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## UNIVERSITIES AND POLYTECHNICS IN AFRICA

THE TWELFTH LUGARD MEMORIAL LECTURE<sup>1</sup>

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MAY I say first how much I appreciate the compliment which you paid me when you invited me to address the International African Institute on this, the occasion of the twelfth Lugard Memorial Lecture. I am proud to be one of those to whom Dame Margery Perham referred in the first Lugard Memorial Lecture, one of those who knew Lord Lugard in his later years. As a young civil servant I was the administrative secretary of the Advisory Committee on Education in the Colonies, of which Lord Lugard was a member. As a kind of extension of my duties, I went to Africa as the secretary of Lord De La Warr's commission on higher education in East Africa. That commission's terms of reference charged it to work out a scheme for setting up a university college in Uganda, and of course Lord Lugard was interested because he had played such a leading part in bringing Uganda into the empire—first in commanding the military expedition and thereafter in conducting the campaign in Britain which persuaded Mr. Gladstone's government to proclaim the protectorate. Shortly after I returned from Uganda to London, I was walking in Whitehall when I saw Lord Lugard coming towards me—walking the length of Whitehall from Trafalgar Square to Parliament Square although at that time he was 79 years of age. I wore a hat in those days, and in accordance with the civilized manners which young people then endeavoured to preserve, I raised it. To my surprise Lord Lugard recognized me, stopped me, and asked me to tell him about the commission and what it was likely to recommend. The conversation left me with a lively appreciation of Lord Lugard's great personal interest in education in Africa. If we could evoke, as Hubert Deschamps evoked when he pronounced the eighth Lugard Memorial Lecture, 'cette ombre auguste qui nous est chère', I think that the august shade would be very willing that this memorial hour should be devoted to a discussion of educational problems.

<sup>1</sup> Delivered at University College London, on Tuesday, 27 June 1972, during the annual meeting of the Executive Council of the International African Institute.

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Any such discussion, in the present age, must be guided by a complete recognition of the sovereignty of the African countries. They make their own decisions, in education as in other spheres. Any views held about education in Africa by persons or groups in Britain must be expressed as contributions to a great debate. It is not for us to say what is going to be done. But in matters of education, perhaps more than in some other spheres of activity, there are indications from the African side that they welcome such discussion and are eager to participate in it.

Anyone who has concern with higher education in those twelve independent states of Africa which formerly were British colonies, must be aware of numerous expressions of regret that the universities have been insufficiently integrated with the life of the communities in which they live; and must equally be acquainted with the efforts of several African universities to find a remedy for this alleged remoteness by involving themselves in work connected with economic development and rural betterment.

Personally I do not think that any university in these African countries needs to feel guilty about being too remote or too impractical. I am tired of cheap jibes against ivory towers and against Oxbridge in Africa. The great reports on higher education in Africa associated with the names of Lord De La Warr (1937) and Sir Walter Elliot (1945) made recommendations which have stood the test of time. The universities at Makerere, Ibadan, and Legon Hill, which specifically owe their existence to those reports, were intended to provide in Africa degree courses equal in standard to those of British universities: and they have done so. They were intended to train leaders for independent countries (which is what Oxford and Cambridge did), and they have done so. Thirdly, they were to provide advanced education in many practical subjects such as medicine, agriculture, and school-teaching among others, and they have done so.

The *doyen* of the African universities is of course Fourah Bay College in Sierra Leone. The opportunity will arise in 1976 for celebrating the centenary of its association with Durham University. It should provide a great occasion. It should not be an occasion for raillery against teaching theology and the classical languages. Those subjects were the main content of university activity in all countries in 1876. Fourah Bay responded then to the impulse of the historical period. As soon as the facility became available at Durham, Fourah Bay College began to prepare students for the Durham bachelor of commerce degree, which later was changed into the bachelor of arts (economics) degree.

In referring to the origins of university studies in Africa, it is pleasant to recall that as long ago as 1931 the college at Achimota in the Gold Coast was recognized by the University of London as a college teaching for the degree of bachelor of science in engineering. This formed part of a government scheme for training Africans as engineers, with four years' study at Achimota and three or four years of practical training either in the railway or in the public works department. In 1937 the mining companies established in the Gold Coast asked to join the scheme. These, the earliest degree studies in Ghana, were therefore practical and vocational.

The University College at Makerere in Uganda began in 1939 with its main concentration on agriculture, medicine, and training teachers for secondary schools. The university at Ibadan which was one of the results of the Elliot Commission

report of 1945 had medicine as one of its principal activities from the moment of its inception. So there is not the slightest ground for the suggestion that the African universities were ivory towers or that they were not concerned with vocational training vital to the countries which they served. But their functions as universities were necessarily much wider than that.

The universities provide, and must continue to provide, degree courses in the arts subjects: language, literature, music, history, African culture; and also in economics and sociology. I do not propose to discuss those activities in this address. I invite your attention, on the other hand, to the more vocational courses, devoted to engineering in its various specialities, to management and administration, medicine, agriculture and irrigation, and numerous other skills which *may* provide the subject-matter for degree courses such as printing, librarianship, pharmacy, hotels and catering, and food technology.

All these vocational subjects have one feature in common. It is this. For every professional man or woman, fully qualified, you require several men and women with ancillary skills. In engineering such persons are described as technicians. The late Lord Jackson, in his address to the Commonwealth Conference on education and training of technicians at Huddersfield in 1966, stated the ratios between technologists and technicians in a large number of different sectors of employment in Britain at that time. Taking an average for the different kinds of engineering, the desirable proportion of technicians to technologists may be about five to one. In hotels and catering you need twenty or thirty persons with ancillary skills for each manager or manageress. In management and administration more generally any sensible pattern of organization requires numerous assistants with business skills to act under the direction of the senior man or woman.

These ancillary skills are sometimes referred to as middle skills, and the type of course which aims at furnishing them is sometimes labelled a middle-level course. I do not like those descriptions. Let me give you two examples to illustrate how inappropriate they are.

To many of us the most essential and familiar ancillary skill is the secretary. As administrators we are reduced to minimal efficiency unless we have a secretary, who will probably be of feminine gender, able to take dictation, transcribe tapes, type, introduce some grammar into our letters, deal with the telephone and the engagement book, tell callers that we are out when we are busy, and remind us of everything that we forget. This middle skill sometimes gets married and leaves to have a baby. Replacement should then be available from the local technical college. But, you may say, this is no middle skill; it is the most superior skill of its kind. Consideration may lead to a similar conclusion with regard to many of the skills of which we are speaking. In medicine the doctor needs receptionists, nurses, physiotherapists, radiographers, microscopists, medical social workers, pharmacists, and other specialized ancillary workers. All these callings require very superior skill within the scope of the technique. A middling skilful microscopist, for instance, is of very limited value.

You may conclude that the term 'middle' in this context is derived from the relationship between the various skills in the engineering and construction industries. Here we have chartered engineers, with the most advanced skill, technicians with

a more modest kind of skill, and craftsmen or artisans who also possess sophisticated skills but who do not participate in direction and control. The technicians stand in a certain relationship to the other two classes and it has been the practice to describe their position as the middle. A technician has been described as 'A person qualified in specialist technical education and practical training to work under the general direction of a technologist'. The Haslegrave Committee in 1969 expanded this, saying that a technician is 'one who has acquired detailed knowledge and skills in one specialist field, or knowledge and skill to a lesser degree in more than one specialist field; is required to exercise judgment, in the sense both of diagnosis and appraisal, and initiative in his work; is frequently called upon to supervise the work of others; and has an appreciation of the environment beyond the immediate limit of his duties'. The committee added that technicians never make things, but they make everything work.

The De La Warr, Elliot, and Asquith commissions were concerned with creating universities overseas. But the Elliot Commission also recommended that three technical institutions should be set up in West Africa. The report of that commission included a passage which succinctly introduced so many themes which were to recur again and again over the next twenty-five years, that I venture to quote in full:

Each institution should at least be partly residential, since many of the students will come from a distance; and library and recreational facilities should be provided. Technical, commercial, and perhaps art courses should be available in the one institution in order that the educational basis of the institution should be as broad as possible. It is essential for the success of the technical institutions that close contact should be established and maintained with the subsequent employers of the students, and that representatives of the technical departments of the government and of private enterprise in commerce and industry, and of workers' organisations, should be closely associated with the management of the institutes.

That was written in 1945.

Resulting from the recommendations of the Asquith Commission, the Inter-University Council was established in Britain to organize and cultivate the connections between British universities and the new universities in the colonies. The Inter-University Council, while it was still very young, sponsored a delegation to west Africa under the chairmanship of Sir William Hamilton Fyfe to pursue the question of the technical institutions as suggested by the Elliot Commission. In 1947 Sir William's delegation recommended that in addition to universities, West Africa needed 'regional colleges complete in themselves and with functions not unlike those of an English polytechnic'. Emphasis was placed on the phrase 'complete in themselves'. In this context it meant that the colleges were not to be feeders for universities. This concept was extended and elaborated early in 1949 in a report to the government of Nigeria by Thorp and Harlow on the establishment of a 'Nigerian College of Arts Science and Technology', a title which subsequently was widely adopted. The Nigerian college was to have three branches at Ibadan, Enugu and Zaria, leaving the needs of Lagos to be served by the technical college at Yaba, which had come into existence long before. It was hoped that the main part of the students for the College of Arts Science and Technology would come from industry on release for sandwich courses. However, this hope met with only meagre fulfilment. The plain fact was, that for technician and commercial courses secondary school

education was desirable, and very few people so qualified were available from commerce and industry in Nigeria at that time. So the Nigerian CAST at its three branches recruited most of its students from the same source as the universities—a circumstance which was to have very much influence on subsequent developments.

In choosing as my subject today the balance between universities and polytechnics in Africa, I cannot claim any virtue of originality, for the subject was already causing concern in 1949. The Inter-University Council's report for that year contained the following remarkable passage: 'The Council believes that the educational structure of the colonies will be mis-shapened'—yes, that is the word they used: 'the educational structure of the colonies will be mis-shapened if the chief form of post-secondary education available locally is that provided by universities. It regards the establishment of regional colleges, or something like them, as having the same importance and urgency as that of the university colleges.' For the next six or eight years, it is fair to say, that was the keynote of policy.

The I.U.C., having thus expressed its view, took action. It consulted the Advisory Committee on Education in the Colonies and jointly the two bodies sponsored a committee whose purpose was to look after the interest of these non-university regional colleges, and to organize links for them with appropriate technical colleges in Britain. In 1949 this joint committee was elevated in prestige to become an advisory committee in its own right, appointed by the Secretary of State for the Colonies, with the title Advisory Committee on Colonial Colleges of Arts Science and Technology, commonly known as ACCCAST. There followed eight years of fruitful activity, during which a number of colleges of arts, science, and technology were set up, most in Africa, but three in other continents. They were, by definition, places which catered for the skills with which the universities were not concerned. In two successive years the ACCCAST was provided with £1½ million for allocation from the Colonial Development and Welfare vote. Its recruitment secretariat engaged many hundreds of members of staff for technical colleges overseas. You will appreciate that, in addition to its work in promoting the establishment of new colleges, it was providing services for institutions which had existed before and which were being improved and expanded. Thus it may be said that by 1957 there was in Africa something which might have been called (if the term had been invented at that time) a binary system of post-secondary education.

As the CASTS—that is, colleges of arts, science, and technology—developed their engineering courses they had the problem of monitoring standards and they came under pressures to secure international recognition of their standards. ACCCAST helped in negotiations to enable students in the colonial colleges to be assessed on the standards set by British professional bodies for students in Britain. The African *universities*, with a comparable objective of adopting and maintaining British academic standards, had entered into a special relationship with the University of London, under which they were preparing students for degree examinations of that university, modified where necessary to suit local circumstances. In the engineering skills a diversity of professional bodies, instead of a single university, conducted the examinations which were of interest to ACCCAST. Foremost among these were the three main professional institutions of engineers—the civils, the mechanicals, and the electricals. ACCCAST was anxious that African students should be enabled, through

full-time study at a colonial college, to be put on the road towards the institutions' associate membership. Students in Britain, in those days, commonly obtained exemption from the institutions' examinations not only by university degrees in engineering but also by higher national certificates or diplomas in engineering, or the diplomas of certain technical colleges. However, none of the examinations in question could (under the regulations then in force) be held in Africa; so the ACCCAST sought a solution along the lines of full-time courses to prepare students for the institutions' own examinations. The Secretary of State for the Colonies, Mr. Oliver Lyttelton, was personally impressed with the educational and political urgency of providing students in the African colleges with a means of attaining professional status through study largely in their home country. In 1954, with his advisers, he discussed the position with the presidents of the three main engineering institutions. They expressed disappointment that faculties of engineering were not being established at the colonial university colleges. Mr. Lyttelton assured the presidents that he would encourage such facilities. The institutions for their part undertook to help establish standards acceptable to themselves whether courses were run in the university colleges or in the colleges of arts, science, and technology. In the following year, 1955, the Nigerian CAST successfully applied to the institutions of civil engineers, mechanical engineers, and electrical engineers for recognition so that students could sit Part 1 of the institutions' examinations.

The Kumasi College in the Gold Coast, on the other hand, sought a different solution by applying to the University of London for the recognition of its department of engineering for the purpose of that university's degree in engineering for external students. This set a problem for the University of London, for the Secretary of State and for his advisory bodies, the Inter-University Council no less than ACCCAST, since all were concerned with developing a balanced system of higher education, and were agreed on their original intention, namely that one set of institutions of higher education should be of university character and that the other should confine itself to studies not leading to degrees. However, after consultations between the four parties concerned in Britain, the special nature of the engineering degree for those aspiring to professional status as engineers was recognized; the absence of any intention of the University College of the Gold Coast at Legon Hill to inaugurate a degree course in engineering was noted, and such opposition as there had been to the application from Kumasi College was withdrawn. The University of London, after inspection of the engineering facilities at Kumasi College, accorded recognition in 1955.

This precedent proved to be completely definitive. Between 1955 and 1962 all the colleges of arts, science, and technology in Africa started courses leading to university degrees. The colleges concentrated on degree courses to the exclusion, or near-exclusion, of the activities which had been envisaged as their main business, directed towards the ancillary skills. In certain cases it was said that there was not enough space to cater for university work and other work in the same institution, or not enough staff. In one college at any rate it was clear that there were not enough students with the educational qualifications required to fill courses of both kinds. As the colonies became independent, each new government was resolved to have at least one university, and other forms of higher or further education possessed no

political appeal. For reasons of prestige, and for what they considered to be their career opportunities, for the sake of the salary which a graduate might hope to secure, most of the students wanted to be at a university and to get a degree, and they sometimes expressed their demands in the way that students have. So all the CASTS in Africa became the nuclei of new universities, and they developed degree courses in many subjects, including the arts and social sciences.

This process, the conversion of the CASTS into universities, was recommended in 1958 in East Africa by a working party from Britain, chaired by Dr. Lockwood, who at that time was Vice-Chancellor of the University of London, as well as being the Master of Birkbeck College. The change was generally endorsed by the ACCCAST and it was also endorsed by the important Ashby Commission on Higher Education in Nigeria; but both ACCCAST and Ashby hoped and believed that a 'second tier' of technical institutions would be created to cater for the ancillary skills.

The Ashby Commission was of outstanding importance. It was appointed by the federal government of Nigeria shortly before independence, in the period when there was a form of ministerial rule under a colonial governor. The members of the commission comprised three Nigerians, three Americans, and three British. The Americans were drawn from universities as diverse as Harvard, Illinois, and Nebraska, and they were able to contribute experience of universities which had much concern with ancillary skills and vocational courses. The British members also brought in a wide range of experience, for with the distinguished chairman, Master of Clare College, Cambridge, there were Dr. Gordon Watts, at that time the Principal of Brighton Technical College, and Dr. Lockwood who had led the working party in East Africa. As mentioned above, the Ashby Commission recommended that in addition to universities, technical institutions should be set up. They considered that in the decade 1960-70 seven such institutions should be sufficient. They estimated that a flow of 500 'professional engineers or technologists' per annum would be required: they considered that for each of these, five or six technicians ought to be made available, and they therefore expected the technical institutions to build up a flow of about 2,500 students per annum.

In 1958 the ACCCAST had gone out of existence, and its place was taken by the Council for Oversea Colleges of Arts, Science and Technology, commonly known as COCAST. The new name, and a revised constitution, were intended to enable the council to continue its work in independent countries, as the colonies, one after another, became independent. COCAST faced a formidable task, for the educational facilities catering for ancillary skills declined alarmingly: in some countries the use of the technical college as a nucleus for a university left a vacuum as regards education for ancillary skills. However, in the early sixties it was the policy of the British Government to grant aid for setting up or expanding such facilities, and in certain African countries where the independent governments saw the need, some new facilities were brought into existence to replace those which had disappeared when the CASTS were converted into universities. In London, with the establishment of a separate government department to administer aid, the COCAST was replaced by a new council bearing the title, Council for Technical Education and Training for Oversea Countries, commonly known as TETOC.

For the next episode of the story I shall quote from a thoughtful address delivered

by Dr. Colin Leys to the Fifth Commonwealth Education Conference last year at Canberra.

The formation of many new universities—eleven in the Commonwealth countries of Africa between 1960 and 1966—provided an opportunity to examine critically the foreign models on which earlier universities' foundations had been based, especially the model of London university established through the scheme of special relationship. This resulted both in the adoption of different models—for example, the model of the American land grant college as the basis for development at Nsukka in Nigeria—and in a much greater willingness to experiment and innovate . . . for instance the multi-level federal institution established in Malawi. . . . Meanwhile at the older universities there was a wholesale review of existing forms and structures with a view to seeing how far they should be adapted to meet the distinctive requirements of national development. . . . Nothing was sacrosanct; the specialist honours degree course, entrance levels based on the pattern of the British sixth form leaving certificate, the freedom of students to choose their subjects of study, the freedom of staff to pursue pure research, the wearing of gowns by students and the eating at high table by staff. There was a continuous debate on the balance that should be struck between professional and 'liberal' education, the standard of accommodation that should be provided for students, the merits and demerits of bonding students to work for their governments after graduation, the desirability of conforming to 'international' standards, and what such standards mean anyway. And there was a great deal of change. New subjects were introduced and there was a big expansion of the social sciences and professional faculties. A *periphery of sub-degree courses* became a normal feature of campus life, training people in nursing, journalism, librarianship, social work, pharmacy and so on . . . but . . . we confront a striking and disconcerting fact: there are relatively few issues among all those raised during the debate of the 1960's which appear to have been resolved. There are comparatively few areas of university life and practice where one can say that a particular way of doing things, or even an accepted set of guiding principles, has been generally established as right or best. (The italics are mine.)

Professor Leys then drew attention to the problem of an over-supply of graduates, already present in some African countries and shortly to be expected in others.

Those who believe that the balance between degree courses and ancillary skill training was upset by the events of 1955 to 1965 must be interested in identifying the best way of setting the balance right again. Those who pay heed to Professor Leys's warning about the over-supply of graduates will regard this problem as an urgent one. Is a university the best place at which to educate young people for ancillary skills? Professor Leys, in the passage which I quoted, spoke of 'a periphery of sub-degree courses, training people in nursing, journalism, librarianship, social work, pharmacy and so on'. Do students and staff like being on a periphery, and do they feel happy about being described as 'sub'? These matters received consideration at an Anglo-American conference at Ditchley Park in 1968. There was agreement that there had been 'over-investment in university development, while sub-professional training has been neglected comparatively to other fields'. But there was not agreement on the best way to remedy the imbalance. Some urged that 'training technicians within the university environment would increase their prestige and might in consequence stimulate the flow of trainees at a level vital to the economy', while others considered that 'the best university contribution might be the encouragement of, and co-operation with, existing technical institutions'.



I have little doubt myself that the presentation of these two options as alternatives is a false dichotomy. Both courses of action can be useful, and each may be the more appropriate in certain circumstances. But whatever solution is adopted, surely the technicians and ancillary skills must be as equal as others, and not be relegated to peripheries. If technician courses are provided by universities, then the senior member of that part of the staff should be as eligible as anyone to become the vice-chancellor.

The most successful polytechnics and technical institutes, in Africa no less than in Britain, are those which achieve complete integration with local industry. The typical student is not a full-timer on a student grant, with a big question as to the job he will do after graduation. No, the typical student comes on day-release or block-release, or for sandwich courses, and he is supported by wages paid by an employer on standard rates, so that his job when he is qualified presents no problem. As a matter of experience, these two types of students sometimes do not get on very well together in one organization.

Then there is the question of the governing body. For the health of a polytechnic a high degree of employer participation is essential. A substantial proportion of the governing body should be drawn from trade associations, nationalized corporations, and private companies. Such co-operation frequently leads to the provision of custom-built courses by the polytechnic for local industries and services, both private and official. These employer contacts are more difficult to achieve in a university.

In one African city there is a polytechnic which has about 2,000 students, fully integrated in local industry on a part-time-release basis. They therefore receive their practical training as they go along. Yet in a university in the same city, it proved so difficult to arrange practical experience for the students of mechanical engineering, that the university itself set up a little business to manufacture teaching materials for schools during the long vacation, so that the engineering students might have at least that opportunity of performing some practical work.

As the result of recent changes, Britain now has a binary system of tertiary education, consisting of forty-four universities and thirty polytechnics. Many courses at polytechnics (and indeed also at technical institutions which have not been designated as polytechnics) now lead to degrees awarded by the council for national academic awards. To quote Sir Eric Richardson, 'the establishment of this body is recognised by the technical colleges as the greatest single step forward in the whole history of technical education'. Well, if it is so tremendous in Britain, should not someone provide a council for academic awards to serve the African polytechnics and technical colleges? Perhaps this might be a remit to the Commonwealth secretariat.

At this point it seems appropriate to refer to the late Sir John Lockwood's commission of 1963 in Zambia. I have already mentioned Lockwood in connection with the East Africa working party of 1958 and with the Ashby Commission. By 1963 he had become Sir John Lockwood. He and his colleagues considered this question of conferring the *cachet* of a degree on technician studies, and proposed their own solution. The commission was smaller than the Ashby Commission, but it had an American member and it also included the principal of the South-East London Technical College, Mr. Hugh Warren, so that British experience in the training of

technicians was well represented. The commission, in its report, expressed the view that the two levels of training, technical level and university degree level, must be considered as one organic whole. As I have already said, I should have preferred not to speak of two levels: but with that proviso, the view that the production of graduates and of technicians must be considered as one organic whole, is the main point that I am trying to make in this lecture. The commission continued, that neither the university graduate nor the technician can adequately fulfil his proper functions without the existence of the other. They therefore sought to put the technical college (and similar institutions) into close organic relationship with the proposed university. At first sight it appeared to be an attractive proposition to take under the wing of the university *all* post-secondary education. This, however, would have resulted in much of what the commission called 'minor work'—e.g. typewriting, craft training, and domestic subjects—of considerable value but not readily associated with a university, being incorporated within it. It would also have meant a cumbersome hierarchy of control if all the many institutions doing this work were to be subject to the university senate in finance. So the commission reached the conclusion that it would be better to retain the division between the university, on the one hand, and 'further education', on the other hand, while seeking to effect the closest relation between them as equal partners. In pursuance of this, it was proposed that students in the technical colleges who successfully completed a course in technician studies should be awarded a degree by the university (note—by the university), to be called an associate degree. It appears that such arrangements are common in America and that the term associate degree is the standard American nomenclature. It was also proposed that the technical college should have a 'top', that is to say courses leading to full professional qualifications; and that there should be facilities for students to transfer from the technical college to the university and vice versa.

It will be very interesting to see whether the authorities who govern educational affairs in Africa take the view that the balance between universities and polytechnics needs to be adjusted. The need for such adjustment has been felt in other countries, and notably in Britain. In 1965 the Secretary of State for Education and Science, Mr. Anthony Crosland, rejected the recommendations of the Robbins Report on the creation of more universities, stated that there should be no more universities in Britain for about ten years, and announced the establishment of the thirty new-style polytechnics, to which I have referred. It does not follow that what is good for Britain is good for an African country, nor is it to be assumed that the African countries all have the same problems or the same needs, but there do seem to be comparable problems to be solved. I was interested to see that Mr. James Mark, in his address to the annual conference of tutors to Commonwealth and oversea teachers, at Hull last March, said that 'the great expansion of university education is, or should be, largely over'.

There are some countries where thought is already being given to the setting up of a grants committee to deal both with universities and with polytechnics—one body to advise the government on the allocation of moneys to all post-secondary institutions. This formula would appear to have much to commend it for rationalizing the division of resources between polytechnics and universities.

I do not know any country where, so far, joint conferences of polytechnic

principals and vice-chancellors are held; but it seems that such meetings might be found useful to both sides.

There are, however, some instances of co-operation between universities and polytechnics. For instance, a university is providing tuition in pedagogical method for the teaching staff of a polytechnic. There will perhaps be much need for co-operation in providing technical teaching staff for secondary schools. The incorporation of technical subjects in the secondary curriculum is clearly desirable in Africa, but it has scarcely begun. Technical subjects are much more expensive in equipment and staff than the traditional school subjects; but in a technological age the expenditure may be rewarding. Is it reasonable to suggest that the polytechnics should provide courses for the subject-content while the universities take the teachers-in-training for their pedagogical formation?

Management education and business studies, including the whole range of computer studies, are of increasing importance in both polytechnics and universities. Here is another sphere in which the closest consultation is desirable.

Another instance of co-operation is seen where a course for senior irrigation staff is being provided jointly by a university and a polytechnic. The men will spend a year at the university mainly on agronomy and a year at the polytechnic mainly on civil engineering and survey. Fortunately in this case both the institutions are well able to furnish the element of liberal studies which is now a normal component of such courses. You will appreciate that technical subjects, as they are taught today, must always be a humanistic study; they are concerned with 'a science used by humans, for humans, to conform with human habits, needs, desires and limitations'. In using those words I quote Mr. Hugh Warren, whose name I have previously mentioned as a member of the Lockwood Commission in Zambia.

In Africa it is generally recognized that, for the development of the countries, institutions of higher education should devote more effective attention to the problems of the rural areas. The instance, quoted above, of co-operation in setting up courses for irrigation staff is an appropriate example. But while in general the African universities have developed faculties of agriculture and veterinary science which give them a window opening towards the countryside, there is little complementary development in the polytechnics and technical institutes. In their defence it may be said that compared with the universities they have been few in numbers, and less adequately supplied with money. But one can think of so much that they might undertake.

Lord Lugard went neither to university nor to polytechnic. He went to the military academy at Sandhurst. He may have been the first head of an African state to be educated at Sandhurst, but by no means the last. In one African country, where the military establishment has recently been greatly increased, there was press comment recently, drawing attention to an over-supply of university graduates and to a serious shortage of technicians. The newspaper went on to suggest that the lack of technicians might be made good by education within the army. It may be that the background of military education, which some of the contemporary rulers of Africa share with Lord Lugard, may enable them to be completely objective in assessing the priorities between polytechnics and universities. Both have their roles to play, and those roles should be entirely complementary if the number of students in the

two types of institution, and the flow of funds to the two types of institution, are correctly in balance.

### *Résumé*

#### LES UNIVERSITÉS ET LES ÉCOLES POLYTECHNIQUES EN AFRIQUE

On a souvent regretté que les universités d'Afrique soient insuffisamment intégrées à la vie des communautés environnantes, bien qu'elles soient parvenues à leur but, c'est-à-dire à offrir des diplômes africains de valeur égale à ceux des universités britanniques, à former des leaders pour les pays indépendants et à promouvoir une formation assez avancée dans des disciplines telles que la médecine, l'agriculture et l'enseignement. Mais les universités doivent aussi donner des cours appropriés pour des études professionnelles telles que les requièrent l'ingénierie, le management et l'administration qui exigent tout des assistants ayant des spécialités techniques d'un haut niveau sur le plan de la discipline considérée.

Le Conseil Inter-Université, établi en Grande Bretagne pour servir de lien entre les universités britanniques et les nouvelles universités des anciennes colonies, a désigné en 1947 une délégation chargée d'étudier la question des institutions techniques. Il recommandait l'établissement de collèges régionaux complets, chargés de fonctions comparables à celles des écoles polytechniques anglaises. Ces collèges des arts, des sciences et de la technologie (connus sous le nom de CASTS) devaient procurer des spécialistes que les universités n'avaient pas prévu de former; mais entre 1955 et 1962, ils entreprirent de créer des cours pour l'obtention de diplômes universitaires, portant leurs efforts sur ceci plutôt que sur la formation de spécialistes des techniques. Ainsi, les CASTS en Afrique devient le noyau de nouvelles universités; il s'ensuivit que les facilités offertes pour la formation de techniciens déclinerent de façon alarmante; cependant, dans certains pays d'Afrique, lorsque les gouvernements indépendants en sentirent le besoin, de nouveaux organismes pour les formations techniques furent mis en place.

Un des problèmes des années 1960, qui reste encore actuel, est celui de la surabondance de diplômés. Bien qu'aucune disposition positive n'ait été prise pour remédier à ce déséquilibre, il n'y a aucun doute que la formation de techniciens devrait être considérée comme aussi importante que celle des spécialistes des arts et sciences des universités. Les instituts techniques et polytechniques ayant le plus de succès, en Afrique comme en Grande-Bretagne, sont ceux qui promeuvent une intégration complète avec l'industrie locale. Le besoin d'un ajustement de l'équilibre entre les universités et les écoles polytechniques a été ressenti dans de nombreux pays et il serait intéressant de connaître les solutions apportées à l'extérieur de l'Afrique. L'établissement d'un comité unique d'allocations chargé d'informer le gouvernement sur les subventions accordées à toutes les institutions post-secondaires semblerait être de rigueur. Des conférences communes des directeurs d'écoles polytechniques et des vice-chanceliers d'universités pourraient aussi être prévues; des consultations plus étroites pour choisir les sujets de cours seraient également désirables.

Dans un pays d'Afrique où un pouvoir militaire autoritaire a été établi récemment, un commentaire de presse a fait état de la surabondance de diplômés de l'Université et d'un grave manque de techniciens. On a suggéré que le manque de techniciens pourrait être compensé par une formation au sein de l'armée. Il se peut que les fondements de la formation militaire — et quelques-unes des autorités contemporaines sont d'accord sur ce point avec Lord Lugard — soient susceptibles de combler ces lacunes pour établir un équilibre entre les écoles polytechniques et les universités. Toutes deux ont leur rôle à jouer et ces rôles pourraient être vraiment complémentaires si le nombre d'étudiants au sein des deux types d'institutions et l'attribution des fonds étaient convenablement équilibrés.