider it desirable that candidates for professional degrees should gain experience through employment in vacations in the practical world in which their future lies and that such work should be recognised as an acceptable use of vacation time where it is a requirement under the rules for the degree. However, such recognition does impose constraints on the application in all faculties of an extended academic year or on having a modified structure such as has been suggested in section 2.6(b) of these submissions.

2.6 (d) Other

The British report on "The Use of Vacations by Students" has drawn attention to the following points which are no less applicable in South Africa than they are in Britain and which will need to be taken into account if serious academic work in the vacation is to be stimulated:

(1) The need for some students to undertake gainful employment during vacations to help meet the cost of a university education. Students compelled to enter employment during vacations for this reason are likely to be less well developed as scholars when they graduate. We therefore advocate the provision of additional financial assistance to students who could not afford a university education without having to undertake gainful employment during the vacations.

(2) The unfavourable home circumstances of some students for serious study, particularly if they are out of reach of a library offering satisfactory facilities.

(3) The competitive claims of educational travel or other broadening experiences in vacations which help to develop personality.

2.7 SIZE OF CLASSES AND DEPARTMENTS

(a) Effect of personal contact between lecturer and student

(See also section 2.1(c))

We consider personal contact between lecturer and student to be essential for the proper intellectual progress of the student. Once the contact has been made the student feels that the way is open for him to discuss his academic problems with a member of staff. This often leads to a discussion on all aspects of his course of study and is considered to be one of the most effective ways of stimulating interest and encouraging the student to undertake more extensive reading.

Departments which organise compulsory field courses report a noticeable improvement in the attitude of students towards their work after such courses have taken place and attribute this to the esprit de corps resulting from the substantial improvement in the staff-student relationship which is achieved much more readily during field courses than in the lecture room.

We consider that in first-year classes exceeding 80 nearly all personal contact between the lecturer and student is lost and of course the opportunities for personal contact become very limited as classes approach this number of students. For an informal lecture, in which questions and some discussion can be allowed, we consider that classes should not exceed 40 students. To achieve adequate personal contact classes must be kept small and the best opportunities for effective personal contact within the classroom are in tutorial and other similar discussion classes. There is a pressing demand from the student body for more instruction within classes of this kind, but their introduction requires the provision of additional staff. We feel that more personal contact between lecturer and student, particularly in the first year of study, would be effective not only in reducing the failure rate but in producing more graduates with well-trained effective minds.

2.7 (b) Efficient handling of large classes - technical aids

See section 2.9(c)

For the formal lecture to be a successful component of university teaching appropriate and often expensive facilities need to be provided. A well lighted room with good acoustic qualities, good seating arrangements and sight lines so that the lecturer can see all students are basic requirements. Beyond these, however, there is a growing demand for a variety of technical aids, e.g., facilities for film and slide projection, and in large lecture theatres a microphone and amplifying equipment. We foresee also the usefulness of closed-circuit television equipment with several display units within a large lecture room for making demonstrations and the presentation of illustrative material, which could not otherwise be seen by those who are distant from the lecturer, accessible to the entire class.

The presentation of a formal lecture to a large class involves considerable strain to most lecturers although there are others who do not find this to be the case, provided the lecture theatre has been properly designed and adequately equipped. Problems concerned with discipline arise in large classes and some lecturers find that they are unable to meet the demands for lecturing to large classes although they experience no difficulty with classes consisting of a smaller number of students. This is a factor which should be recognised in the determination of staff provision.

2.7 (c) Advantages and disadvantages of large classes

We do not consider that large classes have any advantages other than that of economy of staff which is then achieved at the cost of providing a less effective university education. There are, however, occasions when smaller classes can be grouped together with advantage for a specific purpose, e.g. to attend formal lectures by specialists on particular topics. Such formal lectures, in which interaction between lecturer and students is not attempted should, we consider, be limited to student numbers of at most 250 and preferably 150.

With increasing student numbers there is distraction, both to the lecturer and those in the audience, due to the inevitable noise associated with the assembly of a large number of persons. More important, however, is the loss of identification of students by the lecturer when the class becomes a vista of unknown and unknowable faces.

We consider that classes for lectures should be restricted to about 80 students. Up to this number personal identification of students is possible and it is feasible to relax some of the formality of larger classes and to allow a few questions or even to conduct a discussion. Tutorial classes designed to supplement the lecture programme and to encourage discussion should be restricted to about 20 students.

Inadequate staff provision makes it impracticable at present to limit the size of classes to the numbers which we consider desirable or to provide sufficient instruction in tutorial groups with numbers of students which are small enough to make instruction in this way really effective.

With the existing staff establishment it is not possible to effect any further reduction in class size. Students registered for some courses are at present divided into as many as six classes for lectures but nevertheless there are in 1969, 100 classes with more than 80 students, 89 with more than 100 and 37 classes with more than 150 students. Almost all these large classes are for first-year courses and it is particularly unsatisfactory that so many of the first-year students become unidentifiable members of such large classes.

2.7 (d) Advantages and disadvantages of large departments

We consider a large department to be one in which the number of student courses exceeds 500 and a small department one having 100 or less student courses. On this basis there are 20 large departments in this University of which 11 have more than 1,000 student-courses and one almost 4,000. There are six small departments.

The outstanding advantage which a large department possesses is that, having a large staff, the subject for which the department is responsible can be covered by specialists in each of a number of fields. Associated with size is the availability of financial resources for the acquisition of the more expensive items of equipment needed in scientific departments for postgraduate training and research. Both these advantages lead directly to the advantage of making it easier to attract men of distinction to work in large departments. A particular advantage of a large department in a South African university is that a number of specialists working in related fields within the same department establish within that department a community of interests which tends to offset the isolation from colleagues carrying out research in similar fields elsewhere. Some of these advantages may be diminished in a large department if the staff are excessively committed to service teaching at first-year undergraduate level. It is, however, on the practical and administrative side rather than on that of teaching in the strict sense that the effects of a large department are adverse. The Hale report on University Teaching Methods (paragraph 81) said in this connection:

> "Things which in a small department get done without anybody having to consider how they are to get done, in a large department require to be organised. Administration necessarily takes up more time and academic life tends to become more formalised and impersonal. In particular, the interchange of information about a student's progress becomes more laborious, and the head of the department who can be a pater familias to his students when they are relatively few, inevitably knows less and less about them as individuals as their numbers grow."

We should like to draw attention to the heavy administrative commitment in a large department and to express the need for its recognition in departmental staff establishments. The largest department in the university provides 55 courses with an average of 71 students in each course. The duties of an administrative nature concerned with the operation of a teaching unit with almost 4, 000 student-courses place a heavy burden on the academic staff and divert a good deal of their time from their professional duties.

Finally, we wish to stress that no course of study should be dependent for its provision on one person only.

2.7 (e) Availability of lecturers

We interpret this heading to mean informal contact between lecturer and student. The time available for such contact is limited by other demands on staff, e.g., formal teaching, preparation for such teaching, departmental administration, marking and research. The time needed for these duties leaves little time for informal contact with students.

We consider that in assessing academic staff requirements four hours per week should be set aside to enable the lecturer to be available for informal consultation by students.

2.8 SIZE OF UNIVERSITIES

(a) Advantages and disadvantages of large universities, and

(b) Normal size of universities

A study of world universities shows that there are viable units as small as a thousand or less students, a great many in the range between a few thousand to fifteen thousand and some above one hundred thousand. There are serious problems in administering a single university unit with tens of thousands of students and these problems all exist on the campuses of large universities in the United States. These problems include:

(1) The loss of identity of students, the lack of personal contact between students and the academic staff and the general depersonalisation of students in a computerized system.

(2) The difficulties resulting from large classes which give rise either to an impersonal form of teaching through extensive use of teaching aids or dividingclasses into a multiplicity of small units with the consequent organisational difficulties.

(3) The enormous size which some departments attain with the consequent administrative difficulties at departmental level.

(4) The smallest units in which the student body and staff can operate are either too large or too numerous. The break-down of students into effective small units with local loyalities is considered to be a most important factor in preventing general student unrest and the difficulty of doing this increases with the size of the university.

As Professor Cilliers has pointed out (p. 78) the optimal size of departments provides a key to the optimal size of a university. In section 2.7(d) we have advanced arguments in favour of a large department. Although the present (1969) enrolment of full-time day students falls within the maximum enrolment of 7,000 students recommended by Professor Cilliers there are ten departments with student numbers greatly in excess of the 950 postulated as optimal by Professor Cilliers (p. 83). Most of these departments have attained their present size because of a commitment to the provision of "service" courses/

courses for undergraduates reading for professional degrees. As there are limitations on the number of students admitted to most professional courses the growth rate in "service" departments is likely to be lower than than in other departments unless a policy decision is made to increase the student intake into the professional courses. We consider therefore that the existence of a small number of very large "service" departments is an inescapable feature of the enrolment structure of this University. On the other hand the student numbers of some 80 percent of departments are considerably below the optimal number of 950 students and we consider that many of these departments could be strengthened with considerable advantage by an increase in student numbers.

Although it would be impossible to demonstrate beyond question that any particular number of students is optimal for any given university, we are of the opinion that this number should be rather higher than the figure of 6000-7000 proposed by Professor Cilliers, and we suggest that it should be the order of 10, 000 full-time day students on a single campus. This would correspond to a total of all students of about 13, 000, including all postgraduate students, on the present campus of this University.

We submit the following considerations which have led us to this recommendation:

(1) In Britain, no universities plan to grow larger than 10, 000 students.

(2) In the United States the important private universities are stabilised at a full-time population in the region of 10, 000 students or less.

(3) Universities with student numbers between 8, 000 and 12, 000 appear to function efficiently, with a reasonably large staff and income and yet are not too large to make a single community of persons impracticable.

(4) It was a recommendation of the Robbins report (para. 471) that many of the multi-faculty universities in Britain expand to 8,000-10,000 students. The report continued: "We fully endorse the view held by many teachers that a university changes its ethos if it becomes so large that both teachers and students feel lost in it. But this is not a necessary consequence of expansion beyond the size which many universities have thought appropriate for themselves in the past."

2.8 (c) Economic advantages and disadvantages; optimum sizes from an economic point of view

The obvious economic advantage of a large university is in regard to the provision of such facilities as the library, computers and of expensive scientific and other equipment in departments. This point is made in the Robbins report (paragraph 468) in the following words:

"On the grounds of economy it is undoubtedly better to provide very expensive equipment in the pure and applied sciences for large departments and faculties than to spread it amongst a number of smaller departments. There are equally cogent reasons for economy on the side of the humanities. A library adequate to scholarly research is as essential to the efficient running of a university as an adequate range of computers, and however far the technique of micro-filming may be carried, it is uneconomical to provide such libraries in a large number of small institutions."

2.9 STUDENT GUIDANCE

(a) Guidance in the choice of fields of study

The basic decision as to the broad career field that a student wishes to enter ought to be taken before an applicant for admission to a university leaves school. Neither the State nor the individual can afford wrong decisions on careers which are avoidable and involve investments of the magnitude demanded of university study today.

Our experience is that a high proportion of those who apply for university admission (other than those who aim at a professional qualification) do so without having in mind a university training as a preparation for a career and with few ideas about the courses they propose to follow at the university. Frequently last minute decisions are made at the time of registration. Even those who apply for admission to a course leading to a professional qualification often seem to do so with inappropriate motivation and a lack of appreciation of the intellectual demands of the course. As an example the applications received for admission to the first year of study for the degree of Bachelor of Science in Engineering are quoted. When applications closed in November 1968 there were 248 applicants due to write the matriculation examination at the end of that year. Of these 87 failed. This is a failure rate of 28.5 percent among applicants for admission to a course of study demanding intellectual ability and in particular a high degree of ability in mathematics. A possible explanation is that many applicants selected Engineering as a career because of a practical turn of mind and were evidently unaware of the intellectual demands of the university training they proposed to follow. What is clear is that many applicants made the decision to apply for admission to the Faculty of Engineering on the basis of inadequate knowledge.

We recommend that much more attention be given at secondary schools to providing a properly informed advisory service for pupils intending to enter universities.

In principle secondary schools in South Africa offer career guidance and the Department of Labour will supplement this if approached for help. In practice, many schools in the Transvaal are ill-equipped to provide this guidance because the average teacher has little contact with commerce, industry or the professions, and there is no evidence that teachers who have received instruction in vocational guidance at a College of Education are better qualified. Moreover, the Department of Labour is oriented towards the majority of school leavers who do not enter a university.

It would be difficult to overestimate the value of guidance classes which are well organised and in which pupils are required to undertake class projects on their future careers. A guidance teacher at a Johannesburg school who adopted such methods and followed up the results achieved by her former pupils in their first year of study at the university has clained that these were outstandingly good.

Professor A. C. Cilliers recommended (p. 99) the establishment at each university of a Student Information Service with State subsidy. We support this recommendation and see as one of the important functions of the service the maintenance of close contact with secondary schools and particularly with vocational guidance officers.

In the Robbins Report (para 229 and 230) two suggestions are put forward for improving the techniques for selecting candidates for admission to British universities which we consider may be adaptable to the provision of guidance in the selection of fields of study at South African universities.

The first of these suggestions is that more attention be paid to school records. We endorse this and recommend that the "Ed/Lab." records maintained in Transvaal schools and containing the pupil's complete scholastic record as well as results of IQ tests be made available to the University to which a pupil is an applicant for admission. At present these records are confidential and not accessible to universities. They are transmitted to the Department of Labour after the pupil has left school.

The second of these suggestions is that experiments be conducted on the use of Scholastic Aptitude Tests developed by the College Entrance Examinations Board in the United States. These are not intelligence tests, but the marks obtained are claimed to provide a useful guide to later performance in academic courses. The use of these and other similar tests might help to shift the predictive load from examination results alone in helping university applicants to select fields of study.

At this University aptitude tests are at present applied only in the case of students who wish to enter the Faculty of Architecture and first-year courses in the Departments of Psychology and Sociology. Such test results, properly evaluated and interpreted by an experienced counsellor and used in conjunction with other information might be useful in advising students on the choice of a university curriculum and it is suggested that consideration be given to ways of encouraging the more extensive use of psychological tests in helping to guide university entrants into the course of study in which they are most likely to be successful. We suggest too that investigations be carried out on the prognostic value, for career guidance purposes, of the matriculation examination itself by considering results in selected subjects or groups of subjects.

It may be of interest that in our Faculty of Engineering the "Swedish Formula" has been in use for many years as a basis for selection. The formula makes use of the marks scored in the matriculation examination rounded off to the next lowest decade and reduced to a number between 0 and 10 (e.g. 66 percent becomes 6 and 45 becomes 4). A weighting is then applied as follows:

	Possible maximum
Mathematics x 2	20
Science x $1\frac{1}{2}$	15
Language at higher level x 1	10
Aggregate mark x 1	10
Total	55

Records show that no student has ever passed the first-year examination for the degree of B.Sc. (Engineering) at the University, at the first attempt, unless his score has exceeded 26 and it is suggested that methods such as this, applied to the results of "mock" matriculation examinations held at most schools, taken in conjunction with the results of IQ tests and the pupil's school record could serve as a basis for offering advice to those pupils contemplating a degree course in Engineering at a university.

Considerable importance is attached to affording a university entrant the best possible sources of information in regard to his choice of a field of study which matches his intelligence, his interests and his scholastic record. Better information, by reducing uncertainty, will tend to eliminate the misallocation of resources involved in wrong decisions. Not only students but the State, all other bodies subsidizing university education and employing university graduates stand to benefit by reducing the number of wrong career decisions.

2.9 (b) Guidance in regard to social adjustment problems

The results of mental health surveys carried out in the United States and Britain have indicated that between five and ten percent of students were in need of some kind of psychological or psychiatric help and that "social and interpersonal" problems (which may be equated with "social adjustment" problems) were among the most serious problems faced by students.

This University has a full-time clinical psychologist on its staff whose duties as Student Counsellor are to deal with any personal or emotional problems presented by students. She does no formal lecturing but during the course of the year arranges a series of lunch hour lectures given by specialists who speak on topics of their choice.

During 1968 the Student Counsellor was consulted by 423 students with whom 994 interviews were held. These figures show increases of 194 and 68 percent respectively on those for 1967.

University authorities are becoming increasingly aware of the responsibility they have of helping students to develop as whole individuals - personally as well as intellectually. This help, to be effective, must be properly organised if students are to be enabled to develop their skills and potentials to their fullest capacities.

Difficulties in the social adjustment of university students may be caused by a variety of factors. From a superficial point of view, social adjustment problems may be caused by shyness and selfconsciousness, but these terms cover a multitude of situations.

For some shyness may be the result of newness to university. This might result in temporary difficulties which will be remedied when the student gets to know some other students, is consequently not so lonely and is able to establish himself as part of a group. This of course is not really a serious problem. For others, shyness may be a condition that has persisted for many years, and may be the result of the parents' social attitudes which have limited the student's own social contacts and experiences. This may be a more serious problem, but is not necessarily so.

For yet others, the shyness and selfconsciousness may be the outward signs of distress arising from emotional difficulties of varying degrees of severity. It is not always possible to separate social adjustment problems from other problems of a personal and emotional nature. These students require treatment in order that they may function adequately in both academic and social spheres.

It is perhaps important to state that numerous studies carried out at universities have shown that students who experience social adjustment and other emotional problems are at all levels of ability from the lowest to the highest, and not only at the inadequate level.

In suggesting ways of dealing with problems in social adjustment, we put forward the concept of three levels of preventive action as perceived in mental health programmes of United States universities and described in "Counselling of College Students", edited by M. Siegel.

(1) Primary level - Orientation programmes

This level aims at the prevention of the development of emotional disturbances by the use of extended Orientation Programmes at the beginning of each academic year,. so that students can adjust better to the new environment both socially and academically.

(2) Secondary level - the rôle of authority figures

This level refers to any action that is designed to identify and refer for treatment any difficulties in the early stages before a serious difficulty or emotional illness develops. The secondary preventive level therefore is directed towards the prevention of serious illness, not towards prevention of the occurrence of difficulties.

(2) Tertiary level - the rôle of the professional

This level refers to the professional treatment of illness in the hope of preventing crippling, permanent damage. When the social adjustment problem or other emotional problem is of a serious nature, professional help may be essential before the student is able to cope adequately with the demands made on him. Where counselling services are well-developed, it has repeatedly been shown that intervention at moments of stress in the lives of young students has changed the whole future course of their lives. If emotional difficulties become too much to cope with, many students fail or drop out of university. Help at the right time could avoid, or at least cut down this waste.

We consider that psychological counselling should be allied to the educational aim of realizing the potential development of the individual student as a way of reducing the loss resulting from the failure of students of superior intellectual capacity to complete their studies.

We therefore recommend that consideration be given to the provision within each university of a significant number of professionally trained staff to be concerned with the personal development of students.

2.9 (d) Career guidance

At most, if not all, British universities there is an Appointments Service to assist new graduates, as well as some of those who do not complete the course they embark upon, to find employment suitable to their needs and abilities.

The Appointments Board usually consists of part-time members from within and outside the university for the determination of general policy and a full-time staff for the provision of the service.

The essentials of the service have been defined by Lord Heyworth in his report to the University Grants Committee, as comprising the following three main elements:

(a) advisory interviews between appointments officers and students,

(b) the provision of information about careers, jobs and employers,

(c) machinery for:

  (i) notifying vacancies for students and employers

  (ii) arranging interviews between students and employers

  (iii) dealing with employers' enquiries.

In Britain the average cost in 1960/61 for providing the services rendered by appointment boards amounted to £14 per student available for employment, and one of Lord Heyworth's recommendations was the improvement of the ratio of appointments officers to "students available for appointment" which/

which he considered should not rise far above 1:100.

Any effective career guidance service depends on the skill of the appointments officers, whose job calls for a mature personality and consists of the following two main components defined in Lord Heyworth's report:

(a) intervies with students, often detailed, lengthy and numerous

(b) knowledge of employers, gained by personal contact, especially visiting.

Appointments Boards are of long standing in Britain and some were established as early as the turn of the century. In 1939 most universities had a service of some kind. At present this University does not offer the services of any organised central facility to its graduates but the need is recognised to ensure, as far as possible, that the skills of each individual student are used to the best advantage of himself and to the community. Although the diversity of employment opportunities open to graduates in South Africa is not as great as that in a country like Britain, for example, it is perhaps even more important to ensure that the most effective use is made of the services of qualified men and women in a community in which one sector of the population has responsibility for providing almost all the professional services for the whole country.

It is considered that about 600 students or half those graduating annually might make use of career guidance facilities at this University if these were available to them. This number excludes from the graduates those proceeding to further training, those already in employment and those committed to specific employment through scholarships or other financial assistance received while at the University. It also excludes those who have little need of advice because of ambitions which have been clearly defined from an early age and who have the ability to achieve these ambitions. It also excludes students, who for reasons of their own, may not elect to take advantage of the services provided.

On Lord Heyworth's recommendation the provision of career guidance services to 600 graduates annually would need the services of 6 appointments officers. However, on the basis of experience at British universities in the past and with the smaller number of potential employers of graduates in South Africa in mind it is considered that two to three appointments officers at this University could provide a useful career guidance service for students requiring such advice.

With clerical and typing assistance such a service might be expected to cost about R20, 000 annually or significantly less than one half percent of the cost of providing each graduate with a university training.

We consider that the provision of facilities for providing career guidance within the University is an important need.

2.9 (e) The case for an integrated Students' Advisory Service

Submissions have been made separately for the need for the University to make centralised services available for students in regard to their choice of fields of study, social-adjustment problems and in their choice of careers.

Most bodies that undertake the work of vocational or other guidance of students acknowledge the need for an integrated approach to student problems, since those who seek help or advice are not always anything like fully aware of the true nature or extent of their needs.

The basic choice of a field of study is closely related to the employment opportunities likely to be available to the student on graduation and may go wrong because of lack of information. It is much more likely to go wrong because of such factors as parental influence, exaggerated ideas about the income or status of the job or failure to match abilities needed with those possessed. In all such cases the person who has to make the decision needs, if he is to decide rationally, to abandon certain illusions about himself with the risk of experiencing emotional disturbances. Skilled psychological counselling may be essential to avoid adjustment problems.

The careers office should be aware of the symptoms of personality problems in order to know when to invoke the help of the Counsellor: the Counsellor should be aware of the help the Careers Office can give in modifying or carrying out career decisions about which anxiety is being experienced.

We accordingly recommend that consideration be given to providing financial assistance to enable universities to establish a co-ordinated Students Advisory Service to encompass:

(1) the provision of information at secondary schools about university courses and liaison with schools;
(2) guidance to applicants for university admission in the choice of fields of study;
(3) guidance to students at the university in regard to social adjustment problems;
(4) guidance to those available for employment in the choice of a first appointment.

We consider that an investment in the provision of the co-ordinated guidance services proposed would be recovered by the gain to the community and the taxpayer in eliminating wastage through failure of students to complete courses they were never likely to be good at, in rescuing students suffering social adjustment problems and in helping graduates to put their individual talents to full and proper use.

Professor Cilliers has proposed (p. 310 of his report) that component (f) in the revised subsidy formula, for student counselling service and student and staff amenities, consist of a particular provision of R10, 000 and 2 percent of component (a). We consider that an integrated Students' Advisory Service on the lines proposed could be established at an annual cost of about R5 per student.

2.11 NUMBER OF LECTURES PER COURSE

(a) Sound balance between independent study and lectures

It is not possible to generalise under this heading. What is regarded as a sound balance in one subject may not necessarily be the case in another. Further, the time students are expected to spend in independent study will increase substantially in second or third year courses compared with first-year courses. The Hale report on "University Teaching Methods" has pointed out (paragraph 126) that the nature and intensity of private study varies from subject to subject and quoted, as an example, that a relatively short period spent in concentrated reasoning on a mathematical problem may be just as productive, and just as tiring, as a much longer period spent in reading a literary work relevant to a course in English.

On the whole we would consider that a conscientious first-year student should give about double the time of a lecture ($1\frac{1}{2}$ hours) to working up his notes, ensuring he understands them, working up the references quoted and carrying out other reading connected with the material presented in the lecture. With four or five lectures per week in each course the time spent in independent study on this basis for working up lectures alone would amount to about 24-30 hours per week for first-year students attending four courses which is the usual number. In addition students would be required to spend time in independent study for carrying out written assignments and preparation for discussion periods if these are to be productive of useful results. The Hale report referred to emphasises the need to increase the amount of time which a student spends in private study and we concur with this view. Elsewhere in these submissions we have advocated methods of achieving this.

Although students in the second and higher years of study are expected to spend more time in private study they usually study fewer subjects concurrently and we would suggest that an undergraduate of average ability who expects to do well should spend about 24 hours per week on independent study connected with his lecture programme in addition to the time required for carrying out written and other assignments. It may be of interest that the statistical evidence presented in the Hale report showed that the median time spent by students in all faculties in private study was 22.3 hours per week.

2.11 (b) Sound balance between formal lectures and opportunities for discussion

One of the principal existing inadequacies in the teaching arrangements at this University is that due to the inadequate provision for academic staff there is insufficient teaching in small-group classes. We consider that there should be considerable opportunities for discussion in indergraduate training, but this can only be achieved by dividing large classes into small groups. Discussion as a form of teaching becomes effective only when the student himself has worked independently on the topic for discussion. Thus the establishment of a sound balance between lectures and discussions requires that the student carries out more private study which in turn calls for more staff for its direction and for the assignment and marking of written work for subsequent criticism and discussion.

Within the meaning of opportunities for discussion we include tutorials for carrying out problem exercises and the informal discussion of difficulties which arise during the performance of this work.

It is not feasible to determine a sound balance between lectures and discussions which could be applied to all subjects. One department has expressed the view that two formal lectures should be followed by a tutorial period and in some subjects such an arrangement could undoubtedly be effective. As a general rule, however, we consider that there should not be less than one tutorial or small-group discussion/

discussion class per four lectures which would mean about one such class per week for each course.

2.11 (c) Sound balance between formal lectures and laboratory work

We agree that practical work is essential for students in subjects where it is appropriate, and consider that in first-year science subjects generally, one afternoon practical class of about three hours' duration results in a generally satisfactory balance with the lecture programme. In the case of many first-year science students and all first-year medical students attendance at practical classes would take up four afternoons per week involving a total attendance of 12 hours.

The Committee on University Teaching Methods considered in paragraph 262 of its report that although demonstration experiments in lectures are nowadays out of favour, there was still a useful place for demonstration of techniques in the laboratory and that closed-circuit television and films could be used for this purpose. The report quoted the use, in the Department of Physics at the University of Manchester of closed-circuit television to carry out practical work in large student groups in the form of "experimental seminars". It is suggested that this and other similar possibilities be included in the proposed investigation of the use of teaching aids referred to in section 2.1(c) of these submissions.

2.11 (d) Distribution of lectures among subjects

The class time tables for courses in the Faculties of Arts and Science make available the same number of weekly periods for lectures in all courses in the same year of study. How the time is used depends on the nature of the subject and the availability of staff. In some subjects fewer lectures may be required and more independent study with tutorials or discussion periods than in others In the case of faculties which provide professional training the choice of alternative courses is normally very restricted or non-existent. In such faculties the distribution of lectures among subjects can only be determined by assessing the content of each course and its contribution to the overall objective of the year of study and allocating lecture periods for each subject accordingly.

2.12 METHODS OF EXAMINATION

(a) Advantages and disadvantages of the traditional three-hour examination paper

We consider that the examination consisting of one or more three-hour papers at the end of the academic year has the merit of testing the student's grasp of the subject as a whole, his analytical and critical ability in respect of it, his co-ordination of the whole year's work and study and his ability to organise his knowledge and to communicate his thoughts concisely and coherently in a limited time.

On the other hand, we realise that there are disadvantages in this type of examination which appear to be that;

(1) it tends to test memory rather than comprehension and reasoning power unless questions are set very carefully, and it may thereby place a premium on unintelligent memorisation;

(2) the marking of essay-type answers is subjective and consequently unreliable in the measurement of achievement. The more questions depart from the requirement for factual answers the more subjective marking tends to become. Unfortunately it is just those questions which test the student's ability and grasp of principles which should be preferred in university examinations and not those requiring factual answers;

(3) it encourages students to confine their studies to what they expect to need for success in examinations and thus cultivate a concern for examination results rather than an interest in the subject matter of the course;

(4) it encourages students to reproduce views expressed in lectures because they are expected to be acceptable to the examiner;

(5) it places students who are temporarily unfit during the period of the examination at a disadvantage;

(6) knowledge and ability is inadequately sampled by the few particular questions which can be included in an examination paper of the traditional type. This disadvantage applies particularly in examinations comprising only one three-hour paper and diminishes with an increase in the number of papers and questions.

Two of the principal functions of examinations are the measurement of achievement in the acquisition of knowledge of a subject and the prediction of the future potentiality of a student for further training or admission as a member of a professional body.

Professor P.E. Vernon, Professor of Educational Psychology in the University of London in his book "The Measurement of Abilities" considered that orthodox examinations were very defective methods of fulfilling these functions and that their chief, though not their only flaw was inadequate reliability. A major contributory factor to poor reliability is the subjectivity of marks.

Vernon (p. 203) quoted one of the classical experiments carried out in America in 1912 by Starch and Elliott who sent out copies of a single geometry paper to the chief geometry teachers at 116 high schools with the request that they should mark it in accordance with their usual practice. The marks awarded varied all the way from 28 percent to 92 percent. He considered that the prime reason for such discrepancies was that different markers conceived differently the desirable or undesirable characteristics of examination answers. Vernon sums up the reasons for the subjectivity of marks in the following way (p. 206):

> "One examiner may give chief credit for evidence of work done, and for the comprehensiveness and accuracy of the facts contained in the answers. Another may look rather for signs of future promise, originality and grasp of general principles. One may insist on clarity of expression of ideas, another may try to assess the profoundness of the ideas irrespective of their good or bad expression. Some may search for emotional rather than strictly intellectual qualities, such as the examinee's interest in the subject. Whenever/

> Whenever a candidate states his attitudes or opinions, these are liable to coincide, or clash with, the attitudes or opinions of the examiner; and however desirous the examiner may be of maintaining impartiality, he is liable to bias if his pet theories are opposed or attacked by the candidates. Often, if he would take the trouble to formulate explicitly his notion of the aim of the examination, he would find that he means by a good examinee the one who closely approximates to himself, and as a poor candidate the one who shows none of the intellectual or emotional qualities which he himself idealizes."

Professor Vernon goes on to say (p. 207):

> "The essay-type of answer has been very widely and justifiably criticized. Examinees have to waste a large proportion of the available time in translating their historical or scientific knowledge into readable or essay-form, and in the mere process of writing. This latter is particularly unfair, because some can write much faster than others without necessarily being better historians or scientists. A considerable proportion of the written words ..... add nothing to the evidence of the examinee's good or poor ability. Investigation shows that the average examinee puts into writing less than one fact or idea per minute of examination time, since the process of expressing these facts or ideas takes so long. The examiner then has the still more difficult task of translating the product back again, of trying to penetrate through the verbiage to the signs of ability and knowledge beneath."

Despite these disadvantages we consider that the traditional examinations serve the purpose of testing student performance in a way which is reasonably satisfactory. It is, in fact, remarkable that the marks awarded to the same student in examinations in different subjects are, in practice, as consistent as they are even when the answers to questions are of the essay-type and the assessment therefore subjective. This preference, however, does not mean that we would be reluctant to add to the traditional examination other methods of assessing students' abilities.

2.12-4 Departments in this University have been authorised to allocate up to one-third of the final marks for determining performance in a course on the basis of the student's work in tests, essays and project work carried out during the year. We do not consider that a system of continuous assessment of work done throughout the year should contribute more than one-third to the final marks. The results of class tests held at intervals during the year are indicative of the student's performance on parts of the syllabus. He may know the relative part for the test in detail and for a short period, but what is wanted as well is a measure of his grasp and understanding of the year's work as a whole. As his understanding of the subject can be expected to improve as the course progresses, we consider that the student is also entitled to be examined at the end of the year when his grasp of the course as a whole should be at its maximum.

At the honours degree level there is a tendency towards the assessment of the student's ability on the basis of project reports. At the undergraduate level it is usual for the written examination to consist of one three-hour paper for a first-year course, two for a second-year course and three three-hour papers for a third-year course. In some departments where practical work is a requirement, practical examinations are not held at the end of the year, but students are assessed on the practical work performed during the year. In others practical examinations may comprize three six-hour sessions in third-year courses.

2.12 (b) Modern examination methods

Some of the disadvantages of the orthodox examination listed in the previous section may be eliminated by the use of objective tests in measuring achievement. Such tests consist of a large number of questions which may be answered in one word or a few words or numbers, but more often take the form of selecting the right answer from a number of choices given on the answer sheet. The large number of questions enable the whole field of knowledge to be sampled/

sampled more comprehensively and as writing is reduced to a minimum it has been claimed that the average examinee can answer three to six questions a minute. Of course examinees in a multiple choice examination paper could obtain a number of correct answers by random guessing, but procedures have been developed for overcoming this by, for example, deducting marks for answers which are wrong.

The marking of multiple choice examination papers becomes entirely objective and is often carried out by computer. They are subjective, as Vernon points out, only in the setting of the questions, but this subjective element can approach that encountered in the making of essay-type examinations and a good deal of time and skill are required for constructing good examination papers of this type.

Objective tests are usually criticized on the ground that they measure, in Vernon's words, "the most trivial aspects of ability such as details of information". In stating the criticisms levelled against objective tests, Vernon continues (p. 223):

> "The tests may indeed analyse complex mental operations into elements which can be objectively marked, but they cannot put the elements together again, and in the process of analysis they omit many of the most important aspects of ability. They cannot, as can the essay-type of examination, show the examinee's general understanding of the subject, nor his interpretation of facts, his capacity for organising and formulating his knowledge, nor his initiative and originality. Far from reducing the tendency of examinees to cram mechanically, they may increase the amount of rote memorisation and discourage any desire to achieve a general grasp of the field."

Vernon counters a number of these arguments firstly by saying that if objective tests do not measure understanding or originality the essay-type examination is also unreliable in this respect. Secondly, he maintains that information and its reproduction, on the one hand, and understanding and thinking on the other hand, cannot be readily separated in practice and experiments have shown them to be highly inter-correlated. "The acquisition and reproduction of information always/

always involves a certain amount of thinking, and no thinking is possible unless a person has information to think about." (p. 224) He considers, therefore, that although the objective test apparently measures nothing but information it at the same time affords a good measure of other more complex types of ability. (p. 226)

Objective tests can be designed to measure the application of principles or the interpretation of information (i. e. understanding). Vernon concludes that the criticism of objective tests have been exaggerated by the faulty views of the nature and organisation of the mental abilities of the critics.

The design of multiple-choice examination papers which measure achievement and other types of ability satisfactorily requires a great deal of skill and experience on the part of the examiner. In fact, such a task should not be done by one man, but needs several people experienced in the same field to assess the questions and the range of answers. (For example, analyses sone on multiple-choice examinations for matriculation examinations show that many have been dadly set, and with good knowledge, more than one answer is acceptable. The preparation of such papers takes up much more time than the setting of traditional examination papers, although the marking is quicker and may be carried out by computer. Estimates suggest that an economy of time is only achieved by the use of objective tests instead of conventional examinations when the number of scripts exceeds about 300.

Multiple choice examination papers have been used in some departments of this University for class tests during the year, but they have not been used for end of the year examinations. We consider that objective tests have potentiality in some respects as an effective method of examination and suggest that their usefulness be a subject of investigation as a joint undertaking by South African universities or by the designation of, say, two universities to carry out investigations and make the results known to other universities.

2.12 (c) Use of computers

See also section 2.12(b) of these submissions.
The multiple choice examination paper discussed in the previous section lends itself to computer marking and may be an effective method of examining large classes in some subjects which are suitable for the employment of objective type of examination. Perhaps such examinations could best be used in conjunction with examinations requiring essay-type answers.

Another aspect is the use of computers as an administrative tool in the organisation of examinations. We intend to make use of a computer for designing and checking examination time-tables to eliminate clashes in the allocation of places in examination halls, and in the publication of examination results. At this University about 60,000 papers are written in about 1,200 examinations at the end of the academic year and computer assistance for the quick and efficient handling of the administrative aspects of examinations is becoming increasingly important.

2.12 (d) Rôle of external examiners

Our regulations require the appointment of external examiners, not connected with the University, for each examination in a final course for a degree and in other courses where there is a statutory requirement as in the case of the Faculties of Medicine and Dentistry. For other examinations external examiners, not connected with teaching in the course, are appointed. These are usually external to the University but the Senate may grant permission for the appointment of a member of the University staff as an external examiner or alternatively procedures may be approved (where large numbers of scripts have to be marked) for the appointment of moderating committees consisting of members of the permanent staff to ensure accuracy in the addition of marks and uniformity in the standard of marking. Ideally we consider that all scripts should be marked independently by two examiners (of whom one is not connected with the University) but the large numbers of scripts in some examinations do not always permit the practical application of this system.

The appointment of external examiners is important in an examination system for:

(1) ensuring that an acceptable standard is maintained in the questions set and in the answers to these questions;

(2) ensuring that students have been assessed fairly without prejudice as the examinees are unknown to the external examiner;

(3) making possible a useful interchange of knowledge and experience about the quality of candidates for similar courses in different universities and thus helping to ensure that standards at different universities are comparable.

External examiners do not normally do their examining at the University, but this has been found useful in some departments which have been authorised to arrange for external examiners to carry out their duties at the University. As internal examiners in one university usually serve as external examiners to another university the extension of this practice would be practicable only by co-ordinating university examination time-tables throughout the country.

2.12 (e) Other

The work of the academic staff in setting examination papers, marking scripts and deciding upon the results, takes up an appreciable time, whatever examination system is used. If this University is to fall into line with the growing tendency to take into account the student's performance throughout the year in practical classes, periodical class tests and the quality of written work submitted throughout the academic year, consideration will have to be given to making provision for adequate secretarial assistance in departmental offices to administer the system and maintain accurate records of the marks awarded for all work. It is not an economical use of the time of academic staff to employ them on mechanical duties of this kind.

2.13 STUDENT-STAFF RATIO

Introduction

We prefer the term student-staff ratio to student-teacher ratio used by Professor Cilliers or staff-student ratio which is the term in use in Britain and all references in these submissions are therefore to student-staff ratio.

Professor Cilliers in pages 11-14 of his report used the concept of an overall student-staff ratio for reviewing the staffing position in South African universities over a number of years. In deriving the figures quoted in Table IV Cilliers equated two part-time students to one full-time student and three part-time members of the academic staff to one full-time member. These overall figures serve the useful purpose of providing a basis for making relative comparisons and indicating the general trends. However, we consider that it is desirable to introduce a standard method of assessing student-staff ratios which reflect in a rational and uniform way the students' demands on teaching resources within a university and which would enable comparisons to be made between departments, faculties and universities, as well as the determination of trends, over a period of years.

In submitting our proposal for the assessment of student-staff ratios we begin with the basic assumption that the demand of a candidate for a bachelor's degree on university teaching resources is constant for all years of study and in all faculties. This constant is referred to as the undergraduate student unit. The contribution by an individual department in which a student attends a course is thus equal to the constant divided by the number of courses which a student would normally attend in his year of study. For example, students registered for the degree of B.A. or B.Sc. at this University normally attend four courses in the first-year, three in the second and two in the third. We therefore propose that a first-year course be rated as $^1/4$, a second year course as $^1/3$ and a third year course as $\frac{1}{2}$ of the undergraduate student unit.

In the case of part-time students we propose that the fractions referred to in the preceding paragraph be multiplied by a factor equal to the number of years of full-time study specified for the degree and divided by the number of years of study specified for the same degree by part-time study. For example, in the case of the degree of B.Com. at this University which can be completed in three years of full-time study or four years of part-time study the factor would be $^{3}/_{4}$. If a course is available only by part-time study it is proposed that an assessment be made of the number of years in which it could be completed by full-time study for the purpose of determining the factor.

In section 2.14(d) of our submissions we advocated that postgraduate students registered for degrees of master or doctorates should be "weighted" and proposed the adoption of the weighting system accepted in the Robbins report and presently employed by the University Grants Committee in Britain. The weightings for supervised research students now proposed are:-

Arts, Commerce and Law - 2 undergraduate student units
Science, Engineering, Medicine, Dentistry and Architecture - 3 undergraduate student units.

We consider that it is essential to encourage postgraduate training in South African universities and have emphasised the urgent need to do so in section 2.18 of these submissions. We therefore consider that adequate recognition must be given in the student-staff ratio to the time devoted by academic staff in the supervision of higher degree candidates and the ancillary work which staff carry out in the course of supervising higher degree candidates. As we have said, we are not in agreement with the arguments against weighting postgraduate students advanced by Professor Cilliers (p.109 et seq.) and in particular with his statement on page 110 that ".....the ratio of postgraduate to graduate students, will, on an average, also tend to stabilise ..." We consider that active and vigorous encouragement needs to be given to postgraduate training at South African universities, which would result in a continuous increase in this ratio.

A difficulty which presents itself in assessing the demands of teaching resources for postgraduate students is that although a minimum period in which the degree may be completed is usually prescribed in the rules it is common for candidates for higher degrees to proceed more slowly and so exceed this period. We propose, therefore, that higher degree candidates should be assessed on the weightings set out above for the minimum period prescribed for the degree in the case of full-time students and at half these weightings for the minimum period prescribed for completing the degree on a part-time basis.

For any individual department the total undergraduate student units would be the sum of all the components listed. For all departments together the total number of undergraduate student units will not be precisely equal to the number of students. Apart from the weightings for post-graduate students, an undergraduate in the Faculty of Science and in Arts registered for example for two third-year and one first-year course would constitute $1\frac{1}{4}$ undergraduate student units, but we consider this justifiable on the ground that the demand of such a student on teaching resources exceeds that of a student registered for two third-year courses only. Similarly, a first-year student registered for only three courses would constitute $\frac{3}{4}$ of an undergraduate student unit.

In assessing staff numbers, we consider that each member of the full-time academic teaching staff, irrespective of rank, should constitute one unit. We also recommend that part-time academic teaching staff (who may sometimes be full-time members of staff of the University) be included as a fraction of a unit determined by assessing his contribution to the teaching load in relation to the average teaching load of full-time academic teaching staff in the department. Although this method of assessing staff units for part-time staff may become complex, it takes account of the wide variation in the contributions of part-time staff to teaching resources.

We do not consider that it would be possible to evaluate in any realistic way the contribution of hospital staff to the clinical training of students for the degrees of M.B., B.Ch. and B.D.S. and we therefore suggest that in computing student-staff ratios in the way proposed no attempt be made to evaluate these ratios for clinical departments responsible for /

for training M.B., B.Ch. and B.D.S. students. (For purposes of overall comparison medical and dental students in the clinical years of study and the teaching staff concerned have been taken into account in calculating the student-staff ratios and have yielded rather lower student-staff ratios than those calculated by employing the weighting system proposed.)

The Robbins report (paragraph 522) contains the following comment in regard to student-staff ratios:

> "The student-staff ratio is a rough and ready device for conveying the adequacy of staffing; the overall ratio for any one sector of higher education condenses into one figure a range of different conditions in different institutions and in different faculties and departments within the same institution, and may conceal shortages in some departments and disproportionate strength in others. However, a discussion of staffing can hardly proceed without showing at least the orders of magnitude of the ratios."

We believe that the criteria we are using are the best available for assessing the overall staffing of the University. However, within the total resources available to a university there is considerable internal difficulty in deciding on the division of of these resources. We consider that a detailed study of departmental needs, to take into account the disparate activities of academic staff, the proportion of postgraduate work, administrative commitments and the contribution of staff other than lecturers (e.g, demonstrators) to teaching would be rewarding particularly if inter-university comparisons could be made. We suggest that such an investigation be carried out on behalf of all universities possibly by the University Grants Commission whose establishment we have proposed in section 1.8 of these submissions.

2.13 (a) A realistic ratio for effective training

A favourable student-staff ratio is a major factor influencing the quality of university education and is also a major factor in attracting and retaining good staff. The problem to be decided is at what level additional expenditure on staff salaries becomes less rewarding than an equal expenditure on books, equipment and other recurrent costs.

Professor Cilliers has drawn attention to the unsatisfactory overall student-staff ratios at the older South African universities. This has steadily declined from 6.6 in 1912 to 14 or over in 1967, whereas in Britain this ratio improved steadily from 1938 to 1955 and thereafter declined slightly until 1959 since when it has remained steady at about 7.6.

Professor Cilliers (p. 170 of his report) has recommended that the overall student-staff ratio on his method of calculation should be reduced to about 10.7 which would enable universities to revert to the position in the 1930's. To achieve even this target would involve the appointment of no less than 250 full-time academic staff to this University based on the figures for 1969 on the overall method of calculating the student-staff ratio used by Cilliers.

The overall student-staff ratios at the larger universities are substantially less favourable than at the smaller residential universities, because of the structure of the subsidy formula. We recognise that there is an economy in the cost per student in a large university, but we contend that the ratio of basic subsidy to the standard provision falls too rapidly with growth in student numbers. The average student-staff ratio in 1965 for all residential universities was 13 and the ratio for this University was 17.5, but deteriorated to 18 in 1968.

The weighted student-staff ratio calculated in the way recommended in the introduction to this section (which excludes students and staff in the clinical departments of the Faculties of Medicine and Dentistry) shows that the student-staff ratio was 20.6 in 1968 but this improved to 19.8 in 1969. An analysis by departments shows that the smaller departments have low student-staff ratios because of the need to appoint/

appoint specialists in a number of fields of study within the discipline. However, there are only four departments with a student-staff ratio lower than 10.7 the overall ratio advocated by Cilliers and an equal number with a ratio three times as high and one large department with a student-staff ratio of 39.7.

We consider that a desirable objective would be the reduction of the weighted student-staff ratio over the next three years from 19.8 to 13.5. To achieve this on present student numbers would require 215 additional full-time or equivalent full-time staff. However on anticipated student numbers three years hence a further 70 appointments would be necessary to maintain the weighted student-staff ratio at 13.5. These figures do not include any provision for the additional teaching load which a possible extension of the academic year might impose, but as they stand they demonstrate the seriousness of the position.

In section 2.18 we drew attention to the urgent need for South African universities to embark on a greatly extended programme of postgraduate training. The universities' own needs underline the urgency for producing more graduates at an advanced level as a potential source of recruitment of academic staff in future years. Interim ways of strengthening the teaching staff will have to be found. In the courses leading to professional degrees we shall have to increase the number of part-time lecturers. This is far from ideal as part-time staff are in contact with students in only a very limited way, and we should like to improve the opportunities for student-staff contact. We shall also recruit academic staff from overseas and to do so successfully on the scale which will be necessary to improve the student-staff ratio significantly we shall have to be in a position to offer attractive salaries and working conditions. Britain would be our principal source for such recruitment and recent figures which show the wastage rate from full-time academic service by resignation, death and retirement to be only four percent in Britain indicate that a strong incentive will be needed to attract experienced staff.

A further way would be to encourage more visiting lecturers who could stay for one to three years. The benefits of this type of arrangement are considerably greater than with casual assistance as the staff are available on a full-time basis and develop much closer links with the university and the students. The side effects could include a certain amount of continuity by way of advertisement by word of mouth from a former visitor to someone contemplating a visit. There may also be the chance that some of the visitors would wish to be considered for academic posts on a permanent basis. We estimate that the average cost of fares for visiting lecturers and their families would be about ten percent of their annual salaries.

We submit that in the assessment of a realistic student-staff ratio account must be taken of three distinct elements:

(1) an improvement of the present student-staff ratio which is particularly unfavourable in the larger universities;

(2) the effect of the growth in student numbers which we have assessed at $4\frac{1}{2}$ percent per annum;

(3) the additional teaching load which would be imposed if the academic year were to be extended.

2.14 QUALIFICATIONS OF UNIVERSITY TEACHERS

Introduction

See section 2.18(c) of these submissions.

(a) Opportunities for advanced study.

"Advanced study" has been taken to mean study for a master's degree or doctorate for which research and the presentation of a dissertation or thesis is a requirement, as well as postdoctoral study. Universities were first established in South Africa to fulfil a teaching function and have been extended to meet the growing need for undergraduate training. Initially the demand for postgraduates was met mainly by overseas universities. Since the last war this demand for trained men and women with advanced university qualifications has been greatly increased by the establishment of research institutes, not only by government but by industrial organisations, and the University in taking its part to meet this need has had to rely very heavily on its own resources. These have been insufficient for providing the proper research facilities and for making financial inducements available in the form of scholarships to enable qualified graduates to remain in the University long enough to complete the requirements for a higher degree.

As a basic requirement South African universities should collectively be able to attract sufficient very good students to undertake advanced study to produce the number of university teachers on whom the existence and future development of universities depends. In addition the universities have the responsibility for identifying and training talented young people for research careers and replacing the absorption of top level graduates into executive positions not only in commerce and industry but in other sectors of the national life where the contributions of the scientifically trained mind in planning and development are increasingly being recognised. In South Africa, the high growth rate of the economy and the responsibility which the white population has for the provision of professional and advanced technological services, there is undoubtedly a need for a higher ratio of highly trained staff in the white population group than in the population of other countries.

We submit therefore that it is important to provide opportunities for advanced study to all young graduates who are anxious and intellectually fit to undertake postgraduate study. We advocate a generous system of state grants or loans to enable good graduates holding an honours degree or equivalent qualifications to undertake postgraduate study on a full-time basis. This is probably the only stage in a graduate's career when he can afford to do full-time research on a maintenance allowance.

Financial assistance for advanced study needs to be on a generous scale because of the remunerative employment offers which graduates of the right intellectual calibre attract as soon as they qualify with a first degree. Many graduates marry at this stage and part of the assistance offered to encourage them to undertake postgraduate study and research could advantageously take the form of provision of living accommodation for married couples. Overseas universities accept the situation that postgraduate students are often married and provide appropriate stipends and subsidized accommodation. An investment in intellectually able young persons may well help to stem the flow of emigrant scientists and scholars and diminish the high cost of replacing them by less satisfactory immigrants.

The creation of better opportunities to attract more graduates to undertake advanced study must also be accompanied by adequate staff provision in university departments for conducting research programmes and supervising postgraduate students. In addition departments must be able to provide the proper facilities and equipment. In the case of advanced study in the humanities the greatest need in this respect is for improved library facilities. In the pure and applied sciences there is a need for equipping and keeping laboratories up-to-date with modern apparatus. This aspect is dealt with under section 2.14(d) of these submissions.

2.14 (b) Balance between study and research

Under the rules applicable to a Master's degree candidates are required to prosecute advanced study or research or both under the guidance of a supervisor and to present a dissertation which shows acquaintance with the methods of research. He may also be required/

required to present himself for examination in regard to the subject of his dissertation.

A candidate for the degree of Doctor of Philosophy is required to prosecute under supervision full-time research for at least two academic years (or its equivalent in part-time research) and present a thesis, which must constitute a definite contribution to the advancement of knowledge in the subject chosen, in a form suitable for publication. He may also be required to present himself for an examination which may be either written or oral.

A graduate holding a three-year Bachelor's degree is required to complete an honours degree before his admission as a candidate for the Master's degree. The intensive reading required for the honours degree provides, in our opinion, adequate preparation for the rigours of a research degree. In the course of his work for the presentation of a dissertation or thesis a candidate will be required to do further intensive reading in the field of his research and may find it necessary to attend advanced lectures in a contiguous field. However, we believe that in advanced study at university level the primary aims aims are the quest for knowledge and the acquisition of skill in conducting research appropriate to the degree for which the candidate has been registered. This implies the completion of an intensive study of existing knowledge of the specialised field in which he is working but we do not consider that formalised prescribed study should form the major part of the requirements for a higher degree. The combination of doing research and being trained to do so is fundamental to postgraduate training at this University.

With the development of interdisciplinary research it may become increasingly necessary for a candidate for a Ph. D. degree to undertake advanced training in a field different from that in which he has specialised. We foresee a growing need for the conduct of interdisciplinary research and advocate its encouragement by recognising prerequisite training at honours level in another field for the award of postgraduate scholarships.

2.14 (c) Rôle of research institutes within the University

The laboratories of the National Institute for Telecommunications Research and the National Institute for Personnel Research of the C.S.I.R. are located on the campus of this University.

It is common practice in Europe and America for national research establishments to be located within the precincts of universities with the intention of encouraging a close working arrangement between appropriate departments in the university and the laboratory. However, the mere presence of a research laboratory within university precincts does not necessarily lead to any fruitful academic association.

The laboratory must be prepared to say what it requires and expects from the university and what it can contribute to the teaching and research programme of the university. The university on the other hand must be prepared to maintain, despite the changes of academic staff and the consequential changes in research interest, at least a nucleus of staff and resources that would enable the university to collaborate significantly in the main activities of the laboratory. Such collaboration is desirable and we consider that it could best be achieved by the establishment of a liaison committee accountable to the governing authorities of both the laboratory and the university.

The Council for Scientific Policy in Britain reported in 1967 on liaison between universities and government research establishments and considered that close collaboration could lead to the following advantages:-

(1) Economy through the joint use of expensive capital equipment without denying the proper supply of research facilities to all concerned.

(2) A greater appreciation in the universities of the contribution academic scientists can make to the solution of national problems.

(3) An earlier realization in research establishments of the practical significance of advances in pure science and their problems.

(4) The discipline of giving a systematic course of lectures is often a valuable stimulus to research and some of the staff in a research establishment would consequently benefit from devoting part of their time to advanced teaching in a university and gain added stimulus from contact with fresh young minds.

(5) The research establishments are the repository of much scientific and technical knowledge which could be of considerable value to universities in advanced teaching and research training.

A further advantage which we see as a consequence of close collaboration is the possibility of staff interchange between the university and research institute. Such interchange would enable research staff of the institute to participate in teaching and for university staff to participate in research on a full-time basis.

Certain laboratories under the control of statutory councils have the powers to establish research units or groups within universities. Such units may be generously financed in the hope that the facilities afforded will attract advanced students in the university to work in the special field of applied science with which the laboratory is itself concerned. On the one hand advanced students are directed early to branches of applied sciences which require development in the interests of the national economy. On the other hand it is inevitable that the interest of the university department may be diverted from fundamental to applied research. In a large university department, of course, there should be room for an applied research unit and the support of an outside laboratory in establishing a research unit in such a department is likely to be beneficial to the university. In the field of the applied sciences we consider that applied research should have a dominant position with a reasonable blend of fundamental research.

In arrangements in which outside financial resources are used to establish research units there is the inherent danger of creating two types of academic employees within the university - those with teaching responsibilities and those without. We would wish to ensure that the staff of research units have teaching responsibilities so that they are not debarred from professional advancement within the university as lecturers or professors.

We welcome the establishment of research units in universities by research councils as a way of stimulating research in universities, but it is important that these units should be centres of university activity and integral parts of university departments. We consider, therefore, that once the unit has been established in its initial phases with financial support from a research council financial responsibility for its continuance should gradually be passed to the university and the annual grant from the research council finally terminated. In this way funds of the supporting council would be released and become available for the initiation of other research units. An important consequence, however, is that in the subsidy formula for the support of research in universities the component should be large enough for the university to assume such financial responsibility.

Also located on the campus of this University are the Bernard Price Institute of Geophysical Research and the Bernard Price Institute for Palaeontological Research which were established by a donation which at the time provided an adequate income. In the course of time the University has been called upon to assume an increasing financial responsibility and control. In the establishment of research institutes by endowment, it would be realistic to anticipate the need for the provision of such financial support at the inception of the institute. The Bernard Price Institutes are integral parts of the University structure participating in teaching as well as in Research.

In section 2.18(c) of these submissions, we have referred to the need for constructive relationships between a university and industries within the community it serves. We wish to refer here to arrangements with industrial research laboratories which can be mutually advantageous to the laboratories and the university.

Industrial research laboratories are usually engaged in applied research into problems of the industries that they serve. Most industrial laboratories employ permanent staff who intend to make a career in scientific research. However, on account of the attractive starting salaries offered by industry to young scientists, many of the staff enter these institutions before they are well qualified or indeed as well trained academically as they should be.

The problem arises of obtaining academic recognition for the work done in the course of the ordinary programmes of the laboratories. It is not the function of a university to put the seal of academic approval on work in which it has taken no part in planning or directing, except in so far as published work may qualify for senior doctoral degrees. Recognition of such work for degrees at the level of M.Sc. or Ph.D. requires a formal relationship between the university and the laboratory in which the university is involved in the planning and direction of the research in order that the staff members engaged upon it may properly be said to be undergoing university training (which will often include attendance at formal courses of instruction) and so qualify for registration as internal students for higher degrees. Directors and staff members of industrial laboratories usually value the sort of association with a university that enables younger men to obtain advice from scientific specialists and in the course of their duties to qualify for higher degrees without taking long periods of special leave.

In order to make an association of this kind effective it is necessary for the university to be somewhat expansive and willing to grant academic status to persons who are of high scientific standing and whose collaboration with the university in the training of senior students justifies it. In terms of this sort of association senior members of industrial laboratories become honorary lecturers, professors and research associates and there is considerable university commitment to applied research.

The arrangement that exists between the University of the Witwatersrand and the South African Chamber of Mines allows for the appointment as University lecturers of senior members of staff of the Chamber's laboratories who undertake the supervision of research carried out by junior members of their staff in the Chamber's laboratories. This arrangement has proved successful and beneficial to both partners.

The case for linking universities with the laboratories of Government agencies is no less sound in theory, but considerably more difficult in practice. Government laboratories accountable to the Treasury usually have specific functions of a survey or service kind which involve working procedures that cannot be varied in order to raise the academic interest of the work or make it sufficiently varied or demanding to be acceptable as university training for higher degrees. Recently in South Africa certain Government organisations have provided universities with the necessary financial aid to carry out research on their behalf which has been performed by candidates for higher degrees. In view of the man-power shortage in South Africa this arrangement is a device for getting research done that is "in the national interest". However such work cannot always be adapted to the requirements of academic training for higher degrees and in this event the university department loses its initiative in working out a stimulating research programme.

In general the use by Government agencies of the special knowledge of academic experts is desirable and is acceptable in most countries. It is mutually beneficial if this consultation results in students undertaking serious research planned and directed by the university department concerned in partnership with the agency and if at the same time the outcome of the research serves the purpose of the Government agency.

2.14 (d) Specialised facilities

In the fields of the pure and applied sciences the cost of research becomes progressively greater as the equipment required becomes more complex and hence more expensive. In a recent report entitled "The sophistication factor in science expenditure" published by the Department of Education and Science in Britain trends of instrumentation expenditure in a number of laboratories including those at universities were established. The results show that while the annual cost per researcher was £51 in 1958/9 this had risen in constant value terms to £290 in 1965/6 in a university chemistry department with 76 researchers in 1958 and 118 in 1965. In the case/

case of a geology department the annual growth rate in equipment and running costs from 1955 to 1965 exceeded 17 percent per researcher whose numbers increased from 13 to 30 during this period.

It is important for many reasons to have modern equipment for research and teaching. Firstly, the availability of modern apparatus widens the scope of research which can be carried out and increases the productivity of research workers. Secondly, the training at the honours degree level becomes much more effective if modern equipment used for demonstrations and the student's acquaintance with up-to-date equipment does not have to be limited to description of such equipment in the literature. More important still the existence of modern equipment attracts good scientists to the department and restrains good scientists who might otherwise do so from going aborad in search of such conditions in which to carry out or continue their research.

"The Brain Drain" remains a problem in South Africa and the President of the C.S.I.R. has again very recently drawn attention to its seriousness. The Working Group on Migration in Britain, in its report published in 1968, considered that the basic reason for the emigration of scientists and engineers to North America was that the massive investment in pure and applied science had led to the establishment of well-endowed centres of excellence in universities and industry which were able to offer an intellectual atmosphere and the guidance of well-known leaders for those who wished to extend their knowledge and experience. Associated with this was the prospect of generous support and equipment and assistance for developing research. It must be emphasised that this statement emanated from Britain where, by our standards, university laboratories are well equipped and where the annual grant to universities for equipment is now of the order of £18m., excluding computing facilities. The equivalent annual allocation to South African universities based on the number of postgraduate students in the pure and applied sciences would be R3.5m. or based on overall student numbers (excluding UNISA) about R10m. per annum.

Elsewhere in this report the urgent need for improving the provision for academic staff at this university is stressed. The opportunities for advanced study with its research requirements and the quality of the research training afforded are, of course, greatly influenced by the availability of appropriate qualified experienced staff who can devote sufficient time to the supervision of research students. We should like to be in a position to plan postgraduate research programmes conducted by a number of members of staff to replace the system of ad hoc supervision of individual research projects. We submit that the Cilliers report gives inadequate recognition to the staffing requirements for postgraduate training and research supervision and concur with the weighting adopted by the University Grants Committee in Britain by which they equate one postgraduate student to two undergraduate student units in Arts and Social Studies and to three in the Pure and Applied Sciences. With the prevailing student/staff ratios in Britain these become for postgraduate students about 6:1 and 3.5:1 respectively. (See also section 2.13 of these submissions.)

2.15 UNIVERSITY TEACHING METHODS

(a) Training of university teachers in university method

Appointments to the academic staff of a university are normally made on the basis of academic distinction and research achievement. Expertise in a discipline is central to a university appointment, and, as a rule, no evaluation of a candidate's competence in undergraduate teaching can be made. In the case of a first appointment he will have had no experience and if he has taught at another university it is unlikely that an objective assessment of his teaching ability could be provided or would be available.

Few applicants for university appointments have completed courses of training as teachers and as the Hale report has pointed out, a person who adopts the career of a university teacher does not do so in most cases because his main object is to teach. In the face of the strong competition for the employment of persons academically qualified for a university appointment we do not consider that the introduction of a formal compulsory course of training, as a further hurdle to be negotiated before appointment to a university, would be a realistic way of improving the standard of university teaching.

A member of the academic staff of a university will himself have experienced good and bad teaching during his own undergraduate training and could be expected to be aware of the qualities which distinguish a good lecturer from a bad one. We consider that opportunities for self-appraisal by recording lectures on audio-visual tape to enable the lecturer to be his own critic might be an effective way of eliminating some of the more obvious defects in his lecturing technique. We consider too that senior colleagues in the same department would be in the best position to give helpful advice to the inexperienced lecturer. The Hale report on University Teaching Methods (paragraph 346) draws attention to the ill-effects of the physical presence of observers during the lecture and advocated the use of closed-circuit television which enabled the lecturer to be observed and heard without the distracting influence of an observer in the lecture room. Perhaps the combination of self-appraisal with senior/

senior colleagues and the lecturer present together at the screening of his lecture recorded on audio-visual tape might be more effective still. We attach considerable importance to methods of self-examination and the criticism of experienced colleagues in improving standards of university teaching. Such methods provide the means of correcting not only faults of presentation and delivery, but also faults of construction and arrangement which can only be achieved through informed departmental criticism and the advice which can be offered by senior colleagues.

We also advocate holding organised discussions or seminars on teaching methods which members of the academic staff would be encouraged to attend on a voluntary basis. However, we do not think that it would be feasible to devise specific forms of training for university teaching which could be applied uniformly either to all departments or for getting the best results from all members of the teaching staff. The most that could be done would be to bring to the attention of new members of staff the principles of exposition on lectures, classroom techniques and the conduct of discussion groups and laboratory sessions. We concur with the statement in the Hale report (paragraph 344) "....if a lecturer has an interesting and sympathetic personality and enthusiasm for his subject these gifts will more than atone for faults which others could not afford to commit. This fact, however, is not sufficient reason for allowing the less gifted lecturer to be less effective than he might be if his faults were corrected before they were hardened into habits."

An important requirement in ensuring good undergraduate teaching is the allowance of adequate time for the preparation not only of lectures but for conducting small-group teaching in tutorials or seminars. The projected improvement in the staff/student ratio will help to eliminate the existing unsatisfactory position in this respect.

2.15 (b) Suitable methods of tuition for different subjects

See section 2.1(a) of these submissions.

2.15 (c) Employment of modern technical aids

See sections 2.1(c) and 2.7(b) of these submissions.

2.15 (d) Advantages and disadvantages of formal lectures

See also section 2.1

We consider that instruction through formal lectures has the following advantages not as well achieved in other ways by:-

(1) providing a broad exposition and framework of a topic in an orderly balanced and systematic way free from interruption and digressions;

(2) transmitting information which the student must know to comprehend his subject, with the advantage of oral explanation of material too complex to understand through unassisted reading;

(3) achieving economy in staff time by enabling a lecturer to reach more students within the same time;

(4) conveying stimulus and interest in the subject to students through the zeal and enthusiasm of the inspiring teacher;

(5) awakening a critical attitude of mind among students by demonstrating a scholarly mind at work with ideas, theoretical relationships and problems.

We consider that formal lectures have the following disadvantages by:-

(1) imposing a single pace on all students which is likely to be nearer the capability of the slower students;

(2) failing to provide opportunities for dialogue and contact between students and staff;

(3) perpetuating the immaturity of students if they come to expect the material required for a good knowledge of the subject to be contained in lectures;

(4) not usually exercising the mind of the student who thus becomes a passive recipient;

(5) becoming the vehicle for the presentation and accummulation of material for examinations.

2.16 QUALIFICATIONS OF UNIVERSITY TEACHERS

(a) Minimum qualifications for university teachers in different grades

We do not consider that minimum qualifications for the appointment of university teachers to any grade can appropriately be prescribed.

We agree that appointments to permanent posts on the academic staff should normally be made of persons holding a four-year degree and who have either completed a doctoral degree and two years of appropriate post-doctoral work or have established equivalent status in intellectual leadership in a specialised branch of professional skill. In the applied sciences such persons may have attained this status through their contributions in private practice, through research carried out in industry or in one of the national laboratories or who have held an appropriate appointment for gaining the experience required to contribute to university teaching. It is not possible to be more specific and there are doubtless other grounds on which the appointment of persons of first class ability, not having advanced research qualifications, to a university staff could be justified. Each such case should be considered on its merits and the potential contributions of the individual properly assessed. We do consider it to be important, however, that it should be possible through conditions of service for such persons to acquire a research degree in the early years of their university service. All senior staff should be qualified to undertake the supervision of research for the training of postgraduate students in their department.

2.16 (b) Value of professional and/or practical experience

In general, particularly in the vocational fields of study considerable importance is attached to an applicant's professional and practical experience but the value of this can only be assessed in each individual case after taking into account the nature of the experience which has been gained. A good deal of importance would be attached to appropriate research experience, and experience in industry or in/

in professional practice would be considered an advantage in the case of a prospective teacher of technology. Teachers with such experience are able to demonstrate the ultimate value of theoretical courses through their own experience in a practical effective way.

Conversely we consider that teachers of technology who have gained advanced qualifications at universities would profit from experience in industry and we advocate the development of arrangements by which such university teachers could temporarily be seconded to industrial appointments without terminating their service on the staff of a university.

We concur in principle with the following comments contained in the Robbins report (paragraph 292):

"A period of consolidation is no doubt desirable for almost all prospective university teachers between a first degree and the beginning of their teaching career; but it is not necessarily best spent in working for a higher degree. We hope that the notion that to hold a doctorate is an essential qualification for every applicant for a university post will never become established in this country. In the humanities, in particular, insistence on a higher degree or substantial publication as a sine qua non of appointment to a junior lecturership would be disastrous. Similarly, for some prospective teachers of technology experience in industry may well be preferable at this stage to postgraduate study."

It may not be inappropriate under this section of our submissions to comment that we consider it to be an advantage for a university teacher, holding a number of university degrees, to have been awarded them at two or more universities.

2.16 (c) Training of university teachers - opportunities for improving qualifications

We consider that members of the academic staff and particularly junior members should be afforded generous opportunities for research and study leave to improve their qualifications not only to ensure their own career prospects, but to maintain and improve the standards of university training.

It is not likely to be feasible in some departments or even desirable to restrict the recruitment of university teachers to a category of persons holding advanced postgraduate university qualifications. However, it is important that those university teachers who do not hold such degrees should be given every encouragement and afforded adequate opportunities to improve their qualifications.

The present position in this respect is most unsatisfactory and many junior members of the teaching staff are placed in a dilemma. Compelled by financial or other reasons to earn a living before completing a doctorate and having accepted a teaching appointment in the reasonable expectation that they would have the opportunity for research for a higher degree, junior members of staff find that their teaching responsibilities and concomitant commitments make the completion of a higher degree virtually impossible if they carry out their duties conscientiously. By doing so their prospects of promotion are then jeopardised.

To alleviate this position, we recommend that more funds be provided for the appointment of selected graduates holding a four-year degree primarily as research students but with limited teaching duties. We should like to be in a position to make awards on on academic merit and to increase the remineration as experience is gained either academically or in field work. (See also section 2.14(a) of these submissions.)

2.17 POST STRUCTURE FOR UNIVERSITY TEACHERS

(a) Sound balance between junior and senior staff

The grade of Junior Lecturer is, in practice, a temporary appointment and we consider that appointments to the permanent academic staff should be restricted to the grade of lecturer and above.

We regard the grade of Lecturer as the career grade to the top of which university teachers may expect to advance in normal circumstances and that promotion to senior posts above the grade of lecturer should be by selection on merit. The opportunities for promotion to senior posts are thus important in the pattern of remuneration for university teachers.

We consider that the terminal salary in the career grade should be comparable with that of a corresponding career grade in other occupations for which the entry qualifications are similar. We also consider that the number of posts in the grade of lecturer should be more numerous than those of more senior academic staff. There should, however, be sufficient flexibility to provide opportunities for the promotion on merit of persons in the career grade who have demonstrated their suitability for appointment to a senior post.

We see arguments in favour of the appointment system at universities in the United States under which permanent appointments are not made at a grade lower than that corresponding to Senior Lecturer at British and South African universities. However, we do not submit any proposal to depart from the existing system of granting tenure of office, after the completion of a satisfactory probtationary period, in view of the prevailing difficulty in recruiting academic staff. Any such departure from the system of appointment which have become traditional both in Britain and South Africa is likely to aggravate a problem which has already become serious.

In 1966 in all South African universities the number of senior posts above that of lecturer constituted approximately 50 per cent of all posts of lecturer and above. We consider that this ratio was too high. A possible reason is that the shortage of staff and the inability to attract suitable applicants on the then existing scale for lecturers resulted in appointments being made to the more senior posts. We would prefer that the salary scale for the grade of lecturer be sufficiently attractive as a career grade for initial appointments normally to be made to this scale and for senior posts to be reserved for promotions or appointments on merit.

In Britain a new ratio of 35 per cent of senior staff (Professors, Readers and Senior Lecturers) to the total academic staff in each university was introduced in 1967. This was primarily to ensure that broadly similar career prospects are available in all universities, but since the first introduction of the concept of a maximum ratio between senior and other academic staff in 1947 it has become a form of financial control on university expenditure on staffing. British universities are free within this overall ratio to decide on the distribution of posts in each department. As a result teachers in the same discipline in different universities may have career prospects which are by no means similar. An overall ratio of senior to other academic staff does not therefore appear to fulfil the primary purpose for its introduction in Britain.

We do not consider that equitable criteria could be developed for establishing a sound balance between senior and junior staff which could apply either to all departments in one university or in similar departments of different universities. Factors such as the nature of the work, the existing staff, the ratio between first-year and other undergraduate students, the methods of teaching, the programme for tutorials, seminars and practical classes and the nature and extent of the department's research programme would all have to be taken into consideration.

We consider that the senior permanent staff consisting of Senior Lecturers, Readers, Associate Professors and Professors should constitute about 35 to 40 per cent of all permanent posts in the grade of lecturer and above and this would provide reasonable scope for promotion on merit, provided the terminal conditions of the career grade were satisfactory.

Each university should, however, be in a position to determine the staff establishment for each of its departments with some flexibility to allow for promotion on a personal basis. We are anxious to eliminate the frustration which develops when, for example, a lecturer who has proved his ability in teaching, research and administrative duties cannot be promoted to a senior lecturership because of the rigidity of a staff establishment or a fixed overall ratio of senior to other staff. This University has established multiple Chairs in some large departments and we advocate that the need to do so be recognised in the provision for university staffing.

Under this heading we wish to put forward the desirability for the provision of additional financial resources to enable a university to establish a number of posts not specifically assigned to departments and to create a small number of posts to which suitably qualified persons could be appointed, if such persons become available at a time when no suitable vacancy exists on the relevant departmental establishment.

Finally, we submit that no unit of teaching at undergraduate level should be dependent on the services of one person and that it is therefore highly desirable that the basic establishment for the provision of any course be two members of staff.

2.17 (b) Use of student assistants and technical assistants

(i) student assistants

Full-time postgraduate students can provide assistance for informal teaching, tutorials and as demonstrators at laboratory sessions. We consider, however, that no postgraduate student should be called on to devote more than six hours per week to teaching duties of the kinds mentioned. The following statement has been extracted from the Robbins

report (paragraph 550):-

> "... a small amount of teaching is good for some postgraduates, and would give them an introduction to university teaching. Further, undergraduates may benefit from being taught by those who have recently passed along the same way. We do not wish to see any development that prolongs the time spent in postgraduate study and reduces its effectiveness or leads to particular classes of student or types of instruction being regarded as a province for postgraduates."

We believe that almost all postgraduate students would benefit from teaching experience.

(ii) technicians

In an address to the Commonwealth Conference on the Education and Training of Technicians in 1966, Sir Willis Jackson F.R.S. remarked "We in this country have been reminding ourselves continually during recent years of our shortage of professionally qualified manpower, of scientists, technologists and engineers. What we have not done sufficiently is to ask ourselves whether our greater shortage might not perhaps be at the technician level."

Technical, administrative and secretarial assistance is essential for the effective use of the time of university teachers. It is a poor form of economy to expect members of the academic staff to perform duties which could effectively be carried out by staff having a lower level of qualifications and perhaps more appropriate training for the efficient performance of such duties. This aspect has also been referred to in section 2.7(d) of these submissions.
At British universities in the faculties of Science, Medicine and Engineering there was in 1960 a ratio of about one technician to each member of the academic staff. In South Africa this ratio appears to have been about one to four in 1966.

We consider that in addition to the provision of adequate secretarial assistance in all university departments, staffing establishments should provide for the appointment of technicians in all fields in which supporting technical staff would enable university teachers to devote more of their time to the effective performance of professiional functions.

A major difficulty is that of recruiting technicians and we consider that recruitment would be facilitated by the provision of schemes for the education and training (mainly outside universities) of university technicians and ensuring by this means that technicians so qualified are afforded a proper status and realistic salaries in the university staff structure, as well as appropriate career opportunities within a body having an ethos of its own. We wish to emphasise that the present salary scales for technicians in university employment are completely uncompetitive in Johannesburg.

2.17 (c) Number of grades of university teachers and their designations

At this University the existing grades of full-time permanent university teachers are Professor, Associate Professor, Reader, Senior Lecturer and Lecturer. We see no reason for introducing any changes to the designation of these grades. This essentially follows the British system. We have considered the designation in use in universities in the United States but do not recommend their introduction.

2.18 ATTRACTING AND RETAINING UNIVERSITY TEACHERS

Introduction

We introduce this section of our submissions with the premise that nothing is more important to a university than its ability to attract and retain academic staff of outstanding merit.

In South Africa students at a university constitute an exceptionally large proportion of the appropriate age group in the white sector of the population. This proportion is about four to five times as high as it is for the whole population of Britain. Even with the notably higher student-staff ratio at South African universities compared with that in Britain, the academic staff requirements of universities in South Africa in relation to population are proportionately about three times as high as they are in Britain. In 1966 (the latest year for which comparable figures are available) each million of the white population group in South Africa provided 940 members of the academic staffs of universities of the rank of lecturer and above and the corresponding figure in Britain was 307. It is of interest to compare the resources from which university staff may be recruited. In South Africa 1700 Bachelor degrees (including 259 honours degrees and 575 degrees requiring more than three years of study) were awarded in 1966 per million of the white population and the corresponding number of first degrees awarded in Britain was 648 almost all of which were of honours degree standard. These figures are approximately in the same ratio as the numbers of the academic staff in the ranks of lecturer and above, but a comparison of the higher degrees awarded shows that this relationship was not maintained at this level, and became significantly lower at the doctoral level in South Africa. However, a factor which complicates this comparison is that it is still part of the South African "way of life" for many graduates who can afford to do so to complete a doctorate at an overseas university. Not all of them return, but those who do become available as a potential source of recruitment to the academic staffs of South African universities. We have not been able to assess the number who return with doctoral qualifications acquired abroad, but an enquiry carried out in 1963 indicated that in that year about 25 South Africans holding doctorates in the pure and applied sciences awarded

awarded in Britain accepted overseas appointments.

A comparison of the doctorates awarded in all fields in 1966 shows that in Britain these were proportionately about four times as high in Britain as those in South Africa in relation to the number of university posts of lecturer or higher. In the case of all degrees of Master and above the factor is two.

Although we are unable to take into account the number of persons holding higher degree qualifications obtained abroad, it does appear that British universities are able to select their teaching staffs from a much wider field of suitably qualified persons than is the case in South Africa. Unless immediate steps are taken to improve the position, we foresee increasing difficulty in recruiting teaching staff at South African universities with qualifications comparable with those appointed in Britain. We believe too that the availability of persons in Britain for appointment as university teachers is reasonably comparable with the situation in other western countries, although we have no figures for purposes of further comparison.

There were in 1966 3284 lecturers senior lecturers and professors at South African universities and in the same year 170 doctorates were awarded. Undoubtedly a substantial number of these doctorates were awarded to persons already in university employment and only the balance would have become available to take up new appointments. Losses by resignation from university service, retirements and deaths are probably in excess of five percent per annum and at least 160 annual appointments would have had to be made to fill these vacancies and a further 180 appointments needed to maintain the student-staff ratio (even at its existing unfavourable level) because of the increase in student numbers. If only half of these appointments had been filled by persons holding doctorates all the doctorates awarded in 1966 could have been absorbed in the universities to fill vacant and new appointments without meeting the urgent need to improve the student-staff ratio. What seems to be apparent is that South African universities collectively are not producing a sufficient number of graduates at the doctorate level to meet even their own requirements for academic staff and certainly not enough to meet the needs of the community as a whole. This of course means that in order to fill the vacancies on their academic staffs South African universities have to draw on the available resources of less well qualified graduates and the need to

do so would be increased if the student-staff ratio were to be improved and if salaries and conditions of service remain less attractive than in other employment opportunities for graduates holding higher degree qualifications.

It seems to be clear that not enough young men and women potentially able to acquire a higher degree are receiving sufficient financial and other encouragement to proceed to the acquisition of a higher degree, rather than to accept employment opportunities available to those possessing a first degree only. With the demand in South Africa for university staff alone proportionately three times as high as that in Britain and likely to be increased if the student-staff ratio in South Africa is to be improved the need is immediate and urgent for South African universities to increase substantially the proportion of students at postgraduate level.

In Britain in 1966, doctorates comprised 56 percent of the higher degrees awarded, whereas the corresponding figure at "white" universities in South Africa was only 22 percent. We consider therefore that much more attention than hitherto should be given to the fuller development of the country's intellectual potential by the provision of more facilities for research at universities and more financial encouragement to enable men and women who are intellectually able to continue their training in South Africa to doctorate level. We recognize the contribution of overseas research experience to a university teacher, but consider that it would be more useful if this could be acquired at the post-doctoral level after completing a doctorate at a South African university.

2.18 (a) Rôle of salary structure

See also sections 2.17 and 4.4

In the introduction to this section of our submissions attention is drawn to the serious position which is seen to be developing due to the inadequate supply of persons in South Africa holding advanced university qualifications. The university's salary structure for academic staff is undoubtedly /

undoubtedly an important factor, but not the only factor, in placing universities in a position of competitive equivalence with other organisations (particularly those in the private sector) drawing on the limited pool of recruits. Starting salaries for academic staff should enable universities to attract intellectually able persons to enter their service in sufficient numbers to maintain universities at an efficient level and to allow for expansion, the salary scales should provide career prospects to retain them against outside competition with adequate flexibility for affording special recognition to men and women of outstanding merit. These are the persons who matter most in establishing and maintaining a university's reputation in teaching and research and whose services universities should be able to retain against outside competition within the country as well as competition from overseas universities and organisations offering non-academic appointments.

We concur with the following statement contained in paragraph 543 of the Robbins report:

> "Conditions of service involve much more than salary. Major factors in attracting able persons to teaching in all sectors of higher education are the prospect of rapid promotion to posts of responsibility, and the adequate provision of physical resources such as accommodation, library facilities, and scientific equipment and also of technical and clerical help."

2.18 (b) Number of lectures per teacher per week

The existing shortages of staff in almost all departments impose heavy teaching loads on the academic staff with reduced opportunities for research and the prospects for promotion which a good research record affords. It is the opportunities for research which provide one of the principal attractions of an academic appointment in a university and a teaching load which makes the reasonable participation in research impracticable is often the cause of resignation with the resulting consequence of a still heavier teaching load on the remaining members of the academic staff.

It is not possible to prescribe the number of lectures per week which staff in all grades and in all departments should be expected to carry out. This is likely to vary with the nature of the subject and the way in which it is taught. A reduction in the number of lectures may be associated with an increase in the assignment of written work with an additional marking commitment or with an increase in tutorial or other discussion classes. Preparation of some lectures, particularly those for advanced classes, may require more time than that for others.

As an overall figure we consider that the teaching commitment should consist of five lectures and four tutorial or discussion classes per week, or in the case of classes involving practical laboratory work, four lectures, three tutorials and one laboratory session per week.

2.18 (c) Opportunities for university teachers for research

See also section 2.14 of these submissions.

In the Robbins report the term research is used to cover the wide range of intellectual activities that serve to increase man's power to understand, evaluate and modify his world and his experience. It is in this broad sense that "research" is used here.

Teaching is a basic function of a university, but at the same time a university is a community of scholars concerned with the preservation and extension of knowledge, and the application of this knowledge to the problems of the community which the university serves. The educational and scholarly tasks of the university teacher are of a complementary nature and the commitment of a gifted young man to teaching, without affording him adequate opportunities for research is an abuse of the man and his talents, and will usually lead to the dissipation of his potential.

In the realm of undergraduate training the capacity to teach, stimulate and interest young developing minds is increased if the teacher is himself engaged in the conduct of research. In the long run, the student is likely to gain much from a teacher who has himself participated in the adaptation of basic principles to new problems, emphases and innovations which research demands.

Before the advent of national research establishments and the realisation in commerce and industry of the contribution which highly trained minds could make to the conduct of their business, the universities held a predominant position in the attraction if intellectual leaders. It was within the universities that a first class mind found the opportunity for the extension of knowledge in his chosen field of work.

The responsibility for identifying and training intellectual leaders remains that of the universities, not only for their own perpetuation, but to meet the community's rapidly growing demands for the supply of trained staff who, when they emerge from the universities, are offered opportunities which are rewarding both monetarily and intellectually. The monetary aspects are dealt with elsewhere in these submissions, but the intellectual opportunities are no less important. To meet the competition which universities now face and to attract the best brains and so maintain and improve the level of training, the universities must be in a position to offer a working environment with challenging and exciting opportunities. To some teaching may provide this stimulus, but to the overwhelming majority in the category of intellectual leadership the opportunities offered must include that of contributing original work in their fields of speciality. It is in the realm of discovery through research that men and women with first class brains can expect to achieve the intellectual satisfaction and distinction which such persons seek and should be afforded. The need for the best brains is greatest at the universities, which have the responsibility for training the skilled men and women needed for intellectual leadership in every sector of our national life.

In the introduction to this part of our submissions, we have indicated the need for a substantial increase in the output of doctorates at South African universities. For this to be achieved much more participation by university staff in research and in the supervision of research students would be necessary than is the case at present. We have no doubt that this alone would be an important factor in attracting and retaining university teachers.

Research is an expensive undertaking and we consider that five percent of the Standard Provision of component (a) proposed by Professor Cilliers as the "general research provision" (p. 214 of his report) would be quite inadequate for sustaining university effort at an appropriate level.

In the first place we advocate the provision of academic staff on an adequate scale to permit of their participation in research with appropriate weightings in respect of postgraduate students in the determination of the student-staff ratio. We cannot agree with the arguments advanced by Professor Cilliers in section 1.2 (p. 109) of his report for equating a postgraduate to an undergraduate student.

We endorse the statement of the Trend committee on the Organisation of Civil Science (United Kingdom, 1963) :-

> "It is important that there should be more than one source of funds for research; centralised provision carries with it the serious risk that potentially fruitful ideas may be nipped in the cold winds of change or academic prejudice."

One source of funds should be an overall allocation to each university as a general research provision to be applied in the support of research and allocated by the university itself.

A second source of funds for university research should be the agencies supporting research such as the Council for Scientific and Industrial Research, the Medical Research Council, the Human Sciences Research Council, the Atomic Energy Board and other such organisations which provide funds for stimulating specialised subjects or lines of research in the universities. Such funds enable fields of research to be opened up and individual projects supported which, in the words of the Trend report "..may not seem to be of immediate interest to the universities from the standpoint of association with teaching but may - or may not - become an integral part of university work, either in the short or the long term. Universities cannot be expected to finance these "experimental" research developments from their general income; yet it is clearly advantageous that they should be located in the universities."

Roughly equivalent funds should be made available for general and specialised forms of research at universities. This is the relationship which has emerged by trial and error in Britain over a period of many years (Science Policy and the University p. 314). The expenditure on research in South African universities from all sources in 1966 has been assessed at R3, 360, 000. Of this sum more than R3m. came from sources other than the general research provision and was consequently directed to specialised research. On the basis of the fifty-fifty relationship we consider that the general research provision in 1966 should have been the order of R3m. Professor A. C. Cilliers in his report (p. 214) recommended a general research provision of five percent of the Standard Provision for component (a) which would have equalled R673, 915 for all universities in 1966 and we consider this to be altogether inadequate because of the imbalance between general and specialised research.

It is desirable for a university to establish constructive relationships with industries in its community. University departments, particularly but not exclusively those in the applied sciences, should be aware of the problems which related industries face - for example, problems in engineering, environmental pollution, materials behaviour, production control, industrial health and safety - and where they are capable of assisting industry in understanding and solving important problems through research, these departments should be willing to co-operate in such investigations. At the same time, industrial managers should be aware of the strengths, weaknesses and needs of university departments, and should be prepared to assist the university in achieving high standards, particularly in regard to equipment, in departments which are closely allied to their own activities.

Obvious advantages can accrue to the university through such associations, including better placement opportunities for graduates. The disadvantages are few, but one of them is subtle, and the university needs to guard against its insidious effects. A university teacher can be of such value to industry that he is frequently called upon in a consultative capacity, for which he receives a fee. This work

can/

can become so challenging and remunerative that he devotes an increasing proportion of his time to it until his other responsibilities as a teacher and scholar begin to suffer.

A third source of funds should be provided for the rational development of a few selected fields of work in South African universities to establish "centres of excellence" of international standing. These would not necessarily be fields for which the government agencies would provide support and we consider that funds for establishing and maintaining outstanding centres should be made available to universities as a group and allocated by a central body or bodies competent to compare proposals within a discipline and make awards on merit. In section 1.8 of these submissions we have advocated the revival of the recommendation of the Holloway Commission for the appointment of a University Grants Commission and we consider that it would be an appropriate function of the proposed U.G.C. to make awards for the purposes indicated. We consider too that part of the funds from this third source should be allocated to encourage research which needs to be promoted at a university, but which is too costly to be attractive to any particular university as a project to be financed out of its own general research provision. An example which falls into this category is research in Nuclear Physics. There is also a need for research which could not appropriately be supported by a government agency but is of importance to all universities which we consider should be financed from this third source of funds. An example in this category is research into methods of teaching at university level.

2.18 (d) Rôle of publications and media of publication

The publication of research results does not give rise to serious problems. A choice of media is available for the publication of good research results.

2.18 (3) Status of rival organisations

We presume that "rival" organisations refer to the National Laboratories and the industrial research laboratories. The "status" of such organisations in attracting qualified staff from universities is reflected in the salaries paid to their employees, the nature of the duties, the available research facilities and the budget for the laboratory.

Industry must of course set its own standards in these matters, but the National Laboratories may become unfairly "rival" to the universities. The function of the university is well defined and is to provide educated and trained persons for the community and as an inseparable function of the educational process to conduct research.

We consider that national laboratories should be set up to meet well-defined national needs in fields of applied research. It is not unreasonable that research staff of high calibre in such laboratories should want to include a component of fundamental research in their duties, and the opportunities to do so may be provided on an increasing scale in a national laboratory when the national needs for its establishment has been fulfilled or the relevance of its applied research function has ceased to exist. A national laboratory in this way may become a centre for fundamental research at the cost of university research and therefore of university teaching. The university teacher with a strong interest in fundamental research may be attracted to a national laboratory having superior facilities and offering facilities for fundamental research particularly as he will then have no other demands on his time.

We consider that fundamental research should be carried out at the universities and closely allied to university teaching and postgraduate training. We therefore advocate that before a fundamental research programme is introduced within a national laboratory consideration should be given to the possibility of the research being undertaken within one or more of the universities. We suggest that an appropriate body for considering such a proposal will be the University Grants Commission whose establishment we have proposed in section 1.8 of these submissions.

2.18 (f.) Other

Able members of the academic staff of universities are often tempted to take up attractive offers of appointments made by overseas universities and research centres. Such appointments often are not only financially attractive, but provide opportunities for work in the highly intellectual environment of a well equipped major centre of excellence. Even a minor centre in North America or Europe has the advantage of contact with other workers in similar and related fields at a major centre within easy travelling distance. It is important for scientists, in particular, to have such contact with their colleagues. In those fields of work in which progress is most rapid frequent meetings of scientists is the only effective way of keeping abreast of new research. Those who have to rely on published reports have the disadvantage both of the long delay in the publication process and the lack of personal contact and discussion with leaders in the field.

We have stressed the importance of personal contact with colleagues in research at some length because of the distance of South Africa from main centres of excellence in North America and Europe and the difficulties to which this gives rise in retaining staff who have achieved international reputations. We strongly urge that recognition be given to this need for personal contact by the provision of financial assistance to enable staff engaged in research to travel overseas more often than is at present possible and suggest as a basis for assessment an allowance at the rate of R100 per year per member of staff for this purpose.

3.1 PERIOD TO BE CONSIDERED FOR THE DETERMINATION OF POLICY

(a) Time taken by past developments

There are three stages in the formation of policy. The first is the original idea and the initiation of the project. The second stage is the formulation of the project, its detailed examination and that of all its implications often in consultation with outside bodies, government departments and provincial authorities, and then its approval by the bodies responsible for making the final decision. The third stage is the progress of the project to its completion.

If new buildings are required (as they usually are) the second stage involves the preparation of plans as well as obtaining approval and financial provision for the capital expenditure. The construction of the building then becomes an element of the third stage and with it the creation of new posts and making staff appointments at appropriate times, co-ordinated with the building progress.

In practice our experience has been that the first stage takes about a year, the second stage one to two years depending on the implications of the project and the final stage two to three years making a total of about four to six years from the origination of the project to its implementation. If the project is the introduction of a new course of academic training requiring, say, four years of study the first graduates would not emerge for eight to ten years and it is not until then that the course can be regarded as a stabilised part of the academic structure of the university with its full complement of students in respect of whom the university will derive fees and government subsidy.

3.1 (b) Realistic future period in respect of which policy can now be determined

Provided the parameters in the revised subsidy formula make provision for the reasonable needs of the universities without the imposition of an upper limit to the total amount to be made available, as was the case in the 1963 revision, and provided that currency deterioration can be curbed or allowance made for this in the financial provision for universities, we consider that a five-year period is realistic for planning purposes. This would normally enable projects which enter the/

the second stage of the policy-making proceess at the beginning of a quinquennium to reach completion by the end of that quinquennium. We recommend, however, that the procedure be adopted of calling on universities to present plans for new developments about eighteen months before the end of the quinquennium in order that these may be considered and agreement reached on the reasonable financial needs for the ensuing quinquennium. This should enable the revised formula to be introduced at the start of the new quinquennium and the second stage of the planning procedures started without the period of uncertainty which is now being experienced.

The planning problems of South African universities are different in nature from those of universities in Britain. In Britain not all the academically qualified applicants can be admitted to universities and each university has an overall complement of students. If it is agreed that this number be raised new accommodation is planned, financial provision granted, posts for staff appointments created and the additional student intake absorbed when the facilities are ready. At this University, we have experienced each year an increase in student numbers averaging about 450 over the last quinquennium. In terms of space, allowing only 200 square feet per student, (the corresponding figure in Britain is 350) the annual additional space requirement would be 90,000 square feet per annum or 450,000 square feet for the quinquennium. As about four years must elapse from the initial proposal to erect a new building and its being brought into use the building programme needs to be planned about five years in advance and reviewed annually on anticipated student numbers five years ahead. We therefore advocate that a rate of growth in student numbers be agreed for each university for planning purposes and capital expenditure authorised on the basis of student numbers expected five years later. (See also section 3.2 of these submissions).

3.2 NEEDS ARISING FROM POPULATION GROWTH AND EXPECTED INCREASE IN STUDENT NUMBERS

(a) Population growth in the past and expected growth in the future

In 1969 90 percent of the students registered at this University had their homes within the Transvaal, six percent in the other provinces of the Republic and South West Africa and 1.7 percent in Rhodesia. The remainder came from other states in Africa and 0.6 percent from countries outside Africa.

About 75 percent of all students at this University have their homes in Johannesburg and a further 11 percent in other towns on the Witwatersrand.

The number of students at residential universities in South Africa has increased from 10.3 in 1960 to 12.5 in 1966 per thousand of the white population of the Republic. Among the English-speaking population of Johannesburg this ratio has been about 65 percent higher than the national average and in 1960 there were 17, and in 1966 20, students per thousand of the English-speaking white population of Johannesburg at this University.

The official estimates of the white population of Johannesburg show that this has been rising rapidly since 1962 and in the five year period from 1962 to 1967 increased by about 83,000 or over 20 percent. This sharp increase can be attributed to the inflow of over 200,000 immigrants to the Republic during the five year period which ended in 1967. It is expected that of those immigrants who matriculate and enter a university a high percentage will elect to attend an English medium university. We therefore consider that the number of students at this University will continue to rise and do so at an increasing rate as more children of immigrant families reach the university-going age. This is already being reflected in our student numbers as about 9.0 percent of our students were not born in South Africa although only 3.5 percent have a home address outside the Republic.

3.2 (b) Expected increase in student numbers

The average growth rate in student numbers has been about 4.5 percent annually since 1922 and we anticipate that this growth rate will be maintained or exceeded. This view is upheld by the growth of the white population of Johannesburg which is estimated to have increased at approximately this rate between the years 1962 and 1967. On the basis of the present university requirements it is probable that the proportion of persons in relation to population who enter a university will continue to rise as it has during the years 1960 to 1966.

We consider therefore that the rate of increase in student numbers of 4.5 percent per annum is conservative but on this basis we could expect the total number of students to reach 11,000 in 1974. There are at present 6,500 full-time "day" students at this University and at the growth rate assumed the maximum capacity which we consider could be accommodated on the present campus would be reached in 1978 or earlier.

To assist universities in planning their development we recommend that some central authority, possibly the Human Sciences Research Council, in collaboration with the Bureau of Statistics and the Provincial Education Departments be charged with the function of preparing annual projections of student numbers at universities for each of the succeeding ten years and making an annual report available to the universities.

3.3 LINES ALONG WHICH UNIVERSITIES MUST DEVELOP TO MEET FUTURE NEEDS

(a) Expansion of existing universities (maximum size)

See also sections 2.8(a) and (b), and 3.2(a) and (b).

This is the only English medium university in the whole of the Transvaal and the Orange Free State and it has a duty to perform towards the English speaking citizens of these areas and the Witwatersrand in particular. The University wishes, therefore, to continue the admission of all students who have attained the required academic standards.

The present campus at Milner Park has an area of only 80 acres and it is considered that the number of students on this campus and in addition those at the Medical School, located in the vicinity of the Johannesburg Hospital, as well as the Graduate School of Business Administration in Parktown, should be limited to about 10,000 full-time "day" students. The present number of such students is 6,500 and it is expected that this number will rise to 10,000 by 1978 or earlier.

In addition to the reasons previously advanced for limiting student numbers to 10,000 on a single campus, we consider that there must be relief in the following directions because of the location and limited area of the present campus.

(1) the concentration of traffic and student transport at one point or a number of nearby points;

(2) the movement of large groups of students from one point to another within the campus;

(3) the concentration of recreational facilities on one small area or a number of small areas nearby;

(4) the site limitations for major rebuilding which will become necessary when the existing laboratory accommodation, in particular, ceases to be adequate and new units have to be added. Small additions to existing facilities would be uneconomic.

Three possibilities exist for the accommodation of additional students after the maximum numbers on the existing campus have been reached and are under consideration.

The first of these (the "horizontal" division) is the transfer of a group of students from all faculties, but within a common year of study, to another site. Only the first year of study could advantageously be transferred for the following reasons:-

(1) the maximum number of common courses is taken by first-year students, thereby demanding the minimum variety of facilities;

(2) first-year laboratory and other practical work demand relatively simpler and the least duplication of facilities.

(3) the first-year constitutes the largest group of students in the same year of study;

(4) the first-year students have the important feature that they have no experience of the university approach to study and special systems of tuition could be introduced to prepare them adequately for the second and higher year of study;

(5) it is possible to govern such a group separately from the main campus both academically and administratively.

If a "horizontal" division were decided on, the University would consider the establishment of a first-year campus on a site of 800 acres it owns at Frankenwald to the north of Johannesburg which will be easily accessible along the new motorway which passes across one corner of the property, as well as the north-western corner of the Milner Park campus. Such a first-year campus would make possible the removal of about 3,000 students from Milner Park. Student numbers at Milner Park could be contained within the limit of 10,000 until about 1986 on the assumed annual growth rate of 4.5 percent, but with the encouragement of postgraduate studies at Milner Park it is expected that the maximum would be reached somewhat earlier. During the intervening period the development would be the establishment of a three-year degree awarding college on the new campus. From the outset, the campus would be separately administered.

First-year campuses have been established by universities in the United States and Canada and, of course, the absence of the South African equivalent of first-year students is a feature of British universities where advanced or "A" level passes in the General Certificate of Education are required for university admission.

The second possibility under consideration is a "vertical" division or the transfer of a group of students in all years of study but belonging to a common discipline or group of disciplines. Such divisions already exist by the establishment of the Medical School and the Graduate School of Business Administration on sites away from the campus at Milner Park.

If a "vertical" division were decided on the establishment of a new Engineering School on a new campus has been contemplated. This would enable the student numbers at Milner Park to be reduced by about 1,500 students and considerable relief would be afforded to a number of service departments in the Faculty of Science. Government of a separate School of Engineering would be easy in both the academic and administrative senses and undoubtedly there would be built up a strong spirit of cohesion between engineering students in all years of study.

We would not contemplate the erection of an engineering school on the University's site at Frankenwald and have in mind the possibility of a site nearer the city.

The third possibility would be the establishment on another campus of a separately administered "College of Arts and Science" as a College of the University in which first degrees and honours degrees would be awarded. This would in effect achieve a combination of a "horizontal and "vertical" division. We are contemplating the possible introduction of a basic degree as the first stage of a professional qualification and if this were to be implemented the course for the basic degree could be offered at the "College of Arts and Science". We also envisage the inclusion of a limited research programme at the College, although the major centre for research would remain on the campus at Milner Park. As the campus for the "College of Arts and Science" we are thinking of Frankenwald or, alternatively, a site in Parktown where the College would be in proximity to the Johannesburg College of Education and provide facilities for teacher training as well as the other functions we have in mind.

3.3 (b) New faculties, departments and fields of study at the existing universities

The University consists at present of eight faculties, viz., Arts, Science, Medicine, Engineering, Commerce, Law, Dentistry and Architecture. In addition, the University's Private Act confers authority for the establishment of faculties of Education, Veterinary Science and Music. The establishment of a Faculty of Education is now under consideration as part of the organisation for implementing the recent government plans for developing teacher training in the universities.

In countries with a relatively large number of universities in a small geographical area, as for example in Britain, the numbers of faculties and fields of study at each university are generally more limited than they are at South African universities, and there are few British Universities with as many faculties as there are at this University. However, this is the only English medium university within an area with a large population and we consider that we have a public duty to provide opportunities for training in a wide choice of fields through the English medium. However, we recognise that in some fields and especially those where the overall needs for qualified persons is small it may often be in the national interests to provde this training at one or two centres in the English language and concentrate the limited manpower for teaching at the centre or centres established. It is with this in mind that we advocate that a study be made of the requirements of English speaking persons for additional facilities for obtaining university qualifications in the Agricultural Sciences and especially in the field of Veterinary Science at an English medium university. These are developments which could be contemplated by this University at its site at Frankenwald once the need for these facilities has been established.

There are at present 66 departments and four sub-department at this University and the number is likely to increase as new disciplines emerge with the advancement of knowledge and as branches of existing departments gain strength and are hived off as new departments.

Apart from these evolutionary developments in the departmental structure we should like to be able to offer instruction in a number of fields which we do not cater for at present. These might include additional languages, (e.g., Spanish, Russian and Oriental studies) Astronomy and Radio Astronomy, Bacteriology and Parasitology, Drama, Genetics, Material Science, History and Philosophy of Science, Aeronautical Engineering, Industrial Engineering Production Engineering and Communication (e.g. Journalism).

When a new course of study is introduced, particularly new degree courses, there is a considerable initial financial outlay for the provision of facilities and staff appointments. Financial support under the subsidy formula is based on student numbers and this may be very small at first but will grow as the course gets under way and contribute significantly to financing the course only when it has become fully established after a number of years. We should like, therefore, to advocate some form of initial financial provision for launching a new course and maintaining it until a reasonable contribution towards its operating cost can be expected within the subsidy formula.

Under this heading, we should like to propose that a Medical School particularly a and/Dental School with an associated Dental Hospital be established (not necessarily as part of this University) at Baragwanath Hospital/in view of the very limited facilities we are able to provide for accommodating non-white students in these faculties. In putting forward this proposal we at the same time would like to offer all the assistance we would be able to render in planning and establishing these Schools of Medicine and Dentistry.

3.3 (c) Establishment of new universities and colleges

See also sections 3.2 and 3.3(a) and (b)

We recommend the expansion of existing universities rather than the establishment of new universities for the accommodation of additional students at white universities. It is undesirable for the reasons already advanced for single units to grow too large and once a predetermined number of students on one campus has been reached we advocate the establishment of a second campus and when the need arises a third campus to form units of the university with the ultimate/

ultimate possibility of developing a federal university with one or more degree-awarding colleges within its structure.

We consider that developments on the lines indicated are preferable to the establishment of new universities for the following reasons:-

(1) a university such as ours has long experience in the provision of education at university level. New developments carried out under its direction can be expected to lead to improvements in the design of facilities and curricula as a result of the fund of experience possessed;

(2) the establishment of large departments is desirable and becomes practicable. Mobility of staff within the single university structure is easily accomplished and thus better career opportunities for staff could be afforded;

(3) the prestige and structure of an older well-established university is important for the attraction of academic staff from overseas. We consider this to be particularly important in view of the apparent shortage of qualified persons in South Africa suitable for academic appointments;

(4) the establishment of a new university inevitably leads to the drainage of staff from the older universities. A planned move is preferable under direction of the parent university.

(5) economy in the provision of essential facilities and expensive modern equipment which are essential in all universities, irrespective of their size, e.g.; a good library, computers and scientific apparatus.

4.4 SALARY STRUCTURE

(a) Salary structures of teaching staff

In the determination of appropriate salary scales for teaching staff, we consider that the following criteria should be applied:

(1) an intrinsic assessment of the value of the job;

(2) the provision of a minimum scale on which the employee can maintain a socially acceptable standard of living;

(3) an assurance that the standard of living of the individual will rise as he gains experience;

(4) an assessment of the market value of the type of person required;

(5) a comparison of the scales with those of similarly qualified persons in other walks of life in South Africa;

(6) a comparison of the salaries with those of similarly qualified and similarly employed persons in other universities in South Africa bearing in mind average incomes in the area;

(7) a comparison of the scales with those of similarly qualified and similarly employed persons in other countries with which the university competes for staff;

(8) a comparison with pre-war salary scales on constant value terms.

(1) The value of the academic job

The University would be failing in its function as the primary place where knowledge is stored and new knowledge gained, if its professors were not, in the academic aspects of their subjects, among the most distinguished men in the community. It would be failing in its function of teaching and education if its junior staff were not so good that it would be rare for a lecturer to have in his class more than two or three students of intellectual calibre greater than his own. The academic staff must be, and are, of intellectual attainments very much above those of the average graduate.

The financial rewards will never be commensurate with these abilities, because the university teacher has other advantages - opportunities for doing his own research, contact with lively young minds, long vacations and security of tenure. These are real but/

but should not be overestimated. In practice there are limitations to all these advantages.

(2) The minimum socially acceptable standard

A survey conducted in 1968 among members of the academic staff of this University showed an overall average annual gross family income of R6211 with the following figures for each grade:

Professor	R8744
Senior Lecturer (including Reader and Associate Professor)	R6607
Lecturer	R4707
Junior Lecturer	R3114

The mean gross family income of staff below the grade of professor was R5337 which is below the average annual income of a white family in Johannesburg which was reported to be R5501 in November 1966 in Report N-11-06-02 of the Bureau of Statistics and has probably increased since then.

The decline in the status of the academic professor is vividly illustrated by the diminished capacity to purchase a house out of university salaries. Before the war a house in the Johannesburg suburb of Parkwood would have cost the equivalent of about 1.8 times the maximum salary of a professor. Today the same house would cost three to four times the current maximum salary of a professor. This is well illustrated by the case of a house in Parkwood which was bought in 1928 for R2700 since then R2800 have been spent on improvements and the house is presently valued at R21000. The municipal valuation of another house in the same area was R3700 in 1943, R12100 in 1967 and the present market value is R21000.

On the rule of thumb that the annual cost of housing should not exceed one quarter of income and with a 90 percent housing loan a minimum income of R8000 would be needed to purchase at R21000 what is quite a modest house in Johannesburg.

(3) The need to avoid a fall in the real standard of living

Present salary increments of 4-5 per cent per annum allow for a slight increase in the real standard of living in the average year. Where the cost of living rises by 5-6 per cent in each of two consecutive years the decline of the living standard becomes immediately apparent. Those who have reached the top of their salary scales can maintain their standard only be being promoted (a possibility not open to professors) or as a result of periodical salary revisions.

(4) The market value of the type of person required

If in fact the university can attract and retain suitable staff with low salary scales, in competition with other organisations paying higher salaries, it must be assumed that the other attractions of a post in a university compensate for the low salary. The competition in many academic fields is very limited, but an analysis can be made in the professional faculties, where there is competition with private, semi-public and public employers.

The staffs of these faculties enjoy benefits such as differentiated salaries, a high departmental ratio of senior to junior posts, and rights of private practice, which often cause resentment in the academic faculties. Nevertheless, there are Chairs which cannot be filled in the faculties of Medicine, Engineering and Law, and serious staff shortages in the faculties of Law and Dentistry. The salary scales even with special benefits, are not competitive in the professional faculties.

If it is accepted that the University must treat all staff on the same grade alike - and there is no suggestion that the staff in the academic fields are any less distinguished, hard-working or devoted than their colleagues in the professional fields - the results of an analysis of professional salaries will determine strictly academic as well as professional salary scales.

(5) Comparison with similarly qualified persons in South Africa

The comparison is based largely on the report on the 1966 Survey of Salaries in the Engineering Profession issued by the Professional Engineers Joint Council. Its figures represent gross annual income, including fringe benefits, derived from the Engineering Profession. Persons having incomes of less than R2, 000 or more than R16, 000 were omitted from the analysis.

Thus survey shows that in 1966 the average earnings of all engineers in the private sector having experience ranging from 22 to 45 years, exceeded R7, 000 and that the average earnings of those with more than 26 years experience exceeded the professorial maximum of R7, 200 in spite of the fact that some five per cent of engineers earning more than R16, 000 had not been taken into account.

It is reasonable to suggest that earnings in the middle of the salary scale for Senior Lecturers should coincide with the peak earnings of the average engineer i. e., about R7, 800. A senior lecturer should be far abler than the average of his profession.

In the years 1964/65 ten per cent of engineers in the private sector earned more than R12, 700 while the top ten per cent of advocates, accountants and medical practitions had lower limits of earnings ranging from R14, 000 to R16, 000. It is reasonable to suggest that the top salary of a professor should place him in the top ten per cent of his profession and a top professorial salary of at least R13,000 seems to be indicated.

(6) Comparison of incomes in Johannesburg with other university towns in South Africa

Johannesburg is by far the wealthiest city in South Africa, as is shown in the following average annual family incomes in November, 1966 for university towns for which figures were available.

Johannesburg/

Johannesburg	R5501
Cape Town	4556
Durban	4536
Pretoria	4522
Bloemfontein	4266
Port Elizabeth	4261
Pietermaritzburg	4004
Weighted average of the areas	4601

It should be noted that in Johannesburg the average family income is almost 20 percent higher than the average for all urban areas and that in every other urban area the average family income is lower than the average for all areas.

Where there is money the cost of living, goods and services are high. This is recognised in the commercial field by the automatic payment by some firms of an additional allowance to staff stationed in Johannesburg . In sub-section (2), we have drawn attention to the fact that the average family income of academic staff below the rank of professor was less than that of the average family income in Johannesburg. It was however $16\frac{1}{2}$ percent higher than the average family income in all urban areas. If the same salary scales are prescribed for all universities in South Africa a member of staff at this University receiving the same income as a colleague at a university in another town will be placed relatively lower in the income structure of the town and hence at a social disadvantage. A consequence of this is that the position of universities not located in Johannesburg will be stronger in the competitive field of recruitment. On the other hand, it is conceded that there may be better opportunities in certain fields of work for academic staff in Johannesburg to augment their salaries with fees for consultancy work. Those holding appointments in the academic fields would not, however, have any financial advantage of this kind through living in Johannesburg.

(7) Comparison with salary scales in other countries

The countries chosen for comparison are Britain, U.S.A. and Australia. In the case of the U.S.A. salary arrangements are so flexible that only a rough comparison has been possible. The data used are those for 1966-67 contained in the Bulletin of the American Association of University Professors relating to Grade A universities into which it was assumed that this University could be classified. The salaries quoted are for average salaries for a 9-month period. Most staff take on consulting or other work during part of the remaining three months and are able to augment their incomes by about 20 per cent.

	Professor	Senior Lecturer	Lecturer
University of Witwatersrand (top salary 1969 including 10 percent enhancement)	R7920	R6270	R5280
Britain (top salary)	£4990 (R8580)	£3415 (R5870)	£2630 (R4520)
U.S.A. (average salary)	$23556 (R 16830)	$15348 (R10960) (assoc. prof.)	$11868 (R8490) (asst. prof.)
Australia (top salary)	$A12000 (R9600)	$A8750 (R7000)	$A7300 (R5840)

(8) Comparison with pre-war salary scales

In the 1930's academic staff at universities enjoyed congenial and frequently more rewarding employment than highly qualified staff in the private sector of the economy. It was during this period that many outstanding scholars were attracted into university service. In the last decade there has been a dramatic reversal of the situation which existed before the war and a serious imbalance has developed between the supply of suitably qualified academic staff and the demand for their services at the university.

Although the nominal income of a professor has increased more than three-fold since 1939, the combined effects of the war, post-war inflation, increased taxation and the influence of the growth of productivity on the average income of the population have placed academic staff at universities in the position where they now earn "real" incomes which are substantially below those of other professional occupations. It is clear that academic staff have shared to only a limited extent in the fruits of economic progress since the 1930's when their "real" incomes were rather higher than that of other salaried professional staff.

In support of these contentions we submit the following table showing comparative figures of "real" income at 1939 prices in selected tax years for professors, senior lecturers and lecturers at this University at the maximum salary for each grade.

Year	Professor		Senior Lecturer		Lecturer	
	Single	Married	Single	Married	Single	Married
1939	100	100	100	100	100	100
1962	113	109	126	129	119	84
1968	106	104	128	131	137	143
1969	104	101	124	127	133	139
1970	115	118	134	142	138	154

In estimating "real" incomes it has been assumed that the consumer price index will rise 3.2 percent in the 1969 and 2.7 percent in the 1970 tax years.

The real earnings have been derived by deflating the nominal earnings by an index of the consumer prices. Although we are aware of the limitations of this method as a proper measure of the changes in the cost of living, it is considered that it provides a broad indicator of the trend in "real" income.

Since 1939 the increase in output per head of population appears to have grown at the compound rate of 2.5 percent per annum which implies a doubling of average income (of the total or white population) in terms of goods and services in 28 years and hence an increase of about 105 percent between 1939 and 1969. As will be seen from the table, professorial salaries in terms of "real" income have increased in this period by less than 20 percent, those of senior lecturer by less than 30 percent and those of lecturer by less than 40 percent.

On the basis of these considerations, we submit that the maximum salary for a professor needs to be increased to at least R11,000 per annum for it to be compatible with the position in 1939. This figure is estimated in terms of income tax and price levels now prevailing (September, 1969).

The proposed salary scales

On the basis of criteria (1) to (7) alone we consider that the salary scales for academic staff in Johannesburg should be related to that of a professor on a scale rising to R12900 per annum without additional benefits other than contributions to pension and medical aid funds.

Taking all the eight criteria into account, we submit the following recommendations for substantive salary scales for academic staff, with the additional provisions referred to below.

Professor	R9000 + 4 x 480 - 10920
Senior Lecturer	R6000 + 6 x 360 - 8160
Lecturer	R4200 +11 x 240 - 6840
Junior Lecturer	R3000 + 5 x 240 - 4200

Notes:

(1) Appointments to the grade of Junior Lecturer would be made on a temporary basis

(2) Appointments to the permanent staff in the grade of lecturer or above would normally be restricted to persons holding a four-year degree and who have either completed a doctorate or established equivalent status. (See section 2.16 of these submissions.)

(3) Promotions from the grade of lecturer would be by selection and we have recommended a salary scale which overlaps that of senior lecturer to allow for the promotion, on merit, of a lecturer before he reaches the top of the salary scale of a lecturer while at the same time affording a reasonable terminal salary for a lecturer who is not selected for promotion.

Additional provisions:

We recommend that:

(1) An automatic revision of salary scales take place when the cost of living index rises by five percent above that applicable when the scales are determined.

(2) Universities be authorised to augment individual professorial salaries above the maximum of R10920 recommended for that grade within a total sum not exceeding five percent of the aggregate substantive salaries paid to professors. In this way a university would be able to give recognition to outstanding merit and afford scope, which does not at present exist, for filling vacancies in those fields in which the university is unable to compete realistically with opportunities available either in industry or in overseas universities. No similar recommendation is made in respect of the other grades as recognition could be afforded by the award of more than a single increment or promotion to a higher grade.

(3) At any time and at any place when a combination of high interest rates on housing loans and high property prices make excessive inroads into salary for the purchase of a house we recommend that housing loans be subsidised.

If the additional provisions listed cannot be implemented we are of the opinion that the following salary scales would be appropriate for academic staff in Johannesburg.

Professor	R9900 + 5 x 600 -	12900
Senior Lecturer	R6600 + 6 x 420 -	9120
Lecturer	R4800 + 11 x 240 -	7440
Junior Lecturer	R3600 + 5 x 240 -	4800

5.1 STUDENT ACTIVITIES

Introduction

The University's Private Act recognises the Students' Representative Council (SRC) as a component part of the University having powers, privileges, functions and duties prescribed in rules made by the Council. These rules, inter alia, confer authority on the SRC:-

(1) to represent the student body in relation to the Council, student bodies of other university institutions as well as national and international student organisations;

(2) to control and supervise extra-curricula student activities and the student organisations concerned therewith excluding, however, the House Committees of University residences;

(3) to administer, in the interests of students, funds made available to the SRC by the University Council or received from other sources;

(4) to exercise disciplinary powers delegated to it by the Principal.

The SRC consists of 22 members elected annually in August. Fourteen members are elected by all students voting together in a general election and the students in each of the eight faculties elect one member to represent the Faculty on the SRC. Students are eligible to vote and stand for election after completing one term at the University.

The University Council may terminate the period of office of the SRC and if it does so is required by the rules to arrange for the election of a new SRC within six months. The Council is also required to appoint an officer or officers to administer the affairs of and constitute the SRC until the new SRC has been elected.

The SRC elects from its members six executive office bearers, chairmen of its committees, portfolio holders and members of commissions appointed for specialised projects or investigations.

Considerable responsibility is vested in the President and the rôle calls for outstanding qualities of personal leadership in co-ordinating and administering complex activities, guiding mass student opinion and officially representing the student body within and outside the University. For several years the President of the SRC has voluntarily served in a full-time capacity.

Within the framework of the rules the University Council has delegated responsibility to the SRC for the government of student affairs. In 1969 it received a grant from the Council of R32, 500 but the enterprises in which it now engages involve the handling of an annual sum of about R250, 000.

5.1 (a) Activities on and outside the campus

These activities cover a wide range and include:-

(1) Faculty Councils

Faculty Councils were established to maintain interest-identies among students. These councils meet the specialised needs of students in each Faculty in a way analogous to that of the SRC for the whole student body. In all except the Arts Faculty Council there are class representatives in each major department. An amount of R4543 has been allocated by the SRC to Faculty Councils for 1969.

In general terms the Faculty Councils undertake the publication of student journals (there are at present eleven published under the aegis of Faculty Councils) organise inter-faculty sports events, encourage and control societies in the Faculty, organise social events and arrange events of Faculty interest. They also maintain education commissions which maintain liaison with the Dean and Heads of Departments with the object of improving the quality of training in the Faculty and assisting with the orientation arrangements for new students.

(2) All Sports Council

There are 27 sport clubs in the University and the All Sports Council has responsibility for determing financial allocations and for making grants for basic equipment to these clubs. It is also responsible for the award of sporting colours, supervision and co-ordination of University participation in league and inter-university tournaments as well as providing other centralised services to University Sport. In 1969 R11, 053 was allocated to the All Sports Council by the SRC.

(3) Societies

There are 45 societies providing for religious, cultural, political and social interests of students. These Societies have no counterpart to the All Sports Council, but the SRC arranges periodical meetings with Society Chairmen. In 1969 the budget allocation by the SRC to Societies amounted to R3, 017. The general level of activities is high and often four or more meetings, lectures or other events organised by societies take place simultaneously during the lunch hour over most of the academic year.

(4) Visiting Lecturers

The Students' Visiting Lecturers Trust Fund was established over 25 years ago and has the entire responsibility for inviting lecturers from overseas and arranging their programmes. During 1968 the Fund arranged twelve short period and three long period visits to the University by overseas lecturers at a cost of R5, 500. In addition the Academic Freedom Committee arranges for a visiting speaker to deliver the annual Feetham Lecture on Academic freedom.

(5) Students Health

The SRC has founded and operates a Students Health Insurance Society which maintains a daily lunchtime clinic and provides full medical coverage for students in residence. In 1968, 675 students were refunded R9000 for medical expenses and 600 others used the clinic.

(6) Refectory

The SRC operates the Students' Refectory which had a turnover in 1968 of R85, 500.

(7) Loans and Bursaries

The SRC through its loans and bursaries provides financial assistance to students and allocated R4, 366 in 1968.

(8) Student Publications

All student publications are controlled by the Witwatersrand University Student Publication Organisation. It has acquired a type-setting unit and in 1968 collected R43, 000 in advertising fees for the various student publications. Among these is an independent weekly newspaper - "Wits Student" - which enjoys freedom from censorship by the SRC.

(9) NUSAS

The SRC by its own decision is affiliated to the National Union of South African Students and students, by virtue of this affiliation, are entitled to representation at NUSAS Congresses through the SRC and entitled also to the benefits and facilities offered by NUSAS. These include, for example, interest free loans (R50, 000 has been paid to 700 students), scholarships (NUSAS is the largest scholarship awarding agency in South Africa), discounts from some 50 shops in Johannesburg, overseas tours at low cost, and vacation employment schemes. There is a local committee of NUSAS on the campus under the chairmanship of a member of the SRC which arranges weekly seminars and other events and handles matters relating to NUSAS benefits available to students through the NUSAS affiliation.

(10) Education

The SRC maintains an Education Committee which has the dual functions of submitting findings on all aspects of Education in South Africa to NUSAS and of advancing the quality of education and student participation in learning at the University. A recent undertaking has been that of a survey made by analysing replies to an extensive questionnaire completed by over 2000 second -year and more senior students. See also section 5.1(e).

(11) Students' Books

The SRC has campaigned vigorously against what it considered to be the inadequate facilities offered by bookshops for the supply of students' books and against the high prices charged. This led to the establishment of the SRC Bookshop which attained an annual turnover of about R70, 000 before action by the booksellers led to difficulties in obtaining supplies from publishers, and brought an end to a vigorous enterprize initiated by the students. An arrangement with a local bookseller has recently been made to operate a bookshop on the campus and supply books to students at a discount. In addition the SRC receives a percentage of the price of all books sold.

(12) Rag

The annual Charity Rag is a major student activity which has grown steadily in the 41 years of its history and realised a total of R104, 000 in 1969. Some 300 students are involved in the organisation of the Rag and 3, 000 to 4, 000 students participate on Rag Day itself and the supporting events which precede it.

Rag is a vast organisation run by students aimed at raising as much money as possible to help the underprivileged and providing at the same time as much fun as possible for all those participating. It is claimed that the Rag is the largest fund-raising activity of its kind in the world.

Rag funds are allocated to the following four major beneficiaries:

(i) The Alexandra Health Centre and University Clinic which serves the non-white community and attends to about 270, 000 patients annually. This project was started by students and financed initially entirely from Rag funds. It has now grown into an independent organisation with an annual budget of about R100, 000 with State support.

(ii) Entokozweni - a Nursery School and Crèche which serves a great number of African children whose parents are both out working.

(iii) The Johannesburg Child Guidance Clinic - a non-denominational organisation which provides psychological treatment for children from poor homes.

(iv) Witsco - the Witwatersrand University Students Community Organisation - is a recognised welfare organisation which provides a Clinic and Recreation Centre for the coloured community at Riverlea. The Clinic, run by medical students and more recently dental students as well under the supervision of qualified honorary practitioners, attends to an average of 50 patients a night and welfare services for children in the community, totalling 4, 500 child-hours per month, are provided by students and qualified social workers.

In addition Rag funds benefit three charities selected each year - one non-denominational, one Jewish and one Afrikaans - as well as others when the funds available for distribution permit this.

5.1 (b) Activities on the campus relating to non-University matters

The only student activities permitted on the campus are those arranged by student organisations which have been recognised by the SRC. See also section 5.1(d) of these submissions.

5.1 (c) Criteria for permitting student organisations on the campus

Subject to the authority of the University Council and the Principal the SRC is empowered to extend recognition to and withdraw recognition from any student sub-council, club or society.

Under the Standing Orders which the SRC has been authorised to make, the order relating to the membership of clubs and societies is that membership shall be open to all students, excepting only the faculty councils and clubs or societies established under their aegis whose membership may be restricted to students in the faculty. Recognition confers the privileges of being styled a University Club or Society, of holding meetings on University premises and of advertising such meetings on the notice boards, of using the amenities of the SRC office and of being eligible for financial support by the SRC.

5.1 (d) Students' protest

The object of protest can be to express disapproval of the policy or action taken by the government, other public body or the university itself.

No significant protest has ever been organised in the interests of the students themselves. Most of the protests organised by the SRC had their origin in the legislation introduced in 1957 to close the open universities to non-white students. The issue at that time was a fundamental one affecting university autonomy by curtailing the freedom of the university to admit any student who had attained the academic standards prescribed.

The protests in 1959 were organised by the University Council, Senate, Students and Convocation. It was believed then, and we have never wavered from the belief, that academic non-segregation provided the conditions under which our University could serve South Africa best in the pursuit of truth, the dissemination of knowledge to all South Africans and the training of intellectually gifted persons to perform the tasks that the community required of them. In expressing this view, we believed that we were patriotic and loyal South Africans aware of the needs of the country.

Events in more recent years such as the banning of Ian Robertson in 1966, the deportation of John Sprack in 1967, the banning of Professor Hoffenburg in 1968 and the deprivation of Duncan Innes' passport in 1969 have been seen as political attacks against NUSAS. Recent protests by students in 1968 and 1969 were directed against police over-reaction against student demonstrations and the erosion of the civil right of dissent.

Student protests organised by the SRC have been demonstrative only. Demonstrative protests have been called for by strong majorities of average students several times a year. If the right to orderly demonstrations of dissent continues to be diminished by such activities as arrest for picketing or the blanket veto on marches in Johannesburg, there is a danger that growing student frustration will lead to forms of spontaneous protest by groups of individual students. This development of protest, while possibly remaining non-violent, could involve the invasion or infringement of the rights of the university or other public bodies

5.1 (c) Student participation in University Government

From the evidence submitted on student activities it will be apparent that students have complete responsibility for the management of their affairs within the University and a wide range of extra-curricular activities. The SRC is specifically empowered to communicate to the University Council, on its initiative or at the request of the Council, its views on matters of general principle affecting student affairs. In addition there is a standing committee, with joint Senate and SRC membership, which provides a channel for communication of student views to the Senate, and, of course, the SRC is free to make representations to the Vice-Chancellor on any matters of student concern.

In view of the facilities for communication between the SRC and the University Council and Senate student representation on these bodies is not considered appropriate. The Council and Senate should, however, be acquainted with students' views and students should be consulted in areas where they can be expected to make useful contributions. Such areas (apart from those in which students have complete responsibility) include particularly those concerned with curricula and courses, teaching methods, and issues relating to planning and development of the University. In these areas, it is considered that there should be opportunities for students to enter into discussions in the appropriate official committees established by Council or Senate.

The heads of most University departments have no objection to the arrangement of regular meetings between members of their staffs and student representatives drawn from each course. It is considered right that students should be given opportunities to hold discussions about the content of courses and the effectiveness of the teaching they are receiving provided this does not infringe on the academic freedom of the teacher to decide on the way his subject is presented. It is believed that without any such interference profitable and useful discussions between students and staff can be held.

Senate has recently approved proposals for Boards of Faculties to hold prior discussions with students when matters which concern students are to be considered by the Boards, and in some cases to attend Board meetings when matters of importance affecting the student body are discussed. No general procedure for such consultation has been laid down and Boards of Faculties have been authorised to take the initiative in making their own arrangements for consultation with students. Discussions are continuing and student proposals for educational reform will be presented to Senate for consideration in the near future.

Students as members of the academic community of this University are also afforded freedom of speech. We believe this to be a fundamental right and that the denial of freedom of speech to a person who happens to be young and a student cannot be defended.

5.2 MAINTENANCE OF A SOUND SPIRIT AND CODE OF HONOUR

(a) Spirit and conduct on the campus

We consider that the spirit of the student body as a whole is determined mainly by the establishment of an understanding relationship between students and members of both the academic and administrative staffs. To achieve this there must be channels of communication for making representations to the appropriate authority about any matter on which students may feel aggrieved. We believe that easy, rapid and effective communication between students and senior members of the University administration is a particularly important factor in maintaining good student relationships and that the inadequacy of communication has been a primary cause of much student unrest which has occurred at universities overseas.

In the present social environment in which young persons are called upon to carry responsibilities at a much earlier age than, say, a generation ago there is need for modernising the rôle of students in the academic community by granting recognition to the contribution which responsible student opinion is able to make to university government. By opening up ways in which students can participate in the processes leading to decision-making in the University it is believed that a sound and responsible spirit among students is being engendered. In a university in which the main objective is to teach young persons to think, it is surely incompatible with the concept of the academic community to deny students the right to take a constructive part in fashioning policy affecting themselves and their successors in the institution of which the student body is a part.

In any community the imposition of rules is unavoidable, but we believe that these should be as few and unrestrictive as possible. Rules for students are enforced partly by the SRC, under authority of the Council for exercising certain disciplinary powers, and through the Students' Discipline Court. The University is not equipped to undertake the large-scale enforcement of rules and relies on the acceptance/

acceptance by students of the rules needed for the efficient conduct of the University in their own interest and the co-operation of the SRC in applying them.

Perhaps the strongest incentive for maintaining a sound spirit and code of honour can be founded on a proud tradition and the University's standing in the academic world and inthe sense of service to South Africa as a whole. We believe that healthy relationships within a university are maintained implicitly.

5.3 CONTROL OVER STUDENT ACTIVITIES BY UNIVERSITY AUTHORITIES

(a) Legal position of the student on the campus

The legal position of the individual student is governed by the contract between him (or his guardian on his behalf, if he is a minor) and the University, and by legislation which includes certain implied powers for the University as a corporation which is an education institution.

There are two sources of original legislation, the Universities Act, No. 61 of 1955 (as amended) applicable to all universities and the University of the Witwatersrand (Private) Act, No. 15 of 1959 (as amended).

There are the following types of delegated legislation:-

(1) joint statutes framed by the Committee of Principals, and approved by the Minister of National Education. The joint statutes are common to all universities and are to give effect to the provisions of the 1955 Act and to provide for other matters of common interest (1955 Act, sec. 18);

(2) joint regulations, so framed and approved for the better carrying of the joint statutes (ibid.);

(3) statutes, framed by the University Council, and approved by the Minister, for giving effect to any enactment relating to the University and for the general government of the University in relation to matters not prescribed by any enactment (ibid., sec. 17);

(4) regulations so framed and approved, for the better carrying out of the statutes (ibid.) Statutes and regulations dealing with the studies, instruction, examinations and discipline of a university may not be framed, amended, added to or repealed except after consultation with the Senate (ibid.) This does not mean that the Senate's concurrence is required (this would be "in consultation" with the Senate);

(5) rules made by the Council in terms of our Private Act.

Joint statutes, joint regulations, statutes and regulations have force and effect only on publication in the Government Gazette (ibid., secs. 17 and 18). Rules do not require the approval of the Minister and are not published in the Gazette. So far as students are concerned, the significant rules made under rule-making powers conferred by our Private Act are the rules made by the Senate and approved by the Council, for the better carrying out of the regulations relating to the obtaining of any degree, diploma or certificate (sec. 10 (3)); the rules made by the Council prescribing the composition, mode of election, tenure of office, powers, functions and duties of the Students' Representative Council (sec. 13 (2)); the rules made by the Council prescribing disciplinary provisions (sec. 20 (1)), which allows alternatively for the statutes to make such provisions.

Apart from the powers of delegated legislation, administrative powers are conferred on the University authorities by our Private Act. Those of significance in relation to students appear to be the following:-

(1) the Council's power of determining, levying and collecting fees and boarding charges, the determination of fees to be only after consultation with the Senate (sec. 9(7)(b));

(2) the Council's power to require a student to reside during term in an approved place of residence (sec. 20 (2));

(3) the Senate's power of organization and superintendence of instruction, examinations, lectures and classes (sec. 10 (2));

(4) the Senate's power of determination of the standard of proficiency to be attained in each examination and decision as to what persons have satisfied the requirements for the obtaining of each degree, diploma or certificate (sec. 10 (4)).

Finally, it should be borne in mind that a corporate body, such as the University, has certain implied powers relating to the running of its affairs, being those incidental to or consequential upon the powers expressly conferred.

The University statutes, paras. 62 - 4, provide that the general supervision and control of student discipline shall be vested in the Principal (viz. Vice-Chancellor). A Student Discipline Court is created, its membership, composition, powers and procedure to be as prescribed by rules made by the Council. The Council is empowered to make rules relating to the exercise of disciplinary powers by the Principal, the Student Discipline Court, the Deans of Residences and the Director of the Oral and Dental Hospital. Finally, rules made by the Council may deal with the delegation by the Principal of his disciplinary powers to other persons or bodies. Detailed rules on all these matters have been framed.

There is a set of Rules for Students. A few of these rules are framed in terms of specific powers given to the Council (e.g. rule R.2 - "A student not residing with his parents or relatives may be required to live at one of the University halls of residence or at a place of residence approved by the Principal" - see sec. 20(2) of our Private Act); many others are presumably framed by the Council in the exercise of its power to make rules setting out "disciplinary provisions" (sec. 20(1) of our Private Act), e.g., rules as to student behaviour and dress and rules as to traffic and parking; perhaps some are made by the Council in the exercise of the government and executive authority of the University (sec. 9(1) of our Private Act) and its general control of the University and of all its affairs, purposes and functions (sec. 9 (6) ibid.), e.g. the rule that "The University does not accept liability for loss or theft, of, or damage to, property arising out of a student's attendance at the University, wheresoever and howsoever caused" (rule R.7) - or it may be that this rule gets its force not through any legislative basis but through the contract with the student; and perhaps some are simply the expression of the exercise by the Senate of its power of organization and superintendence of instruction, examination, lectures and classes (sec. 10(2) of our Private Act), e.g. rule R.4 - "A student is required to perform all written and other work and write all class tests prescribed. The reason for failure to do so must be notified to the head of the department concerned as soon as possible."

There is also a special set of "regulations" for students in University residences (1969 Calendar, pp. 74-5). These seem too, to be a mixture of statutory rules, flowing from the Council disciplinary powers (sec. 20(1) of our Private Act) and possibly from certain other statutory powers, expressed or implied, and contractual provisions.

There is also a detailed set of Rules for Student Discipline. These do not require elaboration, but attention should be drawn to the granting of certain disciplinary powers to the SRC.

Secondly, as to the SRC. The rules framed by the Council in terms of section 13(2) of our Private Act to serve as the SRC Constitution give certain powers, duties and privileges to the SRC, but "subject to the authority of the Council and the Principal." The Council reserves the right to terminate the period of office of the SRC, in which event it must arrange for elections within six months and in the meantime appoint an officer or officers to administer the affairs of, and to constitute, the S.R.C.

The legal relationship of the student to the University, it will be seen, is regulated by legislative and contractual provisions. Whilst the student is not represented in the Council or the Senate, he is not without his rights, for the University must comply with the legislative and contractual provisions that relate to him. For instance, even though the University has considerable powers of making rules in its unfettered discretion, it is bound by these rules itself, so that students, no less than staff, live their academic lives under the rule of law.

5.3 (b) <u>The legal position of the university authorities with regard to the campus, university buildings, etc.</u>

The University is a body corporate, created by the University of the Witwatersrand, Johannesburg (Private) Act, No. 15 of 1921, which enactment has been replaced by the University of the Witwatersrand, Johannesburg (Private) Act, No. 15 of 1959, since amended by the University of the Witwatersrand, Johannesburg (Private) Amendment Act, No. 32 of 1968. Being a fictitious entity, and artificial person, with - in the time-honoured phrase - neither body to be kicked nor soul to be damned, the University has to work through human beings or associations of human beings.

The actual administration of the University is assigned to various bodies and perhaps reflects a form of dyarchy. The major powers are vested in the Council, but in certain respects the Senate may act independently, in other respects the Council cannot act without the impetus coming from the Senate and in yet other respects the concurrence of both bodies is required. In one regard, at least, the Convocation acts alone - the election of the Chancellor (though as prescribed by the statutes, which are framed by the Council and require the approval of the Minister of National Education).

Finally, certain actions require the imprimatur of the Minister of National Education.

The government and executive authority of the University in general is vested in the Council (Private Act, sec. 9(1). In particular, the "Council shall administer all the property of the University, and except as otherwise provided in this Act, shall have the general control of the University and of all its affairs, purposes and functions" (Private Act, sec. 9(6)).

The grounds, the buildings (which in any event are owned by the owner of the grounds) and various tangible movable and incorporeal things are owned by the University as such, in its corporate capacity. The actual administration of all the University's property is reposed in the Council, which acts as the institution's executive arm. The University is empowered by section 2 (it would act through the Council) inter alia to buy or otherwise acquire, hold, let, hire, sell, exchange, alienate or hypothecate any property, movable or immovable, burden property with a servitude or other real right in it; but section 22 requires the consent of the Minister for the selling, letting, alienation or hypothecation of any immovable property or the burdening of it with a servitude or other real right, except that it is free to let property for a period not exceeding three years.

As with any other landowner, the University is protected by legal remedies in civil law against unlawful occupants or possessors. In addition, it is free to invoke the Trespass Act, No. 6 of 1959, which states that an offence is committed by any person who enters or is upon land or in a building without the permission of the owner, unless he has lawful reason to enter or be there.

5.4 THE RÔLE OF STUDENT ORGANISATIONS

(a) Local organisations

See section 5.1(a) of these submissions.

We consider a strong, stable and representatively elected student government, with considerable responsibility, particularly in student affairs, and enjoying the confidence and respect of the University administration to be an essential element for maintaining good relationships between students and the administration.

The wide range of activities covered by student organisations have been referred to in section 5.1(a) of these submissions. The students have excelled particularly in the provision of social services for the underprivileged and to those undertakings support has been given by large numbers of students.

We have mentioned that there are at present 45 societies within the student body which receive constitutional and financial recognition from the SRC. Many of these societies by providing a common interest play an important rôle in student life by bringing together students following different courses of study. All the student organisations referred to in section 5.1(a) have developed within the student body and have been initiated and developed by student enterprize.

5.4 (b) National organisations

See section 5.1(a)(9)

The SRC is affiliated to the National Union of South African Students (NUSAS) which is a trade union, working to protect the rights and further the interests of students. The SRC out of its grant from the University Council pays an affiliation fee to NUSAS which entitles students to the benefits and facilities which NUSAS offers.

The aims of NUSAS are:-

(1) /

(1) to represent South African students nationally and internationally;

(2) to maintain and further co-operation, in a spirit of tolerance, goodwill and mutual respect among all students;

(3) to uphold the right of all students to meet, assemble and study together on the basis of full equality, and to promote the ideals of academic freedom;

(4) to promote the educational and general interests of students;

(5) to organise and encourage participation by students in welfare and educational community projects for the less privileged;

(6) to guard the rights of students as students and citizens.

NUSAS holds an annual Congress in July attended by delegatations from all its centres. The membership of the delegation is decided on by the SRC, which considers applications from outside its own membership and endeavours to ensure that the general spectrum of student opinion on the campus on all matters is represented within the delegation. At Congress each member votes as an individual.

The SRC is in no way bound to implement the policy decisions of the NUSAS Congress and retains complete autonomy in this respect. NUSAS thus functions as a confederation of Student Representative Councils.

As an indication of the nature of NUSAS business we may mention that at the 1967 NUSAS Congress about 90 percent of the motions were concerned with matters relating to material benefits provided by NUSAS, organisation, procedure and education. The remaining ten percent were concerned with academic freedom, independence of universities from state control and freedoms in society. We quote these figures as the impression, wrongly created, is prevalent that discussions within NUSAS are mainly political in character.

Because NUSAS believes that education should be non-racial, and available to all persons on academic criteria alone, it has been forced into conflict with government policy. We uphold the principle of NUSAS that freedom of thought, expression and movement are prerequisites for a full and worthwhile education. As we have said before, the denial of the right to freedom of speech cannot be defended.

5.4 (c) Internation organisations

The SRC is affiliated to NUSAS which was affiliated to the International Students Conference (ISC) until the dissolution of the latter early this year.

The ISC had had its headquarters in Leyden, Holland. It had as affiliates the national unions of students of nearly every western democracy. The discovery that the ISC funds (provided mainly through the United States National Students Associations) originated from the United States Central Intelligence Agency and made available through various foundations was the chief cause of the dissolution.

Through the ISC, NUSAS obtained for the students of the affiliated SRC's international travel and accommodation discounts as well as reciprocal privileges for students at overseas universities from the various overseas unions.

The ISC is being replaced by an Association of European National Students' Unions, in which the British and the Scandinavian unions are likely to be the most active members.

A number of faculty organisations have national counterparts which in turn are affiliated to appropriate international organisations. For example, the Commerce Students' Council is affiliated through the national body to the Association of International Exchange of Commerce and Economic Students, and the Students' Medical Council through the Association of Medical Students of South Africa to the International Federation of Medical Students' Association.

These international organisations have as their common cause not only the studenthood of their members, but a particular academic discipline. They thus have a good deal of common ground and are hence very active. The international organisations hold annual congresses which have been attended by many students of this University as South African representatives. We consider that every encouragement should be given to encourage student participation in such international activities.

The material benefits available through the international organisations mentioned included travel by charger flights at reduced fares and exchange family visits.

5.5 FACILITIES FOR RECREATION

(a) Facilities for sound intellectual recreation

The University Great Hall, with a seating capacity of about 1100, is used for plays, concerts and other functions at which a relatively large attendance is expected. Lecture theatres are used by cultural clubs and societies for their meetings.

We are conscious of the need for much better facilities than we have at present to encourage interests which reinforce the intellectual life of the University. We consider that this is particularly important today when the cultural values of so many young people are alien to those of an academic community.

In a University in which less than ten percent of the students can be accommodated in residences we consider that it is particularly important to provide facilities which will bring students together after formal teaching has ended. There is a need for a little theatre, a debating chamber and rooms for a wide variety of student societies. There is a need for rooms where students could meet for those informal discussions on 'how to set the world aright' which are part of the traditional pattern of student life in the older universities. There is in short a need for providing a much better corporate life for students than is at present possible.

The growth in student numbers within recent years has made the premises of the Student Centre inadequate for the present enrolment. It is able to provide only for the noisier activities which the majority want and the remainder are deterred from discussions or other activities which might constitute "sound intellectual recreation".

5.5 (b) facilities for sound physical recreation

There are 27 sports clubs in the University financed by the SRC and affiliated to the appropriate provincial or national sports unions. Sports clubs received 30 percent of the SRC grant from the University Council in 1968.

Sports fields are located on the University Campus, Marks Park (about $3\frac{1}{2}$ miles away) and Sturrock Park (about $\frac{1}{2}$ mile away). In addition the University makes use of fields at the Helpmekaar School in return for their maintenance by University groundsmen, and hires a field for baseball from the Wanderers Club. An indoor sports centre and gymnasium is under construction on the campus and squash courts on a site adjacent to the campus have recently been completed. There is a 50 yard swimming pool on the campus which we would like to extend to 50 metres to meet international standards. Boating is carried out at Wemmer Pan (some 6 miles away) where the Club has a rudimentary clubhouse and facilities for storing shells.

In spite of the use being made of off campus sports fields, the number of sports fields available remains very inadequate for present student numbers, but additional playing fields are being provided at Marks Park. Our future needs include more change rooms at Marks Park, squash courts at the Medical School as well as more at Milner Park, a clubhouse and boat at Wemmer Pan, a cricket and sports pavilion and social centre for all clubs and a grand stand and other facilities for the main rugby field.

5.6 RECREATIONAL FACILITIES

(a) Provision of space

See section 5.5 of these submissions

(b) Sports staff

There is no director of sports on the University staff and we feel that such an appointment is undesirable. Students' sporting activities are organised by the Students' All Sports Council which is provided with secretarial assistance. Training is carried out on an honorary basis and arrangements for the appointment of trainers are made by the individual sports clubs. These arrangements work well and we would not like any change to be made as we consider that physical recreation at the University should be conducted within a true spirit of amateur sport.

Maintenance of the sports fields, courts and the swimming bath is the responsibility of University staff which carries out its work in close co-operation with the All Sports Council.

5.7 CULTURAL ACTIVITIES

(a) Facilities and opportunities

See also section 5.5(a) of these submissions.

The Students' Representative Council will only grant recognition and make financial grants to those clubs or societies that comply with the provision that all students at the university be permitted to join the organisation, should they so wish, thus students of any faculty may join any one or all of the cultural clubs and societies.

There are thirty-five cultural societies, covering interests which range from languages (4) to music (5) and including subjects as diverse as politics, drama and metallurgy. In addition, there are eleven religious societies. Should any interest not be covered by those organisations already in existence, any student may gather a group of nineteen other students, levy a subscription and have a constitution ratified by the Students' Representative Council and thus form a society.

5.7 (b) General participation in activities

About one-third of the students at this University make use of the opportunities for participation in sport and in the cultural activities accessible to them. Being a metropolitan university many students take advantage of the wide range of cultural activities available outside the University. An attitude among students encountered too often is that their university commitment consists only of meeting the requirements for their course of study. This is probably a consequence of the non-residential nature of the University. We believe that in these circumstances, the provision of premises and equipment to encourage cultural activities among students should be on a scale which is especially generous.

One organisation which has been particularly successful is the Shadow School established under the aegis of the Arts Faculty Council to provide courses not ordinarily included in the University curriculum. The shadow School aims at extending students' understanding of modern phenomena and providing a broad cultural background. Courses have been provided in such fields as: the Cinema and Social Realism, Ideologies, Evolution, Space Exploration, Statistics, Journalism and Classical/

Classical Mythology. Each course consists of about six evening lectures by a specialist in the field. Attendances have been up to about 100 students per course.

The religious societies are active, but those who attend usually seem to be those who belong to the religious faith for which the society was founded.

5.8 STUDENTS' FEES FROM THE POINT OF VIEW OF STUDENTS AND THEIR PARENTS

(a) The cost of university training

The view of students is that opportunities for a university education should be available to all who are academically qualified to enter a university and that to avoid prejudice to those who are not in a financial position to meet the fees education at university level should be free.

5.8 (b) Availability of loans and bursaries

We try to ensure that no deserving student is denied a university education merely because he cannot pay the fees. Many bursaries are provided and, in general, a student who holds a bursary and who is prepared to supplement his bursary by part-time or vacation work, can pay his way through the University without having to make excessive demands on his parents.

The University receives an annual grant from the Johannesburg City Council to assist students, who on the evidence of their scholastic records, are likely to benefit by a university education and who, by reason of restricted means, need financial assistance. Four-fifths of this grant is restricted to persons who have resided in Johannesburg for at least two years.

The University also administers the award of state bursaries and loans and national study loans from money made available to it by the Department of Higher Education. No loans are made to first-year students, but loans are available to students in the later years of study.

In addition to the above, many outside sources, including mining and business houses, industrial firms, professional associations, state and provincial departments, welfare and charitable organisations, student and other bodies sponsor undergraduate students at this University.

The University also administers bursaries and scholarships in a wide variety of fields on behalf of the donors and some 122 loans, bursaries and scholarships, administered by outside bodies, for which undergraduates at this University are eligible will be available in 1970. In about half of these awards a successful applicant may be called upon to enter the service of the sponsoring organisation on completion of his studies.

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