

Final report

Conference on education and scientific and technical training in relation to development in Africa

Nairobi

16-27 July 1968

Organization
of African Unity

Unesco

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INTRODUCTION

1. The Conference on Education and Scientific and Technical Training in Relation to Development in Africa was held in Nairobi (Kenya) from 16 to 27 July 1968, in accordance with resolution 1.11 adopted by the General Conference of Unesco at its fourteenth session.

2. The Conference was jointly organized and convened by the Director-General of Unesco and the Administrative Secretary-General of the Organization of African Unity, in co-operation with the United Nations Economic Commission for Africa.

3. In accordance with the decisions of the competent organs of Unesco and of the Organization of African Unity, the following countries were invited to send delegates: Algeria, Botswana, Burundi, Cameroon, Central African Republic Chad, Congo (Brazzaville), Congo (Democratic Republic of), Dahomey, Ethiopia, Gabon, Gambia, Ghana, Guinea, Ivory Coast, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Niger, Nigeria Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Tunisia, Uganda, United Arab Republic, Upper Volta, Zambia.

4. The United Nations, Specialized Agencies of the United Nations and the International Atomic Energy Agency were invited to send observers. International or regional intergovernmental organizations having Member States or programmes in Africa, international non-governmental organizations having consultative arrangements with Unesco and private foundations working in Africa were also invited to send observers, in accordance with a list approved by the Executive Board of Unesco at its 77th session.

5. The Conference was attended by representatives of 35 governments as participants, 12 governments as observers, 10 United Nations organizations, 5 intergovernmental organizations and 21 international non-governmental organizations.

6. The terms of reference of the Conference were defined by the General Conference of Unesco in the resolution cited above as being:

(i) to consider problems relating to education

and scientific and technical training in Africa;

(ii) to review a ten-year report on Unesco's activities in its African Member States, taking into account the conclusions of the conferences held in Addis Ababa, Tananarive, Abidjan and Lagos;

(iii) to study the future rôle of Unesco in Africa, including the possibility of setting up or developing regional offices for education, science and culture in Africa.

7. The Conference held its first meeting on 16 July 1968. It received from H.E. Mr. Lynden B. Johnson, President of the United States of America, a message of good wishes for the success of its work.

The Conference was solemnly opened by H. E. The Hon. Daniel Arap Moi, Vice-President of the Republic of Kenya, on 22 July 1968 at the City Hall, Nairobi.

8. The Conference elected the following officers:

President

The Hon. Dr. J. G. Kiano, M. P. (Kenya)

Vice-Presidents

H. E. Mr. Kithima (Democratic Republic of the Congo)

H. E. Mr. Akalework Habte Wold (Ethiopia)

H. E. Dr. Mojabon Dowuona (Ghana)

H. E. Mr. Amadou Mahtar M'Bow (Senegal)

Rapporteur-General

Mr. S. J. Cookey (Nigeria)

COMMISSION I

Chairman

H. E. Mr. Z. Mongo-Soo (Cameroon)

Vice-Chairmen

H. E. Dr. Sid Ahmed Abdelhadi (Sudan)

Mr. A. C. Mwingira (Tanzania)

Rapporteur

Mr. B. Hammiche (Algeria)

COMMISSION II

Chairman

Mr. C. H. Thornicroft (Zambia)

Vice-Chairmen

Mr. G. Traore (Mali)

H. E. Dr. Augustus A. Caine (Liberia)

Rapporteur

H. E. Mr. M. F. N. Agblemagnon (Togo)

9. On adopting its agenda, the Conference decided to examine in two commissions during the first week the several points under item 8: Particular aspects of problems relating to education

and scientific and technical training. Plenary sessions in the following week (22-27 July) were devoted to items 7 and 9: Review of progress of education and scientific and technical training in relation to development in Africa during the period 1958-1967; and the future rôle of Unesco in education and scientific and technical training in Africa, including the possibility of setting up or developing regional offices for education, science and culture. The reports of the Commissions were noted with general approval and the resulting resolutions adopted.

10. At the closing session the Conference adopted its report.

I. TEN YEARS OF EDUCATIONAL DEVELOPMENT IN AFRICA

1. The Conference on Education and Scientific and Technical Training in Relation to Development in Africa provided a valuable opportunity to take stock of the results achieved in the field of educational development in African countries over a ten-year period. Such a conference, taking place as it did after a series of conferences of African Ministers of Education convened at Addis Ababa (1961), Paris (1962) and Abidjan (1964), the Tananarive Conference on the Development of Higher Education in Africa (1962), and the Lagos Conference on Scientific Research and Training in Africa (1964) had nevertheless special characteristics. It came at a time when data relating to the first five-year period of implementation of the Addis Ababa Plan, known as the short-term plan, became available. It also provided the first opportunity since the Lagos Conference to relate problems arising from the requirements of scientific and technological development in Africa to problems of educational development in the narrower sense of the term. The Conference, therefore, can be considered as an occasion for African governments to review the progress achieved in the last ten years, the problems and lessons emerging from the analysis of achievements and failures - as well as new problems identified as a result of changed conditions - steps to be taken in order to achieve future progress, and the various aspects of Unesco's continued rôle in assisting future efforts of African governments, in close collaboration with the Organization of African Unity, towards educational development.

MAIN ACHIEVEMENTS

2. A review of the kind indicated above gives one cause for considerable satisfaction. There is no doubt that the last ten years witnessed a series of major developments which account for the remarkable expansion and progress achieved in the educational field. One factor was of course the

accession of a large number of African countries to independence. Naturally this posed educational problems in new terms, numerically and qualitatively, and gave rise to a genuine thirst for education in African nations which was met by a corresponding will of governments to gratify the need. The second factor was the sense of international solidarity and the framework of international co-operation which made available a substantial, although still inadequate, amount of external resources for the purpose of educational development in Africa. At the same time, inter-African co-operation, which found its political expression in the establishment of the Organization of African Unity, was considerably strengthened. A third was that at the same time education was recognized as a productive investment and as a major factor of economic, social and technological development. This last factor explains perhaps why educational development was almost immediately equated with educational planning, itself closely related to overall economic and social planning. This notion was expounded in a detailed manner at the Addis Ababa Conference, and accepted then by the African governments represented at this Conference. It gave rise to a series of national education plans, often established with the technical advice of Unesco experts in educational planning and related to studies on and plans for economic development prepared by organs of the United Nations, such as the Economic Commission for Africa, the International Bank and manpower surveys carried out with the assistance of ILO experts.

3. In a large number of African countries educational planning units have been set up, generally within the framework of education ministries.

4. Both for the sake of spreading education as such and in view of its contribution to development, governments devoted a large and generally growing part of their budget and national income to expenditures in the educational field. At the end of the ten-year period under review it can be stated that few African countries devoted less than 3% of their national income to education with a

substantial group of governments spending 4% or even 5% for this purpose and some countries as much as 7%; these allocations corresponded to percentages of 15%, 20%, 25% and in a few cases more than 30% of the national budgets.

5. Financial sacrifices made by African governments complemented by such external resources, bilateral or multilateral, as were available, explain why such remarkable expansion was achieved in such a short span of time. Secondary education, according to the priority recommended by the Addis Ababa Conference, benefited most from this effort, with an enrolment increase of 112%; primary education, however, also made considerable strides in absolute terms with a net increase of 673, 800 pupils enrolled. Higher education exceeded the minimum increase recommended in the Addis Ababa Plan - in 1961 facilities for higher education were provided in only a very small number of African countries, whereas today some 35 university institutions are in existence. Teacher-training facilities expanded considerably, particularly with respect to the training of secondary school teachers where they were very scarce before. The number of qualified teachers has considerably increased in primary schools with a proportion of 50% instead of 45% in 1961.

6. The Africanization of teaching staff is almost general in primary schools and has made a good start in secondary education as a result of the establishment of advanced teacher-training colleges and, on a more limited scale, in university education where the necessary Africanization of curricula was also beginning to take place.

7. Governments also began to take the first steps towards developing policies for the planning of both scientific research and the training of scientific personnel.

SHORTCOMINGS AND PROBLEMS

8. It appears, however, that a number of difficulties and shortcomings prevent one from indulging in complacency when assessing the present educational situation in Africa.

9. The Addis Ababa Plan, not only provided guidelines and established priorities, such as the one assigned to secondary education, but also set a series of quantitative targets for the short-term plan (1961-1966) and for the long-term plan ending in 1980, including enrolment ratios and pupil/teacher ratios for the various levels of education.

10. It should be remembered that the targets thus established were meant as a set of reference data, to be used as a series of goals assigned to the combined efforts of African countries at the continental level, and as a tool for the measurement of regional progress. In no way were they to be considered as a plan, nor did they apply to any one country in particular. The fact remains however that if one adds the adjusted figures -

which measure the results achieved by the countries participating in the Addis Ababa Plan on the basis of these targets - one finds that the continent as a whole failed to reach the goals except in the field of higher education. In secondary education, in 1965-1966, there was a shortfall of 272, 000 pupils on the basis of the proportion of secondary school pupils to primary school enrolment. If this proportion had been related to enrolment targets in primary education, the shortfall would have been 387, 000. Much more serious was the situation at the primary level where enrolment in 1965-1966 was 1.1 million short of the total foreseen and where it appeared that unless the trend was reversed, the primary schools of Africa would be in danger of losing the battle against illiteracy.

11. The causes of the present situation are many and varied. The first one of course is the inadequacy of financial resources in relation to the needs. The school-age population, which in fact had been underestimated at the time of the Addis Ababa Plan, has considerably increased as a result of rapid population growth. Unfortunately many African governments have almost reached the limit of their financial effort. Although, as already mentioned, they have devoted a considerable percentage of their budget to educational development, the sums allocated were inadequate because of their limited budgetary resources. This situation is itself linked to a world economic pattern in which terms of trade are unfavourable to countries whose economies are based on the production of raw materials, the prices of which have been going down while the prices of manufactured goods have been soaring up. The amount of external aid made available to Africa, which was somewhat below expectations, did not in any way offset this factor.

12. But financial stringency is by no means the only cause. The unsatisfactory output of educational systems is also to be blamed. For instance, the enormous wastage at the primary school level is measured by the fact that for the continent as a whole, only 32% of pupils enrolled in the first year complete their sixth year.

13. This situation of course makes for excessive unit costs which result in a wastage of already too scarce financial resources.

14. Although this phenomenon is largely due to social and economic factors, certain educational causes can be identified.

15. One is the lack of educational facilities and of schools which, combined with a shortage of teachers, results in overcrowded classes. A second cause is the use of many inadequately trained teachers, particularly at the primary level, itself the result of rapid school expansion. A third is the unsuitability of educational systems inherited from the former colonial powers and whose curricula, therefore, are ill-adapted to the economic, social and cultural requirements of African

countries and to the psychology of the African peoples.

16. Another serious problem from the point of view of the economic development of Africa is the shortage of scientific and technological personnel at all levels. This is due not only to the inadequacy of scientific research and of training facilities in Africa, but also to the fact that in higher education a greater proportion of students are enrolled in courses other than scientific ones, and often less than 10% of the enrolment is to be found in agricultural courses. This is partly due to the faulty teaching of scientific subjects at the secondary level which fails to attract sufficient numbers of students to scientific studies at the higher level.

This points both to the inadequate contents of curricula and to unsatisfactory educational planning.

17. Another sign of educational development being insufficiently related to economic and social planning is that, at all levels of education, school leavers as well as students going out of universities are often unemployed.

18. It therefore appears that while there is an obvious need for seeking additional financial resources for the purposes of educational development, African countries are faced with the problem of rethinking the organization and content of their educational systems in relation to their economic and social conditions and requirements.

II. STEPS TO BE TAKEN FOR ACHIEVING FUTURE PROGRESS IN EDUCATIONAL DEVELOPMENT

19. A first question arises with respect to the implementation of the Addis Ababa Plan. Since it appears so difficult for many countries, and no easy task for the continent as a whole, to achieve the targets established in 1961, should they be kept at all, or should they be revised? To answer this question it should be remembered, as stated above, that the Addis Ababa Plan was in fact not a plan, but a set of data intended to provide goals and directions, and a methodological instrument for the assessment of the results achieved at the regional level. Nor could it be related to economic plans or to manpower surveys which in most cases did not exist. It provided orders of magnitude of an indicative nature to the continent as a whole. The results achieved in the first five years of implementation show clearly that both from the point of view of giving indications and directions and providing stimulus to educational development, the Addis Ababa Plan has more than served its purpose. As a methodological instrument for measuring the cumulative effect of national efforts, it also seems to have proved its value. While the 100% enrolment target in primary education may seem difficult to achieve for certain countries, it still remains a desirable goal in so far as it is the statistical expression of the right to education which no government would wish or could afford to ignore. It seems therefore that the Addis Ababa Plan should be kept as a general framework.

20. One should also take into account the fact that progress is not static, that history points to dynamic forces at work in development, through which a much more rapid pace of growth can be achieved in the subsequent period both as a result of possible changes in the economic and financial situation and of experience gained in the first period as well as of improved methods and of increased determination on the part of the governments.

21. It seems that although the priority given to secondary education in the Addis Ababa Plan should be maintained, due importance should also be attached to primary education. While secondary

education and higher education alike, continue to be of considerable importance for training the cadres of economic development, primary education must be expanded in order to respond to the demand of the African people for more education. This is an inescapable political fact as well as a requirement for educational expansion at subsequent levels.

22. However, it may be that the Addis Ababa targets will have to be revised for the next five-year period when new data have been collected for the purpose of this revision. In this connexion it will be useful that Unesco, in co-operation with ECA and OAU, undertake the necessary studies and make the results available to governments. Furthermore, in so far as the Addis Ababa Plan is not a plan but a set of regional data, it will now be for governments to establish their own targets, using the hypothesis and methodology on which the Addis Ababa Plan was based. It will also be incumbent on them to establish their own priorities in the light of their economic and social requirements and conditions and their respective educational priorities.

EDUCATIONAL PLANNING IN RELATION TO OVERALL PLANNING

23. While there is an obvious need for improving the methodology of educational planning, which is still in its incipient stage, and therefore to intensify, among other things, efforts for the training of educational planners, the main needs seem to be for better integration of educational planning with overall economic and social planning of scientific personnel training and of scientific research policies. This implies increased co-operation between the ministries concerned, better integration of education and of the production sector, and the participation, as required, of scientists in developing scientific and technical education programmes. It also implies that educational development should be viewed not only

in terms of manpower requirements, as has been done so far, but also in terms of employment opportunities if school and university leavers are to find their place in productive activities and in society. Lastly, it requires that steps taken for the expansion and improvement of educational facilities be supplemented by the necessary measures to create sufficiently attractive conditions of employment, improved living conditions, particularly in rural areas, and economic, social and employment patterns designed to accommodate school and university leavers.

INCREASED EMPHASIS ON QUALITY

24. Another way of achieving better results in educational development and of relating it more closely to economic and social development purposes, is to aim not only at quantitative expansion, but also at increased quality which appears so essential in order to make the best of limited resources.

25. In this connexion, the reduction of unit costs, itself calling for a reduction of excessive school wastage, points to the need for studies on this subject. They should start with a precise definition of wastage - a phenomenon ascribable to many complex social and economic factors as well as to educational ones. Such studies should cover both causes and remedies.

26. The first important series of steps to be taken to improve the quality of educational systems relate to teacher training. While a quantitative effort is still needed at the secondary level to reduce the measure of dependence on foreign staff, and at the primary level to remedy the present situation of overcrowded classes, qualitative progress should be the main concern in teacher and in-service teacher training. This applies particularly to primary education where the rapid increase in enrolment, despite the improved ratio of qualified to non-qualified teachers, will make it necessary for many governments for many years to come to employ teachers who are not fully qualified. The solution therefore lies with continuous programmes of upgrading and of in-service training which will gradually bring teachers and instructors recruited at a modest level of general and professional preparation up to the status of qualified teachers.

27. But at least as important appears to be a reorientation and reform of the content of education.

28. Education should be viewed not only as a means of providing instruction but also as a preparation for life and for the future responsibilities to be assumed by each individual as a producer and as a citizen.

29. At the primary educational level, it is clear that in most cases primary education systems, inherited as they are from those of the former colonial powers, are not consonant with the economic requirements of the countries concerned

or with the environment of the child. In so far as most African countries still have predominantly agricultural economies, and as the greater part of the population still lives in rural areas, there appears to be a strong case for ruralizing the content of primary school education, a particular aspect of the general desirability of relating education to the environment. Thus primary education will not act as an uprooting factor and a force of social disintegration. This means that the contents of primary education should have an agricultural bias, not to be mistaken for agricultural or technical education as such, and should inculcate in pupils a respect for manual work. It goes without saying, however, that primary education in rural areas should provide the same basic knowledge and promote the same values as primary schools in urban areas.

30. The change in the orientation and content of primary "ruralization" of primary education, in which many countries are already engaged, often means a shorter cycle, in order to spread education more evenly in less well provided areas. In this situation - but also in the case of complete schools - there is a need for post-primary education because secondary schools, which offer a limited number of places through a process of selection, cannot accommodate all primary school leavers. This group is not trained for employment, since primary education cannot be really either agricultural or vocational. Furthermore, there is a gap between the school leaving age and the age at which they can be employed. Post-primary education with an agricultural or vocational bias, as well as apprenticeship schemes, should fill this gap. Adult education schemes are also necessary to make parents literate and to make them work towards improved living conditions, and to understand better the respective rôles of school and community. An integrated effort of educational development, itself geared to rural development, is needed to make the rural primary school effective. Nothing illustrates better the fact that the social objectives assigned to education, its orientation, and its content, cannot be separated from school organization and structure.

31. An aspect related to the reform of educational content at the primary level is the choice of languages. At present, in many African countries, it appears that teaching in languages other than the mother tongue acts as the content of education does, as an uprooting psychological factor and makes learning more difficult for the child, with resulting lower attainments.

32. It is therefore desirable that African languages and, in so far as possible, the mother tongue, be used in primary education wherever feasible. There are, however, certain countries of considerable linguistic diversity where the use of another language is justified for the sake of strengthening national unity. But, in such cases, studies should be undertaken to determine the

optimum age for starting the teaching of a non-African second language, which should be taught as a foreign language with the help of modern teaching aids. Thus, the use of African languages as vehicular languages, which is imperative for pedagogical as well as for cultural reasons, can be reconciled with the need for teaching English and French as the two main languages of wide communication used in Africa.

33. At the secondary school level, the revision of curricula should achieve several purposes. First, in general education, much more attention should be paid to science teaching and to science courses and new methods should be used in science teaching. Two different aspects should be considered. All students should receive a basic knowledge of mathematics and science which will make it possible for him or her to understand and fit in with an increasingly scientific world. From this point of view, the first cycle of the secondary school curricula should provide adequate instruction in mathematics and general science giving proper attention to observations and deductions, the study of environment and the application of science to everyday technology. A proper basis for scientific education should be provided at the primary level. It is also possible at this stage to teach basic notions of technology.

34. In the second cycle of secondary school, the main purpose of scientific teaching is to attract a greater number of students to higher level scientific studies. Science teaching should acquaint pupils with the situation faced by practising scientists. For this purpose, it should resort to applied sciences and technological experiments and will require, therefore, not only well-trained teachers in sufficient numbers but also laboratory technicians to assist them, and laboratory apparatus which should be produced locally in instrumentation centres. Programmed instruction and audio-visual aids should be used as much as possible.

35. Secondary education should also contribute to the training of the pupil as a future citizen and equip him with moral and cultural values as well as with desirable social attitudes. It should provide artistic and aesthetic education, but here again, it should be as closely related as possible to the cultural environment of the child. From this point of view, the teaching of history and geography should be revised to improve the knowledge of African history, culture, and economic and social problems.

INCREASING THE SCIENTIFIC POTENTIAL OF AFRICA

36. Providing Africa with the scientific personnel needed for its economic and technological development requires a series of steps to which African countries should pay the greatest attention.

37. One is that the desirable percentage of

secondary school leavers be attracted to scientific courses at the higher education level. This is essential in order to reach by 1980 the figure of 200 scientists and science teachers per million inhabitants recommended at Lagos, and to train every year the necessary minimum of 10 to 15 engineers per million inhabitants in Middle Africa. One should note with concern the fact that the recommended shift in secondary and higher education enrolment from general to scientific and technical education failed to materialize and that indeed the reverse trend was observed. Redressing this situation requires improved science teaching in secondary education, as well as providing more attractive conditions of employment to graduates in science and technology. This applies particularly to science and technical education teachers who have to be trained in increased numbers as the first condition for any substantial increase in the training of scientific and technical personnel.

38. It is of course necessary to provide for expanded facilities for scientific training and research.

39. In this connexion, a particularly important aspect is the proposed establishment of a new type of institution of advanced training and research or "centres of excellence", the creation of which has been decided by the Organization of African Unity in eight selected fields: geology, geophysics and mineralogy; climatology and meteorology; hydrology; human medicine (preventive and social medicine) and pharmacology (African medicinal plants); food science and technology; veterinary medicine; applied science and engineering (previously physics and mathematics including electronics and research in solar energy); marine science and technology (previously oceanography, marine biology and fisheries).

40. However, it also appears necessary that such centres also cover the fundamental sciences, the social sciences, and documentation. It appears that the OAU should be entrusted with the responsibility of implementing this decision in consultation with the Member States and the international organizations concerned, taking account of existing facilities and of the natural resources potential within Member States, as well as of the experience available, in deciding on the creation of those centres. It is hoped that the establishment of such institutions, by training and attracting highly qualified African scientists and engineers and by conducting research at the highest level, will contribute towards solving the scientific problems related to the economic development of Africa and will also reduce the brain drain.

41. Finally, a last aspect of developing the scientific potential of Africa is the need for co-ordinating research at government level and of achieving closer links between science training and research in higher education institutions and in the productive sector. Close co-operation between universities and governments is also

necessary so that their activities in the field of scientific training and research can make a full contribution to development.

IMPROVED UTILIZATION OF AVAILABLE RESOURCES

42. Improved quality in education and the development of new types of institutions will not be sufficient to increase the productive capacity of the output of African educational systems. An overall effort for utilizing more intensively and more rationally all resources both in teaching staff and in educational facilities, should be made. Increased and improved teacher training and in-service facilities have already been mentioned. The use of foreign volunteers in spite of certain shortcomings may be considered. Economical educational patterns such as multiple-class teaching schemes or one-teacher schools can be used as well as double shifts with increased salaries, and all devices capable of contributing to a better utilization of the teaching staff available. The use of new educational technology, particularly audio-visual aids including educational radio and television and programmed instruction will go a long way to remedy the inadequacies in training and to improve the efficiency of qualified teachers. However, studies on the efficiency of educational technology appear necessary. Other conditions should also be met for more rational utilization of the resources available. One is to produce locally such scientific or teaching equipment as can be produced in Africa. National and regional centres should be set up for this purpose and personnel should be trained in the production, repair and maintenance of such equipment. In addition, educational facilities such as schools and laboratories could often be used jointly by several schools so as to be put to full use. As for secondary school buildings, their construction may be undertaken by local communities through self-help programmes.

INTER-AFRICAN CO-COPERATION

43. The best utilization of resources available, which should be sought at the national level, also requires intensified inter-African co-operation. This can be achieved through the joint use of institutions by several African countries. This applies

to laboratories, equipment production centres, universities and regional centres of higher education, and to centres for advanced studies whose creation is now being contemplated. Collaboration between universities and higher education institutions is also called for in order to cover the full range of disciplines without duplication, and between regional and sub-regional organs of co-operation in the field of higher education. The grouping of higher institutes of scientific training within the framework of universities would facilitate inter-African co-operation in the field of science.

44. Documentation centres and the exchange of educational information on national experiences will also contribute towards the best utilization of educational resources. The joint production of textbooks wherever possible will serve the same purpose.

EXTERNAL RESOURCES

45. Whatever steps, however, may be taken by African governments to make greater financial resources available to education and to improve the output of the educational systems, it is clear that the desired objectives and targets will not be met unless increased external resources are also available.

46. From this point of view, one can note the proposal made by the OAU that an Educational Revolving Fund be established under the aegis of the OAU and the ADB, in association with Unesco, to provide low interest loans. This would be part of an overall effort which appears to be required for obtaining for African countries increased external resources, better terms of loans, and more generous assistance in various forms. That African countries are becoming increasingly aware of the need to achieve self-reliance as early as possible and to depend primarily on their own efforts should not lead the richer countries to the conclusion that their own contribution to African development should be decreased. On the contrary, the advances already made and the will of governments to devote the necessary resources to further progress, clearly indicate that external assistance, adjusted to the plans and objectives of the African countries, at no time stood a better chance of achieving fruitful results.

III. THE FUTURE ROLE OF UNESCO IN EDUCATION AND SCIENTIFIC AND TECHNICAL TRAINING IN AFRICA, INCLUDING THE POSSIBILITY OF SETTING UP OR DEVELOPING REGIONAL OFFICES FOR EDUCATION, SCIENCE AND CULTURE

47. This problem was considered during a consultation with the Director-General and with the Heads of Delegations. A brief review was made of the machinery of Unesco and statements were made concerning Chiefs of Mission and Regional Centres.

CHIEFS OF MISSION

48. The Director-General emphasized the useful rôle that Chiefs of Mission can play in implementing decisions relating to projects in Africa. They form an important link between Unesco and the Member States, not only interpreting Unesco's plans to Member States but also helping Member States in their planning of programmes and in the preparation of their requests for UNDP aid. Of the 16 Chiefs of Mission which Unesco has throughout the world, 10 are in Africa.

REGIONAL CENTRES

49. The Director-General made reference to the report of the Special Committee which evaluated the Regional Centres in Africa. In his view, the report of this Committee was on the whole fair and he was inclined to accept the recommendations of the Committee if they were generally endorsed by the Conference.

50. He felt that it was time that Unesco had a representative in Addis Ababa for the liaison with the United Nations Economic Commission for Africa and the Organization for African Unity in order to avoid wastage due to duplication or dispersion of efforts. Member States were invited to send their views in writing if they wished to do so, both on Regional Centres generally and on the proposed Regional Representation in Africa. In connexion with the opening of a Regional Office in Africa, however, he pointed out that other regions like Asia and Latin America might want similar offices and that this could lead to high administrative and other costs which the Organization may not afford.

51. Referring to one of the resolutions which asked that Unesco should amend the Draft Programme and Budget for 1969-1970 in order to accommodate the recommendations made by the present Conference, the Director-General pointed out that it was too late for him to make any alterations to the draft programme and budget which had already been studied and recommended by the Executive Board of Unesco, but that he would bring the recommendations of the Conference to the notice of the General Conference of Unesco which opens in October, when it discusses the draft programme.

52. During the discussion that followed the points indicated below emerged:

A. Regional Centres

53. There was general support for Regional Centres in Africa; it was felt that on the whole these centres were doing useful work although they suffered from certain handicaps which limited their value to African countries. The following suggestions were made to improve the effectiveness of the Centres:

(i) Need to define functions: it was felt that some Centres were not quite clear about what they were supposed to do and that it was better to limit the functions of a particular centre within a well-defined area.

(ii) The centres which the Evaluation Commission recommends to strengthen should be adequately staffed. The situation was that some of the Centres were so ill-staffed that their impact was not felt in countries other than the one in which they were located.

(iii) Need for publicity: one reason, perhaps, why the Centres were not effectively used was that most Member States were not aware of their existence. It was suggested, therefore, that some publicity should be made to ensure that Member States are aware of the existence and the functions of the various Centres.

(iv) Mobile teams: because of the vast distances in Africa and poor communications, it was suggested that mobile teams could be set up whose job it would be to visit Member States with a view to stimulating their increased participation in the activities of the various Centres.

(v) National Units: several Member States agreed with the suggestion that, in order to derive the greatest benefit from the existence of Regional Centres, corresponding national units could be set up in each country. These units could do for each country what the regional units try to do for a regional area and there should be co-operation between these units and the relevant Centres.

(vi) Need for economy: it was pointed out by several speakers that one of the aims of Centres like the Khartoum Centre for School Buildings and the Yaoundé Centre for Book Production was to advise on ways and means of producing buildings and books cheaply and thereby cutting down the cost of education.

(vii) Evaluation: there was a general agreement that there should be a permanent machinery to review periodically the work of the Centres and that their co-operation with the international and regional organizations active in this field should also come under review by way of an appropriate co-ordinating machinery.

(viii) Avoidance of duplication: it was felt that since there were many other agencies besides Unesco interested in giving aid to African countries, it was necessary to co-ordinate all international or bilateral aids and to examine the various projects to make sure that they were not too ambitious and that they were not being duplicated.

(ix) Need to make fullest use of existing facilities: some members deplored the fact that as a rule African countries were reluctant to make use of the existing institutions in Africa. Some institutions are under-used while in countries not far from them there is a lack of similar institutions. It was agreed that Member States which have facilities should make information about them available to other Member States. For Unesco Centres to be truly regional, it is important that they have a special status and that efforts be made by Member States to remove the political stumbling block which makes it difficult for nationals of certain States to study in Centres located in other States. Each country should be free to send its nationals to participate in the work of any Centre, no matter where located.

B. Unesco Regional Office

54. The idea of a Unesco Regional Office was generally welcomed. It was felt, however, that the details for setting up such an Office should be worked out later.

C. Chiefs of Mission

55. Most Heads of Delegations agreed that the Chiefs of Mission have a very important rôle to play and showed appreciation of their work. During the discussion the following points emerged:

(i) Chiefs of Mission should travel more than they do at present. If it is not possible to provide Chiefs of Mission for all the States, the existing ones should try to cover as many States as possible.

(ii) Chiefs of Mission should not think of themselves as ambassadors who must serve protocol at all times, but should feel that their first duty is to offer assistance and even, if need be, constructive criticism to the governments of the countries they serve.

(iii) Chiefs of Mission should be supported by adequate staff, particularly where a Chief of Mission is also Director of a Regional Centre.

D. Need for co-operation

56. The effectiveness of Unesco Regional Centres can be enhanced if there is full co-operation between Unesco and the Economic Commission for Africa and the Organization of African Unity. Such co-operation should lead to a better understanding of African problems, to more effective planning and to the avoidance of duplication.

E. Experts

57. Brief mention was made of the work of experts. Two points were raised:

(i) The process of recruiting experts was a slow one; every effort should be made to quicken the process so that Member States do not have to wait too long to have their requests met.

(ii) It was suggested that consideration should be given to the possibility of getting more experts from African countries, one of the advantages in this being that African experts would be more familiar with the background of most Member States in Africa than experts from outside Africa. The need for non-African experts to understand the African situation cuts down the amount of service they can give, as some months would be needed after their arrival to get their bearing.

RESOLUTIONS

RESOLUTION I: INTERNATIONAL CO-OPERATION FOR THE DEVELOPMENT OF EDUCATION IN AFRICA

The Conference,

1. Considering that the development of education and the intensified training of African scientific and technical personnel are decisive factors for Africa's economic and social development,
2. Considering that despite the efforts and financial sacrifices made since the Addis Ababa Conference (1961) by the African States to develop their educational systems, and despite the satisfactory progress achieved, the results still fall far short of those expected at the end of the first half of the Development Decade launched by the United Nations in 1960.
3. Noting that the inadequacy of the results recorded during that period is mainly due to the disproportion between the efforts required and the resources available to the African States for their economic and social development,
4. Noting that the contribution of the developed countries shows a downward trend in relation to their own gross national product,
5. Considering that the expenditures on education of most African States represent a very high proportion of their national budgets and incomes and that in present circumstances it would be difficult to exceed those percentages without endangering the entire economic and social development of those countries,
6. Considering therefore, that the indispensable development of education in Africa is impossible without far more external financial assistance than in the past, combined with the efforts of the African countries,
7. Noting the intention of the General Assembly of the United Nations to proclaim 1970 International Education Year,
8. Invites the African governments to continue their own efforts to develop their educational systems and to ensure that the available funds from every source are used rationally, in particular by improving, through appropriate reforms, the quality and efficiency of the education in their countries,
9. Launches a solemn appeal to the spirit of international fellowship for a substantial increase by the developed countries in the amount of their aid to the African countries, particularly for educational development,
10. Requests Unesco to intercede on behalf of the Conference with the developed countries and the international organizations providing financial assistance, drawing their attention to the fact that a great many African States are liable to reach a dead end if they are not assured of more substantial external aid,

11. Invites Unesco in particular to urge the United Nations Development Programme and other international financing bodies, with special reference to the International Bank for Reconstruction and Development, to make the criteria, conditions and procedure for the provision of their aid to the African States more flexible.

RESOLUTION II: REGIONAL PRIORITIES AND OBJECTIVES

The Conference,

1. Considering that the Addis Ababa short-term targets for education have not in general been achieved,
2. Considering that this delay is due not only to the inadequacy of financial resources but also, in large measure, to such difficulties as drop-outs, lack of flexibility in the curricula and the shortage of qualified teachers, particularly in the scientific and technical fields,
3. Considering that every delay in resolving these problems merely accentuates the dispersal of the human and material resources,
4. Considering further that the necessary information for a possible overall revision of the Addis Ababa targets is lacking,
5. Considering lastly that there is a serious shortage of technical and scientific manpower which is seriously impeding the economic development of the countries of Africa,
6. Recommends:
 - (a) that during the second phase of the Plan, the Addis Ababa targets be maintained as general objectives and that the qualitative improvement of primary and secondary education be stressed; and that Member States, while keeping those objectives in mind, bring them into line with national development plans;
 - (b) that Unesco, in co-operation with OAU and ECA, prepare as soon as possible the documentation needed for a possible general revision of the previous targets, due account being taken of the true economic situation of the African countries and of the external aid likely to be available;
 - (c) that, while working along the lines of the agreed targets, due emphasis be given to the reorientation of primary education, to women's education and to preparing pupils for scientific and technical training;
 - (d) that, to this end, special emphasis be given to the training of rural-oriented primary teachers, the development of curricula and teaching techniques suited to predominantly rural populations, and the preparation of the scientific and technical training of teachers;
 - (e) that steps be taken to expand secondary education capacity in order to reduce the present bottleneck at the entry to secondary education;
 - (f) that, in the development plans of the African countries, all due attention be given to scientific and technical manpower requirements and that every effort be made to attain a certain autonomy in this respect before 1980.

RESOLUTION III: REFORM OF PRIMARY EDUCATION

The Conference,

Invites the African governments:

1. To ensure that the primary education systems of the African countries, in ways varying from country to country,

- (a) achieve as soon as possible the 100% school enrolment at primary level which was scheduled for 1980 in the Addis Ababa Plan and which is in conformity with the right to education, the desire for education shown by the peoples of Africa and the democratization willed by the governments;
 - (b) contribute to the strengthening of national unity;
 - (c) bring about the social and cultural integration of children in the community;
 - (d) act as factors of change and of economic and social development;
2. To reform, for that purpose, the content and orientation of primary education with a view to ensuring that:
 - (a) the risk of the child being uprooted is reduced to the minimum;
 - (b) the aim of the primary school is not only learning but preparation for life as well;
 - (c) the primary school inculcates in the child a respect and taste for manual work;
 - (d) the requisite attention is given to the possibility of using the national languages as languages of instruction and to determining the optimum age and the most effective methods for learning the first language of wide communication;
 - (e) primary education, in both rural and urban areas provides all the children with the same basic knowledge and offers them the same chances of continuing their education;
 3. To improve the output of the primary education systems, in particular by reducing the enrolment wastage rates,
 4. To provide for the continuous in-service training of the teachers,
 5. To create rural-oriented primary teacher training institutions,
 6. To reform the structures of primary education and post-primary education in accordance with the new objectives assigned to primary education,
 7. To introduce adult education measures and the different educational activities which are needed to supplement the expansion and reform of primary education as part of rural and, more generally, social and economic development,
 8. To make the necessary provisions for integrating primary school-leavers in society,
 9. To bring the school closer to the community and the community closer to the school;
 10. To improve rural living conditions and to raise the prestige of the farmer, in order to prevent the school from accelerating the trend towards a rural exodus,
 11. To encourage greater co-ordination, between the work of educational planners and of those responsible for economic and social development,
 12. To convene, in consultation with ILO, Unesco, FAO, ECA, and OAU, National Commissions to study the means of introducing into the production circuit, and particularly into the rural sector, pupils coming out of primary education and not going on to secondary education. These Commissions should examine the problems involved in the post-primary education and training which those concerned should be given and in finding employment for them later on.

RESOLUTION IV: PREREQUISITES FOR SCIENTIFIC AND TECHNICAL TRAINING

The Conference,

Invites African governments:

1. To ensure, through appropriate arrangements, that the physical development of pupils is accorded an important place in school programmes;

2. To give prominence in the curricula to the practical teaching of the mother tongue and the languages widely used nationally and internationally;
3. To accord, in all sections at the various levels of education, an adequate place to training in mathematics, science and technology;
4. To develop the study of environment to the maximum both in primary education and in junior secondary education;
5. To introduce the teaching of technology more particularly into the first cycle of secondary education in order to enable young pupils to improve their understanding of the surrounding technical world;
6. To accord a place to civic education and to the social sciences with a view to the pupil's integration not only in professional life but also in national and international life;
7. To ensure that prevocational education is accompanied by a humanistic and artistic education that will bring out the full potential of the pupil;
8. To revise teaching methods in all disciplines along experimental and practical lines, so that school and modern life may be fused in one attractive whole;
9. To equip the specialized training sections (languages, technology and science) of teacher-training institutes with the most modern material and to provide the necessary infrastructure and staff to maintain and repair that material.

RESOLUTION V: SCIENCE TEACHING AT SECOND AND THIRD LEVELS

The Conference,

1. Noting that the provision of science and technical teachers in secondary schools has fallen far short of demand, and that the shortage of teachers is partially due to the variety of more remunerative posts available to graduates with scientific qualifications,
2. Recalling the recommendations of the Lagos and Tananarive Conferences,
3. Invites the African governments:

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- (a) To use all possible means of information, publicity and national awards for science and technical graduates to take up teaching;
- (b) To ensure that salaries and promotional opportunities for fully qualified science teachers are comparable with those expected by other equally qualified professional cadres in public services;
- (c) To ensure that all students in the first cycle of second level education receive adequate instruction in mathematics and general science. Particular emphasis should be given to fostering observation and deduction, the study of environment and the application of science to everyday technology. All schools should have a practical bias in the junior forms;
- (d) To make full use of existing television and radio facilities and other mass communication media for teaching both children and adults;
- (e) To maximize the use of existing personnel, school buildings and other such facilities;
- (f) To take full advantage of such regional projects as the Unesco Pilot Schemes in Science Teaching;
- (g) To aim at giving all science teachers in secondary schools some knowledge of applied science and technology as well as of the disciplines of pure science;
- (h) To ensure through legal provisions that teachers in higher education have the opportunity of taking part in the elaboration, revision and adaptation of secondary school curricula;

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- (i) To establish manpower boards to fix enrolment targets in higher technical institutions and universities bearing in mind the recommendation of the Lagos Conference (1964) that within 20 years from now 200 science teachers and research workers per million inhabitants are trained, and that 10 to 15 engineers per million inhabitants are trained each year in Middle Africa, more than twice that proportion in North Africa, and, in each area, at least four times more technicians;
 - (j) To strengthen all institutes of higher education with a view to bringing them into university structures on a national or regional scale as this would facilitate the co-ordination of higher scientific and technical education and inter-African co-operation in this field;
 - (k) To provide high level institutions as far as possible with buildings and equipment which meet their functional needs;
 - (l) To provide incentives to prevent the "brain drain" and ensure an adequate supply of trained personnel in such critical fields as university and secondary school teaching, research, industrial and agricultural development;
 - (m) To plan the development of high level manpower on the basis of needs so as to avoid any wastage;
 - (n) To collaborate on a regional basis in developing specialized fields of study in universities or higher technical institutions.
4. Invites institutions of higher education:

C

- (a) To ensure that curriculum content in the field of science and technology pays due regard to a comprehensive approach before proceeding to the specialized fields;
- (b) To maintain contact with government, industrial and economic interests so as to define more accurately goals for both training and research;
- (c) To improve the methodology of teaching, and in particular to accord considerable importance to integrated practical training.

RESOLUTION VI: TECHNICAL AND VOCATIONAL EDUCATION

The Conference,

Invites the African governments:

1. To create among the peoples the motivation which prepares the way for setting up and developing the basic structures that are necessary for introducing scientific and technical innovations;
2. To grant real priority to scientific education and technical training, particularly in agriculture, and to reverse the present trend of falling proportions of students going to technical and vocational schools in some African countries;
3. To take steps to obtain the participation of scientists, engineers and other specialists in national planning and to revise any policies which tend to exclude scientists and engineers from access to top policy-making positions in government administration;
4. To ensure that ministries whose activities are primarily concerned with the application of science and technology are staffed at policy-making level by administrators with professional qualifications in the appropriate field;
5. To plan the development of technical education in close agreement with economic development plans and in collaboration with the economic sectors concerned; to set up the appropriate co-ordinating agencies; to adopt adequate legislation to facilitate training and to ensure that trained personnel will find employment;

6. To make certain that technical training institutions are equipped in such a way as to give students satisfactory and adequate practical training;
7. To encourage those responsible for technical and vocational education to integrate as far as possible general culture, particularly in its national and African forms, with scientific and technical culture; and to develop scientific and technological studies in such a way as to make increasing use of the African context and environment.

RESOLUTION VII: ROLE OF TEACHERS AND OF EDUCATIONAL TECHNOLOGY

The Conference,

Invites the African governments:

1. To undertake research on the rational utilization of secondary school teachers and teaching staff in general;
2. To make a more thorough study of teacher-pupil ratios at the different levels of general education, taking account of the possibility of resorting to educational technology;
3. To engage as soon as possible in the training of laboratory technicians with a view to a more effective utilization of science teachers in the various disciplines;
4. To proceed with research on the local production of teaching aids and their efficiency, and with the training of technicians for the maintenance of aids and of electronic equipment;
5. To improve the circumstances of teachers in order to make their profession more attractive and thus avoid their exodus to other callings;
6. To pursue experiments in both pre-service and in-service teacher training in order to achieve the best output possible, both quantitatively and qualitatively;
7. To make optimum use of educational facilities through careful planning at the national level;
8. To encourage inter-African co-operation with respect to the exchange of students and teachers so as to promote better inter-African understanding and overcome the present language difficulties, and to this same end to encourage the teaching of both English and French in all secondary schools and universities.

RESOLUTION VIII: INTER-AFRICAN CO-OPERATION IN HIGHER EDUCATION

The Conference,

1. Considering that:

higher education and scientific research are indispensable for the scientific, technical, economic and social development of Africa and that it requires resources which are not available in most African countries in the present situation;

2. Believing that:

- (a) the most effective solution might be to resort to a planned programme of all African co-operative research;

- (b) attending the same universities may promote understanding and solidarity among the young educated Africans;
 - (c) African unity, may be strengthened by studying together economic, social and cultural problems, with each country respecting the political options of the others;
3. Recommends the African governments, in the interests of a better utilization of available means (premises, equipment, teachers and research workers) and with a view to promoting a harmonious development of higher education and scientific research:
- (a) to take practical steps wherever necessary to pool their efforts and their means and, wherever possible, to create inter-State universities, integrating into them, if necessary, higher educational and higher technical schools or institutes located elsewhere;
 - (b) to examine the current university map of Africa with a view to encouraging specialization of the universities or their complementarity in the different technical and scientific fields (including the human sciences and economics) as well as in different lines of research;
 - (c) to institute effective co-operation between the African universities, in particular by organizing:
 - (i) exchanges of teachers, students and research workers;
 - (ii) the creation of documentation and information centres for exchanging results of research work;
 - (iii) the organization of periodical symposia and training courses
 - (d) to convene, under the auspices of the African Scientific Council and with the co-operation of the Association of African Universities, a conference of African research workers to prepare the ministerial conference on science policy in Africa which Unesco proposes to organize.

RESOLUTION IX: CENTRES OF EXCELLENCE AND EDUCATIONAL REVOLVING FUND

The Conference,

1. Congratulates the OAU on having proposed the establishment of centres of excellence in Africa,
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2. Recommends to the OAU:
 - (a) that the initial fields of study mentioned in OAU resolution CM/116(IX) include the basic sciences, documentation, teaching and research in the social sciences, and such other disciplines as it may deem appropriate;
 - (b) that it undertake at all stages the necessary preliminary consultations and seek advice from Member States and international organizations and other authorities in implementing the decision to establish centres of excellence in Africa;
 - (c) that in formulating their plans for the individual Centres, the proposed teams of consultants take into account, among other aspects, the existing facilities and natural resources potential in Member States in the disciplines concerned, and the experience acquired in those fields by international organizations and individual States, so as to avoid previous mistakes and to profit from results already achieved;
 - (d) that in executing this programme, it take all necessary steps to ward off the economic, social and political problems which may arise from the presence of those centres of excellence in Africa;
 - (e) that it establish a permanent committee to review continuously the execution of the programme concerning the centres of excellence, and co-ordinate the activities and promote the expansion of the latter;

- (f) that it continue to co-operate closely and effectively with the United Nations family of organizations and with non-African States which are in a position to assist, in any way, the early and effective establishment of the proposed centres of excellence.

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3. Requests the OAU and the ADB, with the co-operation of Unesco, to study in detail the proposed establishment of an Educational Revolving Fund, including its financing, paying special attention to the possibilities of external financing, and to present their study to the meeting of the Assembly of African Heads of State and Government.

RESOLUTION X

The Conference,

A

Invites Unesco and the regional organizations, upon request of the African governments concerned:

1. To help the African countries to reach the targets set forth in resolutions I to VII;
2. To help to set up a network of centres for the design, manufacture, repair and maintenance of scientific apparatus and equipment;
3. To help create and develop in Africa immediately, as a matter of priority, a network of technical teacher training colleges or departments like those already existing for teachers in general education;
4. To undertake thorough studies in comparative education on the subject of technical education and to ensure the dissemination of the relevant information.

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5. Requests Unesco and ECA and other interested organizations, in liaison with universities and specialized institutions of learning and research in Africa, to initiate feasibility studies on the possibilities of manufacturing laboratory equipment and other teaching aids locally with a view to setting up national and regional production centres;
6. Requests Unesco and other organizations, in liaison with universities and specialized institutions of learning and research in Africa, to set up machinery to study the standardization of school teaching equipment used at all levels in order to facilitate their mass production and distribution at economical cost;
7. Requests Unesco and OAU to set up commissions of African specialists to study the problem of harmonizing history and geography curricula in the secondary schools of English-speaking and French-speaking African States. The commissions, where necessary should suggest changes to improve the knowledge of African history, cultures, and economic and social problems.

RESOLUTION XI

The Conference,

Invites Unesco, upon request of the African governments concerned:

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1. to assist in carrying out pilot projects for rural primary schooling;
2. to ensure the exchange and dissemination of information concerning such projects and concerning the numerous experiments carried out by the African governments in this domain:

3. to define more precisely the concept of enrolment wastage and to undertake studies of the various causes of this phenomenon, as well as of measures for remedying the situation;
4. to continue and to intensify, with the help of the United Nations Development Programme (Special Fund), its assistance towards the establishment of rural-oriented teacher-training schools.

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5. to continue to assist governments in the establishment and operation of teacher-training institutions;
6. to help governments to set up and operate institutions for training laboratory technicians;
7. to supply aid in the form of qualified staff able to undertake research on the utilization of educational technology for remedying the shortage of teachers or their lack of adequate qualifications;
8. to assist in the preparation of programmes, adapted to the needs of Africa, for educational technology use;
9. to help these countries to procure and to produce teaching aids which are too costly for the African governments to purchase;
10. to ensure the dissemination of information and studies on methods of utilizing educational technology;

C

11. to include in the agenda of the forthcoming regional conference on the application of science and technology to development in Africa, a specific study of problems concerning higher science education and the training of engineers and technicians.

RESOLUTION XII

The Conference,

1. Noting with satisfaction the important rôle of Unesco in the development of education, science, culture, and mass communication in Africa,
2. Appreciating the initiative taken by Unesco to establish various regional centres in Africa,
3. Noting further with satisfaction the efforts of the Director-General of Unesco to ensure the effectiveness of these centres,
4. Taking into consideration the findings of the committee set up by the Director-General in 1967 to evaluate Unesco operated or aided regional offices, centres and institutes in Africa,
5. Believing that a Unesco regional office in Africa is urgently needed,
6. Invites the Director-General of Unesco, acting in full co-operation with the African Member States,
 - (a) to take due account of the recommendations made by the Committee which appraised the centres;
 - (b) to make, within the next two years, a report on the progress made towards improving the performance of these centres since the 1967 evaluation;
 - (c) to make a detailed study, within the next two years, of the implications of establishing the Unesco Regional Office in Africa.

RESOLUTION XIII

The Conference,

Convinced that the immediate implementation of the conclusions of this Conference will go a long way towards solving some of the educational, scientific and technical problems of Africa,

Requests, the Director-General of Unesco:

1. to take note of the recommendations made by the Conference with a view to the discussion of the Draft Programme and Budget for 1969-1970 by the General Conference;
2. to ensure in co-operation with the OAU, that the date of subsequent regional meetings at ministerial level is chosen in such a way that their conclusions are available when the programme and budget to be submitted to the next following General Conference is being prepared, in order that appropriate provision can be made for their implementation.

RESOLUTION XIV VOTE OF THANKS TO THE KENYAN AUTHORITIES AND PEOPLE

The Conference on Education and Scientific and Technical Training in Relation to Development in Africa,

Having met in Nairobi (Kenya) from 16 to 27 July 1968,

Deeply appreciative of the generous facilities put at its disposal by the authorities of the Republic of Kenya, and of the unfailing courtesy and kindness shown to its members by the Kenyan people,

Places on records its gratitude to His Excellency Mzee Jomo Kenyatta, President of the Republic of Kenya and his Government for having invited the Conference to meet in Kenya and for the measures they have taken to ensure its success; and to Dr. Kiano, Minister of Education, and his staff for the part they played in the preparation and conduct of the Conference.

ANNEX I

REPORT OF COMMISSION I

Commission I held eight meetings, from 16 to 20 July 1968, to consider items 8.1, 8.2 and 8.3 of the agenda and to adopt its report.

The Commission elected the following as its officers:

Chairman

H.E. Mr. Z. Mongo-Soo (Cameroon)

Vice-Chairmen

H. E. Dr. Sid Ahmed Abdel Hadi (Sudan)

Mr. A. G. Mwingira (Tanzania)

Rapporteur: Algeria

In the absence of the Rapporteur the Commission decided that the Chairman should assume his duties.

Item 8. 1

GENERAL OBJECTIVES AND TRENDS IN PRIMARY EDUCATION, WITH SPECIAL REFERENCE TO RURAL PRIMARY SCHOOLING

Introduction

1. The development of primary education in Africa within the framework of the targets and guidelines laid down by the Addis Ababa Plan raises a whole series of qualitative and quantitative problems, which are, moreover, closely connected. From their discussion it would seem that the entire question will have to be re-examined if the present situation is to be remedied; for reaching the quantitative targets fixed for primary school enrolment is likely to prove a difficult task; nor does primary education appear to be equal to its tasks as regard adaptation to environment, preparation for living, and contributing to economic and social development.

2. In this connexion, a large number of African countries have moved in the direction of "ruralizing" primary education, or of working out

systems of primary education suited to the needs of rural areas. Such solutions must be viewed in an economic and financial context, and related to the circumstances of geography and time.

3. In the first place, one point must be noted. All the African countries have endeavoured to reach the targets fixed by the Addis Ababa Conference. Many of them, as a result, have increased considerably their total budget expenditures on education and training, even at the cost of sacrificing other sectors of national development. It must, however, be acknowledged that in the present situation, neither available resources, nor the external aid, which is only parsimoniously granted, are enough to enable many countries to step up the pace of their educational development satisfactorily. This is essentially due to world market conditions and to the methods of granting certain investments, which render ineffective the efforts of many countries to increase their resources. Furthermore, the twofold effect of population growth and demand for education, and the underestimation of the actual school age population, have resulted in schooling requirements that are higher than was forecast. In these circumstances, it would seem that, while condemning the inequalities of which the developing countries - and those of Africa in particular - are victims, and while expressing the hope that an end will be put to those inequalities, the African countries should seek new methods of improving the output of primary education.

4. In recent years, the vital rôle of education in economic development has been fully recognized. Applying this to primary education in a predominantly rural continent leads quite naturally to the concept of rural primary education or the "ruralization" of primary education. This implies both the extension of primary education to all and its reorientation.

5. The question nevertheless arises as to how far such rural primary education should constitute a separate form of primary education, and how far it represents a final course to be adopted in primary education or else a provisional solution

which, for want of better, makes it possible to meet certain contingencies, at a certain level of means.

6. Rural primary schooling - a specific reflection of the need to adapt education to its environment - must naturally be rooted in the African setting and in its cultural traditions, from which it will derive its characteristics, its trends and its content.

I. Objectives

7. Primary education in Africa draws its inspiration from the objectives common to educational systems throughout the world. In the first place, it imparts a necessary minimum of basic knowledge and fundamental concepts required for implementing the right to education. It must mould the attitudes, character and moral being of the child. It may also be regarded as forming an integral part of a continual process of education and as paving the way for the acquisition of additional general or specialized knowledge.

8. But primary education in Africa must have certain more precise objectives.

9. First of all, to meet the increasing demand for education which the African governments have to face, primary education must make it possible to attain in the relatively near future the universal school enrolment which is necessary alike for the application of the right to education and for the building of a democratic society.

10. The Addis Ababa Plan recommended that a hundred per cent school enrolment rate should be reached by 1980. Some countries experience difficulty in reaching that target, which already seems to be within reach of others. As for other, less fortunate ones, they must regard it as a remote goal which obliges them to adopt approximate solutions and temporary measures. Since it is impossible, with such limited resources, to ensure total enrolment, it would appear necessary to consider other ways of getting as close to it as possible.

11. Another objective, which is linked to the first, is that of strengthening national unity. Spreading the knowledge of one common language can act as a powerful factor to this end, by enabling the greater number of citizens to communicate with each other, thus developing a better awareness and understanding of their common destiny. Similarly the expansion of primary education, through reducing the number of illiterates, will assist towards bringing the gap which often separates the educated minority from illiterate masses.

12. A third objective is that of socio-cultural integration. It is a matter of importance that primary schooling, and indeed the entire educational system, should help the young to take root in their environment by drawing inspiration from the world around them as well as from the cultural traditions which are the heritage of the countries to which they belong.

18. Lastly, primary education must be viewed in the perspective of economic and social development. It must also prepare children for their future rôle of producers rather than consumers, and in so far as Africa is still an essentially agricultural continent, help towards the exploitation of its agricultural resources. In particular, it must play a vital part in the fight against hunger, and also against disease. The primary school must not only impart knowledge for the sake of acquisition, but must also teach children to exist more fully and to introduce changes. It must not only transmit values, but train children to modify the environment in which they live and to use that environment as a springboard to the world outside.

14. The foregoing calls for some comment. In the first place, it was long thought that in attaining the general goals of primary education - namely to impart basic knowledge and to prepare children for continuing education - the objectives of social integration and contribution to economic growth were automatically achieved. Unfortunately, it is becoming increasingly obvious that this is not the case, and that only under certain conditions can these objectives be reached. Needless to say, the particular objectives of primary education in the several countries must be defined specifically in accordance with the situation in each, within this framework of objectives common to all countries.

II. Content and orientation of primary education

15. A reform of the content and orientation of primary education appears imperative in view of the new objectives assigned to it.

16. The aim of that reform should be the replacement of a merely theoretical education for the minority by an education for the masses which should be such as to contribute towards the training of producers, particularly agricultural producers, citizens and adults well integrated in their social and cultural environment.

17. In this respect it is particularly important that education should not, by uprooting and alienating the child, help to strengthen the trend towards an exodus from the villages, which cannot be justified by the number of jobs in the towns, as well as a disintegration of the social structures. Of course, any education, constituting as it does an environment of its own and a factor of change, leads to some alienation from the family and village; but the risk should be reduced as far as possible by ensuring that the content of the education is based on social and cultural realities, develops in the child attitudes befitting his responsibilities as a citizen and producer, and provides him with the knowledge he needs to contribute to development.

18. The first aim of education should be to help the child to appreciate the intrinsic importance

of his physical, social, and cultural environment. It is that appreciation which carries within itself the seeds of advancement, change and progress. Consequently, every effort should be made to adapt the school to environment in order to include essential elements of his economic and social-cultural environment. Schools that are too far from the village and frequent changes of school hardly seem desirable. But before the physical uprooting, there is sometimes a psychological uprooting, particularly if the school environment is too different from that of the family or village and if the child is torn between two different behavioural and value patterns.

19. The content and orientation of the education should be such as to minimize the risk of uprooting the child, and here psychological, sociological and ethno-sociological studies would seem necessary.

20. Moreover, education must not be overcrowded with too many subjects and its content must be fixed also by choosing subjects likely to be useful in productive activities. Although it cannot be strictly agricultural or vocational, the content of primary education should have an agricultural and craft bias and should provide the first elements of a multipurpose training.

21. The primary school must inculcate in the children a respect for work, particularly agricultural work, and a taste for the manual work, on which it must start them. The child must learn to work with his hands as well as with his brain. Here, too, the school and village attitudes must not be too far apart.

22. Special problems are involved in the choice of the language of instruction and the teaching of languages other than the mother tongue. Learning in a language other than the mother tongue makes it, of course, more difficult to master the various subjects. It is an uprooting factor since language is not only a vehicle for knowledge but also an element of culture. Yet there might be other considerations, e. g. the strengthening of national unity or the need for spreading a national language which may militate against the exclusive use of the mother language at this stage. There may be cases, therefore, when the mother language may have to be supplemented by other languages as media of instruction.

23. When the language of instruction in the primary school is neither the mother tongue nor a national language, and when a second language of instruction is used in addition to the national language, the best age for starting the instruction must be determined. It is also important to improve the methods of teaching that language, e. g. by introducing the latest methods of teaching foreign languages and making use of audio-visual aids.

24. Primary education must include civic and ethical training to make the child aware of his duties as an individual citizen and as a producer within the national community.

25. However, in revising the content of primary education to take account of the actual circumstances and needs of the rural environment, care must be taken not to create a rural education differing entirely in its content from urban education. There must be only one education, with the same basic objectives everywhere, and it must make possible the utilization of all human resources in town and country alike. It would be not only unjust but also dangerous, socially, politically and even economically, to split African countries in two by creating two parallel schools, alien to one another, which would restrict the recruitment of the elite to the towns. Primary education, whether urban or rural, must dispense the same basic knowledge and values. But since the African environment is predominantly rural, the adaptation of primary education to the environment seems to imply a rural orientation.

III. Output of primary education

26. The fact that the short-term primary enrolment targets set at Addis Ababa have not been reached by the continent as a whole, and have only been attained by a few countries, is due partly to financial reasons but mainly to educational ones: the output of the primary education systems is generally unsatisfactory, even in those countries which are nearing the target of universal primary school enrolment. For a six-year primary course, the wastage rate for the whole continent is 68%. As a result, unit costs are much too high and this makes it impossible to use to the best advantage the funds allotted to primary education.

27. The causes of the wastage - repetition and drop-outs - are many and vary from country to country and area to area. Wastage among boys differs from that among girls. It is impossible to enumerate here, let alone study, all the causes of such wastage, some of which are socio-economic - customs, attitudes towards school, seasonal occupations, nomadism, the structure of the family, health conditions, and so on, while others are strictly educational.

28. There would seem to be three main educational causes: the general unsuitability of the education provided, the often grossly overcrowded classes, and the inadequate general and professional training of the teachers - these two latter factors frequently being combined.

29. A precise definition of the concept of wastage, and studies of the different aspects of the phenomenon as well as of proposed remedies, would seem to be needed. The Commission notes with satisfaction in this respect that the problem is to be studied at the next session of the International Conference on Public Education.

IV. The training and upgrading of teachers

30. Preparing teachers for the rôle devolving upon them in a primary education redirected towards new objectives is obviously of decisive importance. A teacher who has no proper conception of his task can act as an uprooting force on the child. One way of mitigating this risk is to recruit the teachers assigned to the rural areas in those same areas.

31. To begin with, the inadequately trained teachers must be used to best advantage and a continuous upgrading (in-service training) system introduced for those teachers who, despite the progressive raising of the level of recruitment, will necessarily be entering service without full post-secondary training for some years to come.

32. Such upgrading can be achieved by organizing retraining, vacation and correspondence courses, by opening pedagogical and audio-visual aid centres and by creating mobile teams of advisers.

33. As regards the training of primary school teachers, the problem is one of creating a new type of teacher who is integrated in the community in which he lives, is imbued with the new objectives of a renovated education, is accustomed to using active teaching methods and is aware of his rôle as an agent of development.

34. The training given at the teacher-training colleges must therefore be revised in line with the new objectives of primary education, and in particular rural-oriented teacher-training schools must be established with the help of Unesco and the UNDP (Special Fund).

35. A similar effort to reform the training of inspectors and educational advisers should also be made.

V. Structures

36. A new conception of primary education in many cases calls for a renewal of its structures. It would often seem possible and sometimes necessary to change the pattern of that education, its duration, and the starting age of the pupils, in order to adapt it to its objectives and the available resources. The solutions will vary from country to country.

37. However, and particularly in the case of a short primary education, it is often necessary to organize post-primary education with a vocational or agricultural bias or some form of apprenticeship or training for primary school-leavers in order to keep the young from unemployment, social non-integration and juvenile delinquency. Moreover, whenever a short primary course is organized, provision must be made for the necessary means of transfer to enable, whenever necessary, the more gifted pupils to continue their education.

38. School education must be supplemented by a whole series of measures for adult education. In the first place, the parents themselves are often partly responsible for the uprooting of children in so far as they encourage them to take up employment in the town or start work too early, and make them regard working on the land as a punishment. An effort to educate parents in such a way as to make them understand the rôle of schooling in relation to the community is an essential component of adult education. It must also promote adult literacy with a view to creating a society in which people can read and write and which will prevent the young from relapsing into illiteracy. By training co-operators to staff co-operatives which will accommodate school-leavers, by developing the rural community, thus improving living conditions in the country-side, by education and agricultural productivity, adult education will effect the transformation of environment essential to the socio-economic integration of the young, and in particular their integration into the rural environment.

39. The reform of primary education is therefore not only part of a general development of education, in which it is associated with post-primary, agricultural, and technical education, with adult education and literacy, rural community development and teacher training, but also of general economic and social development, and rural development in particular. No reform of primary education will be fully effective and in particular keep the young people on the land, unless it is accompanied by a whole series of measures for improving living conditions in the country-side, making agriculture more profitable and giving it greater prestige. In all this the educationists must act in conjunction with the planners and with those responsible for development.

RECOMMENDATIONS

40. Commission I recommends that the Conference adopt the following resolutions:

The Conference invites the African governments:

1. to ensure that the primary education systems of the African countries, in ways varying from country to country,
 - (a) achieve as soon as possible the 100% school enrolment at primary level which was scheduled for 1980 in the Addis Ababa Plan and which is in conformity with the right to education, the desire for education shown by the peoples of Africa and the democratization willed by the governments;
 - (b) contribute to the strengthening of national unity;
 - (c) bring about the social and cultural integration of children in the community;
 - (d) act as factors of change and of economic and social development;
2. to that end, to reform the content and orientation of primary education with a view to ensuring that:
 - (a) the risk of the child being uprooted is reduced to the minimum;
 - (b) the aim of the primary school is not only learning but preparation for life as well;
 - (c) the primary school inculcates in the child a respect and taste for manual work;
 - (d) the requisite attention is given to the possibility of using the national languages as languages of instruction and to determining the optimum age and the most effective methods for teaching the first language of wide communication;
 - (e) primary education, in both rural and urban areas provides all the children with the same basic knowledge and offers them the same chances of continuing their education;
3. to improve the output of the primary education systems, in particular by reducing the enrolment wastage rates;
4. to provide for the continuous in-service training of the teachers;
5. to create rural-oriented primary teacher training institutions;
6. to reform the structures of primary education and post-primary education in accordance with the new objectives assigned to primary education;
7. to introduce adult education measures and the different educational activities which are needed to supplement the expansion and reform of primary education as part of rural and, more generally, social and economic development;
8. to make the necessary provisions for integrating primary school-leavers in society;
9. to bring the school closer to the community and the community closer to the school;
10. to improve rural living conditions and to raise the prestige of the farmer, in order to prevent the school from accelerating the trend towards a rural exodus;
11. to encourage greater co-ordination, between the work of educational planners and of those responsible for economic and social development;
12. to convene, in consultation with ILO, Unesco, FAO, ECA, and OAU, National Commissions to study the means of introducing into the production circuit, and particularly into the rural sector, pupils coming out of primary education and not going on to secondary education. These Commission should examine the problems involved in the post-primary education and training which those concerned should be given and in finding employment for them later on.

The Conference invites the African governments to call upon Unesco:

1. to assist in carrying out pilot projects for rural primary schooling;
2. to ensure the exchange and dissemination of information concerning such projects, and concerning the numerous experiments carried out by the African governments in this domain;
3. to define more precisely the concept of enrolment wastage, and undertake studies of the various causes of this phenomenon, as well as of measures for remedying the situation;
4. to continue and to intensify with the help of the United Nations Development Programme (Special Fund), its assistance towards the establishment of rural-oriented teacher-training schools.

Item 8. 2

RESEARCH IN THE INCREASED UTILIZATION OF AVAILABLE TEACHERS THROUGH THE USE OF IMPROVED TEACHING AIDS AND MATERIALS, PARTICULARLY IN THE LIGHT OF THE NEED FOR EXPANSION IN SECONDARY EDUCATION AND IN TEACHER TRAINING FACILITIES

41. The extremely rapid expansion of general education, and particularly of secondary education in Africa, under the Addis Ababa Plan, has raised, and is still raising, problems connected with the fact that such development has not been accompanied in all countries by a corresponding growth in the number of teachers. This means that the African governments are obliged to make more intensive and rational use of available teachers and at the same time to resort to teaching aids and educational technology with a view to improving the quality of teaching. Many African governments have, in fact, been forced to engage teachers who frequently have insufficient qualifications, or none at all. The question arises as to how far aids and educational technology could compensate for these insufficient qualifications.

I. A more intensive utilization of available teachers

42. There is a need at national and regional level for research into the best possible utilization of teachers.

43. Statistical data show that foreign teacher requirements, particularly for secondary and higher education, have continued to increase since the Addis Ababa Conference.

44. When coming to grips with the problem of utilizing teachers, it is immediately seen to be closely linked to the training of national teachers capable of replacing the foreign ones. Only by training such teachers will it be possible in the long run to settle the problems arising from the

teacher shortage and make the educational systems of African countries independent of external factors.

45. A considerable amount has been done since the Addis Ababa Conference in almost all the African countries in the matter of training secondary teachers, 'mainly through the founding, with the assistance of Unesco and the United Nations Development Programme, of secondary teacher training institutions. It is important that this form of aid continue and that other training institutions be opened, particularly for primary and senior secondary school teachers.

46. As a general rule, the most highly qualified teachers should be assigned to the primary teacher training colleges, programmes and institutions concerned with upgrading them.

47. One possible way of making good, at any rate in part, the shortage of teachers would be to organize the upgrading of national primary teachers through residential courses, correspondence courses, etc. which would enable them to reach the level of professional competence required for teaching in secondary schools.

48. This has led to the conclusion that when necessary, permanent centres or institutions should be created for the in-service training and upgrading of teachers.

49. With a view to encouraging primary and secondary teachers to add to their qualifications, every upgrading course should provide the possibility of achieving a higher degree of professional qualifications and therefore of earning a higher salary.

50. To overcome the teacher shortage, some governments have introduced a national civic service, under which system all students who have completed their higher studies are obliged to teach for a certain period of time.

51. Other governments make use of foreign volunteers. This has a number of drawbacks, in particular the need for a period of adaptation to the country, which reduces the effectiveness of an already all too short stay in Africa. Other governments have decided to give up using volunteers,

for various reasons and notably in order to oblige themselves to train their own teachers.

52. In primary education, it is possible to make a more rational utilization of teachers by using the multiple-class teaching scheme or one-teacher schools which can be organized, for instance in sparsely populated areas. The teachers, however, require special training. It might also be possible in these areas to recruit first-year pupils in primary education only every two or three years, so that children of much the same age will be taught together.

53. In secondary education, it may be possible in certain cases to make a more intensive use of available teachers by organizing courses by subjects and not by classes.

54. In higher education, there should presumably be a more rational utilization of teachers, as the present teacher-students ratio is too low. On the other hand, it may be considered that teachers in higher education, in many cases with no more than three or four hours teaching per week, are a luxury for the African educational systems.

55. The efficiency of science teachers, who are in any case too few in number is often diminished through lack of laboratory technicians to prepare their work and look after the scientific equipment. The creation of laboratory technician training centres would seem to be an important and urgent task.

56. One possible way of making a more intensive use of qualified teachers might be to introduce a system of double duty, if necessary with an increase in salary, or even with two salaries, but this might lead to a serious falling-off in the quality of teaching. In any event, any additional services should entail extra pay for teachers. The appointment of teachers to difficult posts, or to particularly under-privileged areas, may also justify payment of allowances.

57. Furthermore, it is clear from an examination of the prerequisites for optimum utilization of teachers that the problem of persuading them to remain in their profession is proving very serious. This suggests that salaries might be increased, since teachers in certain countries belong to the lowest paid category of civil servants with similar qualifications.

58. The status of teachers, the relations between their professional associations and the governments, and the participation of teachers in decisions affecting them, are so many factors making for a more efficient utilization.

59. Lastly, the utilization of school buildings, which are often left unoccupied during the long school holidays, is closely linked to the utilization of teachers. Building schools, particularly for secondary education, would seem to be one of the fields in which the governments are waiting for more considerable international aid.

II. Use of teaching aids and educational technology

60. In our age, with its extraordinary development of skills and technology, recourse to the latest educational methods (closed-circuit television, for example) is an important aspect of teacher training and in-service training.

61. It should nevertheless be emphasized, however, that aids and educational technology can make teaching more efficient, but can never replace the teachers.

62. In any event, it is important for teachers to be trained to make effective use of audio-visual media.

63. The use of television at primary and secondary levels, and in teacher training and in-service training would appear to be an undoubted means of speeding up school enrolment, offsetting the inadaptation of education to its tasks, decreasing wastage and compensating for the insufficient qualifications of teachers.

64. Educational technology must, however, be used with discernment and only by educators, as it may prove to be a one-way form of teaching which fails to arouse an adequate response from pupils and students.

65. The use of educational technology is often made difficult by problems of equipment maintenance. In the case of teaching machines, there is the problem of preparing programmes.

66. It is generally noted that the use of educational technology, however desirable that may be, often requires a heavy initial investment which is beyond the possibilities of the African governments. In this field so important for the development of education in Africa, aid from the developed countries and from the international organizations would seem to be essential.

67. Besides the frequently complex and costly aids, it would appear to be absolutely necessary to make use of rudimentary aids contrived by the teachers themselves.

68. Following the same line of thought, it would seem necessary for the national industrial or craft concerns to produce aids in the African countries themselves.

69. The importance of turning out books, particularly the textbooks which are among the most important aids to teaching, was emphasized. It is desirable in this regard for a higher proportion of the textbooks in use to be produced in Africa.

70. Teachers' associations, grouped by branch of study, can be of appreciable assistance in producing teaching aids (notes for teachers, for example).

71. It is important to follow experiments in the use of educational technology with close attention and to study its effect on the efficiency of the educational systems. Here again, there must be research, and the results must be disseminated.

RECOMMENDATIONS

72. Commission I recommends to the Conference that it adopt the following resolutions:

I

The Conference invites the African governments:

1. to undertake research on the rational utilization of secondary school teachers and teaching staff in general;
2. to make a more thorough study of teacher-pupil ratios at the different levels of general education, taking account of the possibility of resorting to educational technology;
3. to engage as soon as possible in the training of laboratory assistants with a view to a more effective utilization of science teachers in the various disciplines;
4. to proceed with research on the local production of teaching aids and their efficiency, and with the training of technicians for the maintenance of aids and of electronic equipment;
5. to improve the circumstances of teachers in order to make their profession more attractive so as to avoid their exodus to other callings;
6. to pursue experiments in both pre-service and in-service teacher training in order to achieve the best output possible, both quantitatively and qualitatively.

II

The Conference invites Unesco, upon request of the African governments concerned:

1. to continue to assist governments in the establishment and financing of teacher-training institutions;
2. to help governments to set up institutions for the training and functioning of laboratory technicians;
3. to supply aid in the form of qualified staff able to undertake research on the utilization of educational technology for remedying the shortage of teachers or their lack of adequate qualifications;
4. to assist in the preparation of programmes, adapted to the needs of Africa, to be used by educational technology;
5. to help these countries to procure and to produce these teaching aids which are too costly for the African governments to purchase
6. to ensure the dissemination of information and studies on methods of utilizing educational technology.

Item 8.3

PROVISION OF FACILITIES, LABORATORIES, EQUIPMENT, TEACHER TRAINING AND THEIR JOINT AND ECONOMIC USE

73. A review of the educational facilities since the Addis Ababa Conference shows that, in order to improve the quality of science teaching 'n African States, it is imperative that science equipment be obtained cheaply and in sufficient

quantity to meet the needs of expanding primary and secondary schools. To encourage science teaching at all levels, the present delays in the delivery of science equipment purchased from overseas must be overcome without further delay. The local production of science teaching apparatus from available local material should be encouraged by all States.

74. It is also important that available educational facilities at all levels be put to maximum use so that States might be able to attain the targets in their educational policy at reduced costs.

75. The problem of the provision of facilities and their joint and economical use should be reviewed under four main heads:

- (a) The provision of laboratory equipment and the possibility of manufacturing them locally;
- (b) The joint and economical use of available educational facilities and services;
- (c) Inter-African co-operation in the field of education and training; and
- (d) Establishment of an Educational Revolving Fund for Africa.

(a) Provision of school equipment

76. Some countries have established workshops for the production of science equipment for secondary and primary schools using local materials. These workshops also train teachers in the production, repair and maintenance of teaching apparatus. However, some types of equipment still have to be imported. Feasibility studies are being planned by the ECA and Unesco in order to determine the possibilities of local production of school equipment in Africa. These studies should be given full attention and be carried out expeditiously by the international organizations concerned.

77. It would also be advantageous to standardize and produce laboratory equipment and other school materials locally, in the interest of economy.

78. Similarly, textbooks and other materials could be produced locally. National and Regional Production Centres should be set up with the assistance of Unesco and other international organizations for this purpose.

(b) Joint and economical use of educational facilities

79. In view of the high cost of providing educational facilities, it is regrettable that there are cases where laboratories and classrooms are not fully used. In this connexion joint use of laboratories, workshops, and playing fields by several schools or by in-service training programmes could be considered wherever possible. In other cases, school buildings could be expanded. This

applies to libraries as well. Implementation of the necessary arrangements should be given attention by the various countries.

80. To meet those cases where adequate use is not made of qualified and specialist teachers, the educational authorities concerned should take the necessary steps to remedy the situation. Where inadequate utilization of specialist teachers is due to the lack of equipment, the necessary provisions should be made.

(c) Inter-African co-operation

81. It is urgent and necessary that inter-African co-operation be intensified and made more fruitful through the setting up of regional institutes for research and training, with the assistance of interested international organizations, establishing regular relations with universities and with regional centres for higher education and between regional organs responsible for co-operation and co-ordination at the university level, such as the Association of African Universities, CAMES, and similar organizations in English-speaking Africa.

82. Documentation centres for the dissemination of information in the educational field and for the promotion of African culture could also be jointly established by Member States. Such co-operation should be possible in fields such as educational research and television, radio broadcasting, curricula reform and textbook writing.

(d) Educational Revolving Fund

83. The suggestion of the OAU that an Educational Revolving Fund should be established under the aegis of the OAU and the ADB in association with Unesco, to provide low-interest loans for important educational projects in Africa was noted. It was considered, however, that because of the importance of this project, the OAU, ADB and Unesco as well as other interested organizations should study the proposal further and make concrete recommendations to the Assembly of Heads of State and Government of the OAU.

RECOMMENDATIONS

84. The Commission recommends that the Conference should adopt the following resolution:

The Conference,

1. Requests Unesco and ECA and other interested organizations, in liaison with universities and specialized institutions of learning and research in Africa, to initiate feasibility studies on the possibilities of manufacturing laboratory equipment and other teaching aids locally with a view to setting up national and regional production centres;

2. Requests Unesco and other organizations, in liaison with universities and specialized institutions of learning and research in Africa, to set up a machinery to study the standardization of school teaching equipment at all levels in order to facilitate their mass production and distribution at economical costs;
3. Invites Member States to make optimum use of educational facilities through careful planning the national level;
4. Invites Member States to encourage inter-African co-operation with respect to the exchange of students and teachers so as to promote better inter-African understanding and overcome the present language difficulties, and to this end to encourage the teaching of both English and French in all secondary schools and universities
5. Requests Unesco and OAU to set up National Commissions to study the problem of harmonizing history and geography curricula in the secondary schools of English-speaking and French-speaking African States. Those Commissions, wherever necessary should suggest changes to improve the knowledge of African history, cultures, and economic and social problems;
6. Requests the OAU and the ADB, with the co-operation of Unesco, to conduct detailed studies of the proposed establishment of an Educational Revolving Fund including its financing, paying special attention to the possibilities of external financing, and present their studies to the meeting of the Assembly of African Heads of State and Government.

ANNEX II

REPORT OF COMMISSION II

Commission II held eight meetings, from 16 to 20 July 1968, to consider items 8.4, 8.5, 8.6 and 8.7 of the agenda and to adopt its report.

The Commission elected the following as its officers:

Chairman

H. E. Mr. C. H. Thornicroft (Zambia)

Vice-Chairmen

Mr. C. Traore (Mali)

Dr. Augustus A. Caine (Liberia)

Rapporteur

H. E. Dr. F. N. Agblemagnon (Togo)

Item 8.4

THE ESTABLISHMENT OF TRAINING AND RESEARCH INSTITUTIONS OR CENTRES OF EXCELLENCE IN AFRICA

General introduction

The Commission was informed that the Organization of African Unity had decided to establish training and research institutions or centres of excellence in Africa. That decision followed a careful look at the present and future needs of Member States for the highest qualified personnel specially in scientific and technical professions. The fields initially chosen were eight and these are:

- (i) Geology, geophysics and mineralogy;
- (ii) Climatology and meteorology;
- (iii) Hydrology; (1)
- (iv) Human medicine, (preventive and social medicine) and pharmacology (African medicinal plants) ;
- (v) Food science and technology;
- (vi) Veterinary medicine; (2)
- (vii) Applied science and engineering (previously physics and mathematics including electronics and research in solar energy) ;
- (viii) Marine science and technology (previously oceanography, marine biology and fisheries).

As presently conceived the proposed centres of excellence would provide post-graduate training and research services at the highest level possible and within the context of the needs of Member States. The claim to the word "Excellence" stems from the fact that it is anticipated that these centres will have the best qualified staff available in Africa and that they will provide the most advanced training and undertake the most advanced research in Africa. Consequently it is anticipated that they will be provided with the best available equipment for training and research purposes and they will employ the best known methods in these fields. The qualifications of the scholars coming out of the centres will be recognized throughout Africa. Until such a time as a common language is established in Africa, provision would be made to enrol in the same institutions English and French-speaking scholars and the necessary facilities be provided to enable instructions and research to be carried out in both languages using common facilities.

The discussions of the Commission were based on the following main aspects:

1. the purpose of centres of excellence;
2. the choice of the fields for the centres of excellence;
3. problems to be faced in creating them; and
4. programme of action in the establishment of initial ones.

It was agreed that until the reports of the consultants were received it would be better to leave for the time being any discussions concerning the cost of establishing the proposed centres of excellence and the sites where they would be located in Africa. Taking now the above four items on which the discussions were based, these are reported on below one by one.

(1) Hydrology should now be replaced by Water Resources Planning and Development.

(2) Veterinary science will be substituted as the title for this.

1. The purpose of centres of excellence

The purposes of establishing the proposed centres of excellence in Africa are mainly three, i.e.

- (i) the training of highly skilled personnel;
- (ii) the solution of problems that require the application of science and technology in the implementation of economic and social development plans;
- (iii) the acquisition of new knowledge in the fields concerned.

Turning to the question of training highly skilled personnel it was mentioned at the meeting that such personnel, who would be trained under local environment, would assist in filling existing posts and in manning the present services in places such as universities, colleges, research institutions and the productive and the service sectors of economies of Member States. Such persons would also assist in and undertake the planning and execution of programmes which could lead to an accelerated development of the Member States. As for solving problems that hinder or obstruct economic and social development the scholars who would come out of the centres of excellence that are to be established would themselves be required to solve through research, the problems that may have been met either in the industrial exploitation of natural resources or other sectors of the economies of Member States. It is anticipated that such research directed as solving problems would be undertaken at the highest level and with the best equipment and under the best methods possible. It was observed in the discussion of the Commission that while great emphasis would be given to applied research which would be directed as solving known problems, efforts will also be made to promote fundamental or basic research with a view to increasing the volume of new knowledge that is being made continuously available to the States in Africa. The establishment of centres of excellence would provide institutions to which highly qualified African scientists and engineers would be attracted. Many such specialists at present remain abroad in the developed countries for lack of any opportunity to use their knowledge in their own countries. The creation of the centres of excellence would reduce this "brain drain".

2. Choice of disciplines

The Commission learnt that in choosing the fields that had been initially selected the OAU was guided among other things by the need to produce professional men of high calibre to occupy existing and planned posts in the public and private sectors of the economies of all Member States. It was also considered necessary to provide the required skills for the exploitation of the natural resources within Member States.

Several delegates pointed out that, while accepting the urgent need to provide highly trained personnel in applied scientific fields, it was necessary not to forget the social sciences. It was also pointed out that the social sciences are becoming increasingly important in ensuring that certain needs of man are not ignored and that the training institutions produce citizens who can usefully contribute to the development of their environment. It was also pointed out that it would be necessary to provide for advanced training in pure sciences which would nourish the training provided at centres of excellence in applied scientific fields.

Several delegations also mentioned the need to provide within proposed centres of excellence, training and research facilities in the application of nuclear energy for peaceful purposes. The Commission was informed that the list of the fields in which centres of excellence are to be established which the OAU had initially agreed upon was not meant to be exhaustive, and that, as and when necessary, additional disciplines such as agriculture could be added to it. The Commission took note of this point.

3. Problems to be faced in creating them

When examining the problems to be faced in the establishment of the proposed centres of excellence the Commission observed that there were some difficult aspects that would require to be solved or overcome if the centres are to serve the purpose for which they would be set up and if they are to provide the Member States with maximum benefits. Several such problems were touched upon by various delegates. One of these was the problem of scarcity of personnel of a high calibre who would be expected to staff the proposed centres of excellence. Some delegates pointed out that if such personnel of high calibre were to be attracted from the national services, this might lead to the slowing down of the pace of development of the Member State concerned. It was also pointed out that due to this scarcity and although it was undesirable, it appeared that in the initial stages expatriate personnel may have to be used to serve at the proposed centres of excellence. In such cases it was pointed out that such experts should be employed on short contracts with local counterparts to understudy them and eventually take over from them. In this connexion also it was mentioned that an increasing number of fellowships will be necessary to enable African scholars to acquire the required level or degree of training and on undertaking research so as to be able to serve at the proposed centres of excellence. It was also emphasized that these centres of excellence should not only undertake the highest training possible, but also that at an appropriate time, they should train or at least assist in the training

of middle-grade personnel in the scientific disciplines concerned. Concern was expressed that the Commission had not been permitted to go into the financing and location of these centres which, it was considered, was an essential element of the Commission's deliberations.

A number of problems were raised which are mainly political in nature. Some delegates expressed the fear that in the event of differences arising between some Member States, one of which may be playing host to a given centre, it would be necessary to ensure that the vacancies available to the State which may be at variance with the host State should be guaranteed. It was also pointed out that the centres, including the students, the staff members and their work should also be insulated from differences of this kind. Another problem of a political nature that was raised in the Commission was that due care should be taken to avoid the proposed centres being located only in the African States that are comparatively developed while ignoring those which are less developed. This could lead to a slower development in the latter countries while those that are comparatively better off will continue to be more developed. The Commission felt that political problems of this kind must be taken into account and suitable solutions found before the proposed centres of excellence are established.

Another problem that could arise is that of employment opportunities for the scholars coming from the proposed centres of excellence. It was indicated that since some of them would already be employed in existing industries, universities or research institutions or other productive sectors of the economies of Member States, such persons would merely return to their posts at the end of their period at the centres. In any case, scholars from such centres would easily find employment at existing and planned universities and colleges and in advanced research institutions. Also as the Member States industrialize and become generally more developed, employment opportunities will arise from time to time for such personnel of the high calibre expected. These were among the problems that were mentioned during the discussions in the Commissions on the subject.

4. Programme of action in the establishment of initial centres

It was pointed out that it would be necessary for OAU to establish as soon as possible, adequate machinery under which the whole programme of establishing and developing the required centres of excellence would be continuously reviewed and assessed. Some delegates also pointed out that in view of the size of Africa and also in view of the language problem it may be necessary to establish more than one centre of excellence in any one scientific discipline. Some delegates pointed out that

the OAU should be requested to study the experience of international organizations such as Unesco and individual countries in the running of Similar centres. Lessons learnt by these sources in establishing centres of excellence would prove fruitful in Africa as a precautionary measure in avoiding mistakes. Several delegates also requested that the problem of establishing centres of excellence in Africa should take into account the fact that it would be necessary to provide adequate staff and facilities to cater for the needs of all participating states. It would be disastrous if any particular Member State was informed that its request for services could not be met for lack of staff or facilities. Some delegates also requested that it would be necessary to establish machinery for executing results of research that maybe forthcoming from some of the centres. It was further emphasized that for the centres of excellence to operate effectively and successfully, it was necessary to ensure that there were adequate institutions, services and activities which would assist in identifying problems that required advanced treatment at the proposed centres of excellence.

Finally some delegates requested that in executing the programme of establishing centres of excellence in Africa, we should proceed cautiously so as to avoid disastrous results. It may be necessary to start one or two centres for purposes of obtaining experience before embarking on the rest of the programme.

General

Several delegates commented on the criteria that could be used in selecting the sites at which the centres will be located. One of these would be the natural resources potential of the area. It was pointed out that the right scientific environment and certain volume of activities were necessary to support each of the centres at the places at which they will be located. It was also indicated that because of the need to reduce the costs of establishing centres of excellence, it may be necessary to develop them from existing universities. It was generally accepted that in carrying out the programme of establishing centres of excellence in Africa, it will be necessary for the OAU to co-operate very closely with the United Nations family of organizations and also with other friendly outside sources of funds and information. It was also agreed that it was necessary to continue tapping all sources of expertise known on this subject both from Africa and outside in order to ensure early and effective implementation of the OAU decision. This is particularly necessary when it is realized that the proposed centres of excellence are part of the infrastructure which Member States hope to build and from which they will obtain the necessary skilled personnel for, and solutions to problems arising from, their efforts to develop as quickly as possible.

RECOMMENDATIONS

The Commission, having discussed the decision of the Organization of African Unity to establish centres of excellence in Africa, recommends that the Conference should adopt the following resolutions:

1. The Conference congratulates the OAU on having proposed the establishment of centres of excellence in Africa;
2. The Conference recommends to the OAU:
 - (a) that the initial fields of study mentioned in OAU resolution CM/116(IX) should include the basic sciences, documentation, teaching and research in the social sciences, and such other disciplines as it may deem appropriate;
 - (b) that it should undertake at all stages the necessary preliminary consultations and seek advice from Member States and international organizations in implementing the decision to establish centres of excellence in Africa;
 - (c) that in formulating their plans for the individual centres, the proposed teams of consultants should take into account, among other aspects, existing facilities and natural resources potential within Member States in the disciplines concerned, and also the experience in these fields by international organizations and individual States, so as to avoid mistakes that had been made and to gain from successes that had been achieved;
 - (d) that in executing that programme, it should provide adequately for problems, economic, social and political, which may arise from the presence of those centres of excellence in Africa;
 - (e) that it should establish a permanent Committee to review continuously the execution of the programme concerning the centres of excellence and to co-ordinate their activities and promote their expansion;
 - (f) that it continue to co-operate closely and effectively with the United Nations family of organizations, and individual non-African States which are in a position to assist, in any way, the early and effective establishment of the proposed centres of excellence.

Item 8.5

(a) SCIENCE TEACHING AT THE SECONDARY LEVEL

1. The purposes of second level science courses. Secondary school courses can usually be divided into two stages. the first of three to five years duration and the second of four to two years duration depending on the country. At the end of the first stage a number of pupils (the majority in some cases) leave school, the remainder staying on to prepare for third level courses at universities and technological institutions.

2. The purpose of teaching basic sciences at the second level is to produce understanding of the environment in which we live. The applications of science should illuminate this type of teaching. In upper secondary school, science and the scientific approach should be taught as a

prerequisite to those who will go on to specialize in pure and applied science at third level courses. School courses should not only train in observation, analysis and synthesis but cultivate inventiveness and develop the aptitudes of the pupils.

3. The enrolment of students in science courses. Science is a basic necessity for all educated people if the scientific and technological potential of Africa is to be adequately exploited. All students in the first cycle of secondary education should receive instruction in mathematics and general sciences. In the second cycle specialization must operate, although some hold the view that science teaching should be compulsory even at this stage, whatever the ultimate destination of the school leavers.

4. Curricula and structure of courses. Although there can be no consensus of opinion on syllabuses, certain factors should be present. The achievements should be revealed to the pupils;

observation and deduction should be practised: a study of local environment conditions is needed; desirable areas of scientific development in Africa should be discussed; the growing points of modern science should be indicated. The objective for curriculum construction is to ensure that the population becomes scientifically minded and aware of the place of science in society.

5. The Unesco Pilot Sciences Schemes are now able to report on the curricula they have developed, their successes and failures, and modifications proposed. Within countries, science curriculum centres have been set up, and use is being made of subject panels and similar bodies. More endeavours of this type are needed.

6. The essential methodology of science teaching is to get the pupils to face a situation in physics or chemistry, say, as a practising physicist or chemist would: to examine the situation, hypothesize, and deduce. This so-called rediscovery method is known to be a most stimulating method of instruction. It leads to project work, to applied science and technological experiments. It needs apparatus of all kinds which can be simple and cheap, made locally or in the school itself. Above all, it needs good and enthusiastic teachers.

7. Instrumentation centres capable of producing simple laboratory apparatus in African countries is now becoming a necessity. Programmed instruction, audio-visual aids, and especially the television and radio can upgrade science teaching in all schools. One good teacher on television not only instructs children but also, incidentally, teaches adults.

8. There is a need for new techniques for assessment of aptitude, and the testing of scientific knowledge. Some of these exist and should be introduced.

9. Provision of science teachers in secondary schools. The most critical factor in science teaching is the presence of well-qualified teachers. All Africa reports shortages, some on an alarming scale. The production of teachers is still far too low to meet the needs. School leavers who complete the full secondary courses and are thus eligible for third level courses in higher colleges should be encouraged to enter school teaching in science: encouraged by publicity, propaganda, national merit awards for scientists and science teachers, and an obvious recognition by governments of the importance of science. Recruits will be drawn to the profession only if adequate salaries are paid. The idea of preferential salaries can be discounted, yet a fully qualified science teacher should be given a salary approximately equal to that of other professionals with equal qualifications. A corollary to higher pay should be more work, not less.

10. Bonding of graduates as a national service should be encouraged, so that after completing the third level they have to teach for a specified period at least. Nevertheless, the ideal teacher

is one who wants to teach, and pupils must see their teachers enjoying their work in well-equipped schools, and communicating in an exciting way, if they are to follow in their footsteps.

11. A partial answer to a shortage of teachers is to concentrate secondary schools into larger units, thus economizing on resources. The use of television and radio aids should be investigated as another way of economizing on teachers.

12. Buildings and equipment for secondary schools. Buildings need not be grandiose, but should be simple and give adequate shelter. Quite essential are adequate maintenance workshops and artisans, a point often overlooked. Standardization of school building and furniture is necessary. Building design should be flexible to allow for change in usage. Apparatus should be obtained with spare parts at the very date of purchase.

13. There is a need for adequate supplies of biological material, laboratory apparatus, building kits, and so on. Much of this can be produced locally or perhaps in regional instrumentation centres, which could also repair apparatus. When Unesco or a similar body supplies equipment, it should also provide a laboratory technician who would train a counterpart.

14. It was noted that secondary school buildings can be used twice in one day, thus immediately doubling the capacity of the school.

15. Financing of capital and recurrent costs. This is a task for governments and local authorities, and is already a high fraction of the national incomes. Thus in setting up curricula, planning buildings, buying equipment, deciding on the number of children in various types of school, etc., great care must be taken to see that the needs of the country and citizens are being met, and do not follow an idealistic or unrealistic plan.

16. In legislating for secondary education, it is not enough to plan schools here, there, and everywhere, if they cannot be staffed, equipped and maintained. The production of science and technical teachers is now first priority. Foreign recruitment alleviates the situation but such recruitment cannot supply the demand. Hence resources should be switched from other parts of the educational system to institutions producing teachers, and especially science and technical teachers. It may well be that some bursaries for third level courses should carry with them an obligation to teach for some years (alternatively, to pay back the cost of the education).

17. International aid is of course vital in Africa at the moment but it is essential to get the most out of this money. Can African countries get together and channel this aid into operations useful to more than one State?

18. Employment of secondary school leavers. People who leave secondary schools comprise:

- (a) drop-outs who do not reach the end of the first cycle;

- (b) pupils completing the first cycle and going on to vocational and technical training or into direct employment;
- (c) pupils completing the second cycle and usually in Africa going on to higher institutions.

19. The second and third groups as yet have few problems of employment and even those in the first find useful employment especially if they have taken some science and are useful to industry as potential craftsmen.

20. It is possible that in due course there will be some unemployment of the second group, as has already happened with primary school leavers, and a careful record must be kept by authorities to try and obviate this.

21. If secondary schools are diversified, as in Tanzania for example, so that many have a technical bias, then school leavers facing unemployment are in a better position to create their own

employment, such as a repair service for agricultural implements and so on. There is a lot to be said for all secondary schools having a technical and practical bias in the first cycle, for one object is to train citizens who can earn their living. Hence science should be taught in a concrete rather than an abstract way, with meaningful practical work (not watching experiments). Now the teacher is of prime importance for, if not properly trained himself, he cannot teach science as indicated here. Rather he reaches for a book, the more so if over-worked in an ill-equipped school. All science teachers should perhaps be taught partially through applied science rather than pure science. There are very few technical teacher training colleges in Middle Africa. This is tragic, for all countries were aware of this problemsome years ago.

RECOMMENDATIONS

The Commission, noting that the provision of science and technical teachers in secondary schools has fallen far short of demand, and that the shortage of teachers is partially due to the variety of more remunerative posts available to graduates with scientific qualifications, recommends that the Conference adopt the following resolutions:

I

The Conference invites African governments:

1. To use all possible means of information, publicity and national awards for science and technical graduates in order to influence graduates to take up teaching;
2. To ensure that salaries and promotional opportunities for fully qualified science teachers are comparable with those expected by other equally qualified professional cadres in public services;
3. To ensure that all students in the first cycle of second level education receive adequate instruction in mathematics and general science. Particular emphasis should be given to fostering observation and deduction, the study of environment and the application of science to everyday technology. All schools should have a practical bias in the junior forms;
4. To make full use of existing television and radio facilities and mass communication media for teaching both children and adults;
5. To maximize the use of existing personnel, school buildings and other such facilities;
6. To take full advantage of such regional projects as the Unesco Pilot Schemes in Science Teaching;
7. To aim at giving all science teachers in secondary schools some knowledge of applied science and technology as well as of the disciplines of pure science;
8. To ensure through legal provisions that teachers in higher education have the opportunity of taking part in the elaboration, revision and adaption of secondary school curricula;

II

The Conference invites African governments to appeal to regional and international organizations:

1. To help to promote through aid programmes the activities described above;
2. To help to set up a network of instrumentation centres for the design, manufacture, repair and maintenance of scientific apparatus and equipment.

Item 8.5

(b) SCIENCE EDUCATION AT THE THIRD LEVEL

1. The purpose of this type of education is to train high-level staff for research, production, administration and teaching who will be agents of development and innovators; and also to train their senior technicians who will act as their assistants.

2. Enrolments. The objectives of the Tanarive Conference (60% of all students in the scientific branches) and the Lagos Conference (which fixed as the target for 1980: 200 university science teachers and research workers per million inhabitants) are by no means attained (1). The present trend is rather the other way. Science teaching at secondary level is insufficiently developed, for in some countries non-scientific professions seem to be more lucrative. The universities must be associated with the reform of secondary education and more accurate forecasts of skilled manpower requirements must be established for each sector of activity.

3. The status and emoluments of the teaching staff must be changed to make the profession more attractive. The setting up of specialized study centres should make it possible to train more teachers and to provide training better related to the needs.

4. Curriculum. The fundamental sciences should be taught in Africa in such a way that every student through interdisciplinary training - a source of creative thinking - can grasp their scope. Too hasty specialization should not be contemplated. Moreover, science students should continue to receive a general education. Account should be taken of the fact that it is becoming increasingly important to study the basic sciences, because they make the development of the other scientific disciplines possible.

5. Courses with applied sciences could be regrouped either according to the technical fields which they command or according to the fundamental sciences on which they are based.

6. The environmental sciences are gaining in importance wherever the environment should be modified to meet the needs of a growing population, and the teaching of such sciences should be adapted closely to local conditions.

7. Students should be initiated in scientific research from the outset of higher education, for it is a formative factor and "teaches how to learn". The research should be closely linked to local development needs. In that way the results could be put to use and would become known.

8. Exchanges of information on training levels should make it possible to establish norms facilitating the recognition of equivalences of degrees and diplomas and the better utilization of the students on a regional basis.

9. Methodology. Modern educational methods should replace the traditional university teaching and open the way to innovation, experimentation and creativeness. Practical training must be given both inside the institutions (laboratories) and outside (factories, work sites, etc.). This can be done only with the co-operation of the economic sectors concerned. Applied research institutions, design offices and pilot production units could serve as links between industry and the universities and other institutions of higher education.

10. Students' scientific and technical extra-curricula activities are rewarding because motivated and should be encouraged and systematized. Continuous checking of the knowledge acquired should avoid costly failures at the end of the school year.

11. Buildings and equipment. The teachers should participate in the preparation of building plans to ensure that the school buildings are functional. Quality of equipment should take priority over luxury of premises.

12. Costs. Scientific education, though economically viable, continues to be very expensive and every effort must be made to avoid failures and to ensure the full-time utilization of teachers and laboratories. The teacher/student and student/laboratory ratios must be so calculated as to guarantee maximum efficiency and returns.

13. Legislation. This must be such as to ensure the participation of the higher education institutions in economic development, and consequently, the participation of the economy in the functioning and development of higher education.

(1) The Tanzanian delegation expressed some reservations concerning these methods of planning on a regional scale.

14. International and regional co-operation. Direct aid, fellowship, and student and teacher exchange programmes should be developed. External aid can be put to better use by planning education and setting up co-ordinating bodies.

15. Employment of graduates. The employment of graduates is facilitated by educational planning and the creation of placement services. The "degree", however, is only a starting point, and certainty of employment and the level of remuneration will depend primarily upon the individual merit and efforts of the graduates.

16. Among the particular problems involved in the training of engineers and technicians, mention should be made of the following:

- (a) The objectives: Technical staff of this category must be utilizable immediately and must be able to participate in the on-site training of the labour force for which they are responsible. They must be able to cope with technical changes which they themselves will often have initiated. They must be aware of the fact that their technical advice may have important political, social and economic repercussions.
- (b) Implications for the curricula: Practical training must be developed. The basic sciences curricula must be strengthened if change is to be brought about. Applied research must form an integral part of the training of engineers and technicians, for they, too, must

"learn to learn". Finally, their basic training must be a multipurpose one - to enable them to cope with problems of different kinds and magnitude - and must include an introduction to economic and social problems.

- (c) Life-long education: It is possible to establish curricula that can be covered in normal time, despite the apparently contradictory needs which they must satisfy, provided that the basic training is recognized as only a first educational stage in which the students are trained for further studies later on.
- (d) The structures: The introduction of research and the strengthening of the basic science curricula argue in favour of integrating all the higher training establishments in the universities. Such integration will make it easier to solve the problem of the equivalences of diplomas, as well as inter-African co-operation. In addition, the ties between higher education and the economic sectors concerned must be developed considerably and institutionalized.
- (e) The needs: The analysis included as an annex to paragraph 83 of document UNESCO-OAU/CESTA/4 shows that by the end of the next 20 years Middle Africa will need at least 200 engineers per million inhabitants and North Africa nearly 800. Over the same period, both areas will require four to five technicians to be trained for each engineer.

RECOMMENDATIONS

Commission II recommends that the Conference recalls the Lagos and Tananarive Conferences and adopts the following resolutions:

I

The Conference invites African governments:

1. To establish manpower boards to fix enrolment targets in higher technical institutions and universities bearing in mind the recommendation of the Lagos Conference (1964) that within 20 years from now 200 science teachers and research workers per million inhabitants are trained, and that 10 to 15 engineers per million inhabitants are trained each year in Middle Africa, more than twice that proportion in North Africa, and, in each area, at least four times more technicians;
2. To strengthen all institutes of higher education with a view to bringing them into university structures on a national or regional scale as this would facilitate the co-ordination of higher scientific and technical education and inter-African co-operation in this field;
3. To provide, as far as possible, buildings, and equipment for high level institutions which pay due regard to functional needs;
4. To provide incentives to prevent the "brain drain" and ensure an adequate supply of trained personnel in such critical fields as university and secondary school teaching, research, industrial and agricultural development;

5. To plan the development of high level manpower on the basis of needs so as to avoid wastage;
6. To collaborate on a regional basis in developing specialized fields of study in universities or higher technical institutions.

II

The Conference invites institutions of higher education

1. To ensure that curriculum content in the field of science and technology pays due regard to a comprehensive approach before proceeding to the specialized fields;
2. To maintain contact with government, industrial, and economic interests so as to define more accurately goals for both training and research;
3. To improve the methodology of teaching, and in particular to accord considerable importance to integrated practical training.

III

The Conference invites Unesco:

1. To assist Member States in fulfilling these tasks;
2. To include in the agenda of the next regional conference on the application of science and technology to development in Africa, a specific study of problems concerning higher science education and the training of engineers and technicians.

Item 8.6

PREREQUISITES IN GENERAL EDUCATION FOR SCIENTIFIC AND TECHNICAL EDUCATION

1. Some training in science and technique is necessary at all levels in our present society. Children's minds must be progressively prepared to receive that training as soon as they come into contact with the world of education. All pupils should be introduced to scientific and technical subjects but this must be coupled with general and artistic culture. Education must produce men and citizens and not mere cogs of the social machine.

2. The prerequisites in general education for scientific and technical training can be classified as follows:

Health and physical education

3. Efficient and healthy bodies served by active sense organs are basic requirements to all human endeavours and more particularly in technical and vocational fields. This therefore sets one of the objectives for general education. Children can also be specially prepared for the physical aspect of their future trade in order to increase their safety and efficiency,

Language and communication

4. Language and communication would need to be both easy and adequate. An early start should be made to adapt vernacular languages for use in science and technology. The creation of specialized linguistic centres may be necessary for this purpose. In view of the fact that most of the existing scientific and technical books are in English and French, special efforts should be made to teach these two languages. This implies expanding the production of materials and textbooks in the country concerned.

5. Language teaching can easily be embodied in primary and secondary schools in simplified scientific literature. Audio-visual aids and educational toys used in language teaching can be effective in stimulating interest in that field. They train and sharpen the sense organs and the power of observation at the same time. In secondary schools, a large variety of simple scientific and technical books or magazines can greatly help to increase the necessary vocabulary.

Mathematics and measurements

6. Mathematics are essential for all forms of scientific and technical training and for the evaluation of one's productivity. The progress in that field compels to renew the teaching methods and modernize the curriculum content.

7. Primary schoolchildren should be able to appreciate the significance of: enumerations, quantities and measurement units for lengths, areas and volumes. In secondary schools, a necessary reconstitution of the mathematics syllabus should develop the use of graphic representation, practical devices for quick calculations, based on modern mathematics.

Basic and environmental sciences

8. Any technical activity rests on the principles of basic sciences: physics, chemistry, biology and geology. In Africa, a special effort must be made to increase and tighten the mutual relations between those sciences and technology. In primary schools, adopting the environmental approach which encourages curiosity, observation, questioning, experimentation and explanation will be the most useful form of introducing the basic sciences. This should be extended to the junior secondary schools while the basic sciences are progressively introduced. That approach should emphasize scientific attitudes and problem solving as key elements. Thus the primary and secondary schoolchildren will know about the earth and the soil, plants and animals, water and other liquids, air and simple gases and a few basic facts about cosmography. This will help to bridge the existing gap between science teaching and practical life. The teaching of hygiene and nutrition forms part of the same approach.

Applied science and technology

9. A considerable amount of technology can be introduced into primary schools through educational toys which develop creativity and resourcefulness. Drawing, modelling, designing, innovating, dismantling and rebuilding will help the child understand the function and the principle of the surrounding objects and make the synthesis of their common characteristics. The child will thus be led to understand and appreciate the new discoveries at an early level. He will realize through personal experimentation that complicated things are made with simple parts. This will develop his sense of analysis and synthesis, and help develop his ability to visualize things in three dimensions.

10. We can see that technology must be distinguished from basic sciences whose aims and methods are of a different nature and also from usual handicrafts such as metal work, woodwork, glass and plastics, which are focused on a different type of skill and creativity. These three kinds of educational activities will prove complementary.

11. In secondary schools, applied science and technology may be of a terminal or prevocational nature. Beside those mentioned above, they

may include practical agriculture and poultry farming, cookery and housecraft, building trades, soap-making, automobile mechanics, electric circuits, sign-writing and lettering, letter press printing. All these require adequately qualified teachers, necessary equipment and the understanding and collaboration of parents.

Artistic and aesthetic training

12. Every effort should be made to cultivate a sense of aesthetic and artistic appreciation, a sense of harmony in colours and shapes and develop three-dimensional visualization. Drawing and sketching, colour work in pastels, water colour and oil painting, modelling can greatly help in that field.

Social sciences

13. The engineer, technician and craftsman must know the other members of the society in which they live. They must appreciate their mutual interdependence and the division of labour that implies. At school, social sciences should emphasize the interdisciplinary approach towards preparation for life in an integrated society. The child must be led from his egocentric self to social organization and responsibility from family to mankind.

Preparation for the next higher level of education in science and technology

14. The division of the whole schooling and training system into isolated units should be avoided and each level must directly prepare the child for the next higher one. In this regard universities should play an active role in the development and execution of curricula at all levels.

15. The children leaving primary school should be prepared by the prerequisites described above before any forms of vocational training. Secondary schoolchildren must be prepared for employment, or for higher technical or scientific studies. The basic elements of physics, chemistry, biology, mathematics and earth sciences as well as the prevocational exposure to technical activities through technology, handicrafts and applied sciences will give them that possibility.

16. Some delegates expressed the opinion that without a parallel education of the parents, all those endeavours to create a scientific spirit may be useless. Other delegates expressed the opinion that intellectual independence is necessary to achieve such a fundamental change.

RECOMMENDATIONS

Commission II recommends that the Conference adopt the following resolutions:

I

The Conference invites African governments:

1. To ensure, through appropriate arrangements, that the physical development of pupils is accorded an important place in school programmes;
2. To give prominence in the curricula to the practical teaching of the mother tongue and the languages widely used nationally and internationally;
3. To accord, in all sections at the various levels of education, an adequate place to training in mathematics, science and technology;
4. To develop the study of environment to the maximum both in primary education and in junior secondary education as well;
5. To introduce the teaching of technology more particularly into the first cycle of secondary education in order to enable young pupils to improve their understanding of the surrounding technical world;
6. To accord a place to civic education and to the social sciences with a view to the pupil's integration not only in professional life but also in national and international life;
7. To ensure that prevocational education is accompanied by a humanistic and artistic education that will bring out the full potential of the pupil;
8. To revise teaching methods in all disciplines along experimental and practical lines, so that school and modern life may be fused in one attractive whole;
9. To equip the specialized training sections (languages, technology and science) of teacher-training institutes with the most modern material and to provide the necessary infrastructure and staff to maintain and repair that material;

II

The Conference invites African governments to appeal to regional and international organizations:

To provide aid to projects designed to achieve the aims set out above.

Item 8.7

PROBLEMS OF VOCATIONAL AND TECHNICAL EDUCATION AT THE SECONDARY LEVEL

1. The Commission discussed this topic in terms of educational, economic and political and social factors. A summary view of the problems and of measures needed to deal with them is as follows :

Educational problems

2. The provision of an adequate number of properly qualified teachers is vital to the success

of technical and vocational education schemes. Enthusiastic and competent teaching staff may overcome certain deficiencies in buildings or equipment but they will only be attracted to the service by the payment of salaries comparable with those they can earn in industry. A technical teacher should have adequate technical qualifications, extensive industrial experience and teacher training. Such individuals are in short supply the world over. Where industries exist the quickest way to train teachers is by recruiting them from industry and offering teacher-training bursaries; but, with the current shortage of qualified technical personnel and the salary scales prevailing in

the teaching service, this is not yet possible. Technical teacher training schemes must therefore be initiated for secondary school leavers and should include higher technical studies, industrial training and teacher training. The use of modern audio-visual aids, radio and television, programmed learning, etc. should be encouraged to assist in overcoming the shortage of teachers.

3. The purpose of the vocational and technical schools must be clearly established before the curriculum content can be determined. The curriculum should take into account the national background and traditions and the natural resources, local technical practices and economic objectives of the country. Owing to the rapid advancement of science and technology, training in a specified technical vocation may be rapidly outdated unless it has a sound scientific basis which makes the trainee adaptable to new developments. At the secondary level, the curriculum content should preserve a balance between general education, science and practical training. It should be considered as pre-craft or pre-technician training and should allow students to advance to higher education or on-the-job training in accordance with their aptitudes and abilities.

4. Wherever possible, practical training should be carried out in industry and sandwich programmes developed for the training of technicians and craftsmen. Close collaboration must be developed between technical and vocational institutions and industry. If industry cannot offer facilities for in-plant training, the educational institutions, with their practical training facilities, must set up industrial-type workshops. Alternatively, special production or training centres may be set up as satellites to the educational establishment.

5. To overcome the prejudice existing in some countries against technical vocations, a comprehensive careers guidance service should be set up in the schools. The identification of pupils' abilities can be facilitated by properly validated aptitude tests. Mass media should be used to publicize careers in the technical field.

6. There is a tendency for students to pursue studies for the sake of the certificates or diplomas awarded at the end of the course rather than with an eye to subsequent employment. Many employers however realize that such certificates are only of value in short-listing applicants for posts, and are more concerned with the individual's ability to undertake a job of work. Some examining authorities attach great importance to the assessment of laboratory and workshop exercises undertaken by the candidates during their course. Others include a practical test in the final examinations. Research is required into the effectiveness of various types of examinations and tests in assessing the student's ability. Comparative studies of the systems and practices in technical and vocational education

throughout the world should be analysed to determine the best forms for the developing countries of Africa.

Economic problems

7. The provision of technical and vocational education facilities must be geared to the economic development plan of the country. In this regard, the manpower needs in different fields and at different levels should be estimated as accurately as possible to avoid shortage in one area and surpluses in others. The training of craftsmen and technicians must not lag behind that of engineers. The output from technical training programmes must meet the requirements of industry and employers.

8. Technical and vocational education is inevitably expensive because of the laboratory and workshop facilities required. However, the necessary funds will have to be found if agriculture and the processing of primary products is to be expanded, transport and communications developed, buildings and construction work undertaken and the foundation for industrial development laid. Sharing of the costs by commercial and industrial organizations should be encouraged to relieve the financial burden on the government, and to encourage them to participate in the training programme.

Political and social problems

9. In some developing communities there is inadequate response to scientific and technical change. The need for change should be accepted by the political leadership, and all the instruments of mass media used to stimulate the people to accept scientific and technological institutions and innovations.

10. Proportionately, there has been diminishing enrolment in vocational and technical institutions. Despite the targets set at the Addis Ababa Conference for an increased emphasis on vocational and technical education in comparison with general secondary education, the proportions actually fell in the five years 1960-1965. This situation calls for political decisions to increase the prestige of technical and vocational institutions, while at the same time it must be demonstrated that new methods in such fields as agriculture, building and health are more effective. Pilot programmes can stimulate interest and change in rural communities. The adult community has to be convinced of the need for the application of science and technology, through mass media, adult literacy projects and pilot schemes with a view to ensuring a positive response to innovations introduced to pupils at school. Large investment projects such as road construction, power supply schemes, irrigation schemes etc., should be used as opportunities for the promotion of new techniques.

11. Legislation may be necessary to ensure the collaboration of industry, commerce and farmers in technical and vocational training programmes and to ensure the employment of the output from such schemes.

12. The magnitude of the task facing African countries in the field of technical and vocational education calls for regional and international cooperation and assistance in such fields as teacher training, curriculum development, research and surveys, provision of equipment, planning of buildings including laboratories and workshops, etc.

13. It is important to ensure the participation of qualified scientific and technical personnel in decision-making. Scientists and engineers should be associated with the drawing up of plans for economic development and in government policy decisions and not simply called in to implement decisions after they have been taken by administrators. It is important to do away with the impression that engineers and technicians cannot make good administrators. Personnel responsible for planning, design and execution of development projects ought to have a status and salary no less than senior administrators.

RECOMMENDATIONS

Commission II recommends that the Conference adopt the following resolutions:

I

The Conference invites African governments:

1. To create among the peoples the motivation which prepares the way for setting up and developing of the basic structures that are necessary for introducing scientific and technical innovations;
2. To grant real priority to scientific education and technical training, particularly in agriculture, and to reverse the present trend of falling proportions of students going to technical and vocational schools in some African countries;
3. To take steps to obtain the participation of scientists, engineers and other specialists in national planning and to revise any policies which tend to exclude scientists and engineers from access to top policy-making positions in government administration;
4. To ensure that ministries whose activities are primarily concerned with the application of science and technology are staffed at policy-making level by administrators with professional qualifications in the appropriate field;
5. To plan the development of technical education in close agreement with economic development plans and in collaboration with the economic sectors concerned; to set up the appropriate coordinating agencies; to adopt adequate legislation to facilitate training and to ensure that trained personnel will find employment;
6. To make certain that technical training institutions are equipped in such a way as to give students satisfactory and adequate practical training;
7. To encourage those responsible for technical and vocational education to integrate as far as possible general culture, particularly in its national and African forms, with scientific and technical culture; and to develop scientific and technological studies in such a way as to make increasing use of the African context and environment.

II

The Conference invites African governments to appeal to regional and international organizations:

1. To aid the African countries to implement the above objectives;

2. To help create and develop in Africa immediately, as a matter of first priority, a network of technical teacher training colleges or departments, as has been done in the case of teachers in general education;
3. To undertake thorough studies in comparative education on the subject of technical education and to ensure the dissemination of the relevant information.

ANNEX III

ADDRESSES DELIVERED AT THE SOLEMN OPENING SESSION

1. ADDRESS BY H.E. THE HON. DANIEL ARAP MOI, VICE-PRESIDENT OF THE REPUBLIC OF KENYA

Mr. Chairman,
Your Worship the Mayor,
Ladies and Gentlemen,

His Excellency the President of the Republic of Kenya has asked me to come and read to you his speech. He would have liked personally to have been amongst you today, but because of another important engagement which was unavoidable, he was not able to make it. I am very pleased to have the opportunity of launching this important conference - the third assembly, within seven years, of education ministers from independent African States is a great occasion. In arranging these conferences, the initiative was assumed by Unesco. This has proved to be a practical and fruitful undertaking. So many African countries have gained their independence: in these seven years that today this assembly is more representative and therefore more effective than ever before. Sponsorship of this present conference has been shared between the OAU and Unesco, and this further underlines the emergence and importance of Africa within the world community.

You will be discussing the rôle of education in development and all aspects of scientific and technical training designed to enable African countries to take their place in modern society. No subject could be more fundamental to the aspirations and future needs of all our people. I extend my most cordial welcome to you all; the government and people of Kenya share with me the hope that you will find opportunities before returning to your homes to see something of our wild life and mountains and beaches. Any such travels will enable you to move among hospitable and hardworking people, and we are confident that your efforts in this assembly will fulfil the trust placed in you by the governments and the nations which you represent.

The first of these conferences was held in Ethiopia in 1961, followed by a meeting in the Ivory Coast in 1964. I am proud that this year the Republic of Kenya is your host country. The modern city of Nairobi with all its facilities is frequently selected as a venue for international meetings. It is a particular pleasure for us when we can offer these facilities to our African brothers and in this case we are serving the cause of the true freedom of Africa. We can only be complete when illiteracy is banished and our people are equipped with academic and scientific establishments. At Addis Ababa in 1961, the conference discussed priorities and costs as applied to educational needs in developing African States. It was concluded then that education was not just a social service but a gainful economic investment: it was further stated that for purposes of economic progress, the development of human resources was a challenge at least as urgent as the exploitation of natural resources. Those were fundamental findings upon which some educational targets were based. In the Republic of Kenya most encouraging advances have been made, in tune with both the spirit and letter of such early work. Since independence our primary school enrolment has increased by one-third. We have four times as many secondary school pupils as there were in 1963, and about seven per cent of our whole national income is allocated to the education system. This system now extends from nursery school right through to university level and no doubt before your departure, you will wish to visit institutions under all the various headings. Great strides have also been made in the teacher training both in general and scientific subjects. In the task of expanding education in developing States, finance is often a limiting factor, but it is also true that the output of more and more qualified teachers is vital to keep all projects moving.

Of course as education is expanded in volume, other considerations must be kept in mind. We must strive towards improved teaching techniques and for high quality in the latest visual and technical aids. Yet another point is that our education system must be relevant to the needs and circumstances of developing African States. There is much more to education policy than just the carrying out of some social obligation. The whole purpose and the products of education must be geared to nation building. Each of the independent States in Africa, has problems in the field which are basically similar but which differ in degree. It is inescapable that systems of education should be built up on national lines, but great benefit can accrue from any pooling of resources or ideas. It would be wrong to carry isolation to extremes and only some injection of international feeling or design can further the concepts we all share of African unity and the family feeling of mankind. Each national system of education in Africa may and could vitally contribute to co-operation within the OAU, and we should actively promote rather than overlook the endeavours of such bodies as Unesco to recognize and provide for the common needs of all humanity. This conference is itself a significant landmark on the road to all such purposes and in the field of pan-African ideals. We have been fully engaged in Kenya with curriculum changes to bring about more diversity. We have been careful in this regard to discard subjects or approaches that are not of universal value. But in the colonial era the content of education with history and geography, as just two examples, was not always tuned to African thinking and needs. The object here has been to enrich the education system by making each subject matter more relevant and more real, and topical. At the same time we have introduced more practical courses to prepare young people more effectively for their future careers on the land or in commerce. School systems may

sometimes be regarded as a kind of factory production line, just turning out students crammed with a kind of basic learning that society feels they ought to have. Our aim has been more meaningful: to mould young men and women into responsible citizens, ready and eager to play their part in nation building and determined that our hard-won independence must never be lost or betrayed.

Education can also be the umbrella under which the traditional culture of Africa is studied and preserved. Interest in music and dancing and folklore, songs and stories, may and could be cultivated among the children of Africa from an early age, and as hands are more nimble and minds more imaginative, painting, carving and pottery can be encouraged. The culture of Africa is something that all our countries share. We have much still to discover about our respective traditions, apart from all modern development planning. To both these ends exchanges of students and staff at schools are important and worthwhile.

At Abidjan in 1964 the conference recommended that OAU and Unesco should co-operate in meeting the great challenge of education and scientific advancement in Africa. At the same time, it was suggested that each of the African countries should set up educational planning groups to watch constantly over the purposes and the structures and the content of education. Much has been done in Kenya, as in other Member States, to adopt such ideas. This Conference will proceed to discuss a ten-year report on Unesco in Africa and the future establishment by Unesco of offices for education, science and culture within this continent. Your views and findings will be awaited with the greatest interest. You will be anxious now to get to grips with your important work. I therefore wish you all success in your deliberations, and enjoyment while you are the guests of the Kenya Government. Thank you.

2. ADDRESS BY MR. RENE MAHEU, DIRECTOR-GENERAL OF UNESCO

Mr. Vice-President of the Republic,
Mr. Chairman,
Honourable Ministers,
Your Excellencies,
Ladies and Gentlemen,

It is a great honour for me, and a real pleasure, to be here with you at this Conference of African Ministers on Education and Scientific and Technical Training in Relation to Development, organized jointly by Unesco and the Organization of African Unity, in co-operation with the United Nations Economic Commission for Africa. I was unable to take part in the opening phase of your work, but I have informed myself of the deliberations of your two Commissions and I have been impressed by the insight of their discussions and the value of their conclusions. I think they paved the way remarkably well for the recommendations you may adopt in this final stage of plenary sessions.

For a conference of this kind, in which not only the Ministers of Education but also those responsible for economic and scientific development are taking part, no place more fitting could have been found than this city of Nairobi, capital of a country so evidently determined on renewal and progress.

For the generous hospitality of the Government of Kenya, I am sure I echo the thoughts of all present in expressing our gratitude to you, Mr. Vice-President, and through you to His Excellency Mzee Jomo Kenyatta, President of the Republic, in whom I respectfully salute one of the heroes and of the wise of free Africa. I also wish to thank Dr. Kiano, Minister of Education, who has done so much to ensure the success of this meeting.

Assembled here with Mr. Joshua Buliro, representative of the Secretary-General of the Organization of African Unity and Dr. Ademola Banjo, of the United Nations Economic Commission for Africa, who represents the Secretary-General of the United Nations, there are some 160 delegates from 36 African States, observers from 10 non-African States, members of Unesco and from the Holy See, representatives of 10 organizations of the United Nations and observers from 5 inter-governmental organizations and from 17 international non-governmental organizations having consultative relations with Unesco. Their presence here reflects the number and strength of the friends on which Africa can confidently count. To all I address the cordial greetings of the Organization.

Your Conference, Ladies and Gentlemen, is one in a series of regional meetings called by Unesco which have been so many milestones in the development of education in Africa - Addis Ababa in 1961, Paris and Tananarive in 1962, Abidjan and Lagos in 1964. But this Conference has its own special features which - apart from

being the fruit of a partnership, now officially established, I am very happy to say, between the Organization of African Unity and Unesco - derive mainly from its purpose. In accordance with the decision of the General Conference at its fourteenth session, this purpose is to re-examine the objectives and methods of educational planning in the light of economic growth in the African countries since 1958.

Now, although a number of African countries even then had made some notable progress in education, sometimes with the aid of Unesco, it must be said that it was above all after 1960, as most of the African countries became independent, that the movement developed which led to a general advance in education throughout the continent. And since the most recent statistical data we have at present are for 1965-1966, the retrospective examination YOU make will coincide almost exactly with the evaluation of the results obtained by the five-year indicative plan adopted in 1961 at the Addis Ababa Conference.

Without prejudice to your own conclusions, I should like to tell you of the grounds for satisfaction, but also for concern - for we are here to be frank and realistic - to which, in my view, an objective analysis of these results can lead.

Let me start with the grounds for satisfaction.

First, it can be seen that the development of education is now regarded, in Africa, as in the rest of the world, not merely as the expansion of education systems, but as a comprehensive effort to mobilize all the human resources, with the help of school and out-of-school education through both general education and scientific and technical training. The ideal of justice underlying the implementation of the right to education thus coincides with the imperatives of development.

In this regard, it will not be the least contribution of the First Development Decade launched in 1960 by the United Nations to have made it possible, with the recognition of the value of education as a productive investment to bring gradually into prominence the idea of making the most of human resources. Not only is this a factor as necessary to development as the utilization of natural resources but to the development process as a whole, it is now recognized as a most, if not the most decisive factor. It cannot be over-emphasized and repeated too often that man is the major source of development and its unique purpose. As I said a fortnight ago to the Economic and Social Council in Geneva, on these essential truths must rest the strategy of the Second Development Decade, which is to start in 1971.

In this regard it is gratifying to learn that the United Nations General Assembly proposes to proclaim 1970 International Education Year. I have no doubt that the Unesco General Conference,

which is to advise the General Assembly on this point, will warmly urge it to do so. For this International Year would provide an occasion to encourage reflection and mobilize the energies of Member States, nationally and internationally, in favour of education, and would thus pave the way most appropriately for the launching, the following year, of the Second Development Decade.

Education, therefore, is no longer regarded only as the preparation of the individual for the fullest possible development of his or her own capacities, but also as the training of the young generations in terms of the needs and potentialities of the community for its development. Educational planning is thus situated at the meeting-place of ethics and economics and implies the constant confronting and integration of both. This explains why educational planning which, perhaps too much influenced at first by econometrics, was originally intended mainly as a means of determining the quantitative aims of training, is now being increasingly regarded as the qualitative analysis of the various factors, economic and other, on which the expansion and the improvement of education depend.

Educational planning, pursuant to the recommendations of the Addis Ababa Conference, has gained full acceptance in Africa. This is not the effect of a passing infatuation with a new idea, but results from the clear recognition that educational planning meets the need to bring educational systems up to maximum efficiency, while at the same time ensuring the balanced development of the individual. The governments of many African countries, often with the help of Unesco experts, have set up appropriate planning services and the forecasts for education have been integrated, as economic plans were worked out, in the projections and the objectives of development in general. With this purpose in view your governments have taken steps to ensure the training of African specialists, either in Africa itself, as at the regional centre at Dakar, or outside Africa, as at the International Institute for Educational Planning at Paris.

Secondly, since the Addis Ababa Conference there has been a general and substantial increase in school enrolments which reflects the African peoples' thirst for knowledge, and the will of their governments to provide universal access to education. Even if the progress made has still not satisfied the need, this is quite obviously the beginning of an irreversible process. That surely is a great achievement, of which you can justly be proud. The nineteen-sixties will go down in African history as the years when education made its great advance; so true is it that enlightenment always goes hand in hand with freedom.

With regard to the numbers of students, one notes that in higher education they now exceed by a wide margin the minimum targets fixed by the Tananarive Conference, while the percentage of students enrolled in African institutions compared with those who hold scholarships to study outside

Africa is steadily increasing. It is also appropriate to point out that at all levels of education the figures for the enrolment of girls and women, long held back by considerations and factors wholly foreign to education, show a greater rise than do those for total enrolment, thus ensuring firm foundations for the emancipation of the African woman and her contribution to social progress.

Similarly, the quality of the training of African teachers has improved remarkably. In many countries, primary education is now entirely, or almost entirely, staffed by African teachers. In secondary education, the number of African teachers trained in the 25 higher teacher training schools set up by governments with the aid of Unesco and the United Nations Special Fund is over a thousand yearly. This figure is expected to increase in 1971 to over 4,500. These are eloquent figures, which assume their full significance when it is recalled that, in 1960, there were extremely few institutions, if any, for higher teacher training in tropical Africa. Further, the double process of Africanization of the educational administration staffs and of the curricula, with which Unesco has been actively associated, has been undertaken or developed with increased energy.

These are unprecedented efforts and remarkable results, for which all friends of Africa rejoice with you and warmly congratulate you. But that, however, cannot blind us to the difficulties which have stood in the way of giving full effect to the Addis Ababa Plan. Knowing your wisdom and courage, I do not doubt that you will agree with me in rejecting all vain complacency; and so now I come to the grounds of concern.

First, it must be recognized that the increase in enrolments in primary and secondary schools falls short of the targets set.

In 1965, the number of children enrolled in primary schools was 1,100,000 short of the target. Instead of the 5% increase recommended, the first-year primary intake rose by only 1.77% per annum. Annual wastage was 21% instead of only 10% as foreseen: this means a rate of 68% as against an expected 41% for a six-year primary course. Taking the population growth into account there is thus an alarming increase in absolute terms of the number of illiterates. If the present situation continues, it can be calculated that the children born in 1954 will produce a new contingent of more than 3,800,000 adult illiterates in 1969. In other words, unless strong measures are taken to reverse the trend, the primary school is going to lose the battle against illiteracy.

In secondary education, the number of pupils falls short of the targets by 387,000. This is because primary school enrolment did not reach the planned target, and also because the percentage of primary school pupils who were to go on to secondary was not reached. Moreover, contrary to the Addis Ababa recommendations, the ratio enrolments in technical and vocational to those in

general education has not altered in favour of the first: quite the contrary.

In higher education, although the enrolment increase is, as I indicated, on the average above the target, the percentage of science and technology students, instead of rising from 41.6% to 43.3%, fell to 36.2% between 1961 and 1965. And the percentage of science students who go into agronomy is often less than 10%, although the requirements of African agriculture are immense and indeed vital.

Thus the targets set at Addis Ababa for the first five-year phase have been only partially attained and it is to be feared that the cumulative effect of the delays incurred may make the implementation of the second phase more difficult. Does this mean that the targets were too ambitious and that they should be revised? That is an important matter for you to weigh. But, whatever conclusions you may reach in this respect, the fact stands beyond any doubt that these targets have had the beneficent effect of stimulating educational expansion in Africa on a scale never before attained, or even envisaged.

The main point, however, is to endeavour to understand the nature and causes of the difficulties that obstructed the attainment of the targets of Addis Ababa. Some of these difficulties are of a socio-economic and financial character, others are inherent in the education systems themselves,

Above all, the economic growth rate did not rise as fast as expected, as shown in the excellent report prepared by the Economic Commission for Africa. In particular, it was found that not enough account had been taken of the disturbances caused in the economies of the African countries by the instability of basic commodity prices.

It must also be noted that, however, generous the contributions of countries friendly to Africa and however active the assistance of the international organizations may have been, the volume of outside aid during the period under consideration was much less than had been hoped.

Now, from the trends visible in the present international situation, it would seem unfortunately imprudent to bank on any marked rise in the financial help that Africa could get from outside in the coming years. If these trends persist, African governments will have to be prepared to redouble their own efforts.

Unhappily, although some seem to have a certain budgetary margin for this purpose, many are already devoting 4% or 5% of their national income to education, and 20% or even 33% of their public expenditure and thus have already arrived or soon will have arrived, at the limit of their capacity. It is a fact that in the countries least favoured economically, which very often are those where initial enrolment rates were lowest, an increased financial effort, though large in percentage, will produce only a meagre budgetary sum. It must therefore be recognized that, in these countries

at least, it will be extremely difficult, without a considerable increase of external help, to reach in 1980 the enrolment targets set at Addis Ababa.

Thereupon, it seems to me, certain conclusions must be drawn and here are some which I should like to submit, Ladies and Gentlemen, for your consideration.

First, it seems to me desirable that each African government should interpret the guidelines and general objectives indicated in the Addis Ababa Outline Plan in the light of its own individual position. It had been thought at the time of the 1964 Abidjan Conference that this reassessment could be carried out by groups of countries, classified according to their social and economic situation and their educational systems. However, a more particularized approach now seems called for: each country should redefine its own priorities within the framework suggested by the general outline recommendations, on the understanding that those priorities could subsequently be adjusted during the successive phases of implementation.

However, the shortfall in primary enrolment in the majority of African countries turns out to be so great that priority during the second phase should doubtless be given to primary education, which is an indispensable basis for the progress of any nation and an essential sector for the effective application of the right to education. Such an adjustment of priorities, which would in no way imply questioning the vital importance of secondary and higher education, would make it possible, in the long-term, to build up balanced educational systems after successive adjustments.

Another lesson which can, I think, be drawn from experience is that the qualitative improvement of systems of education, far from running counter to their quantitative expansion, is a necessary pre-condition for such expansion, since it allows maximum utilization of available resources. There are a number of directions in which the efforts already made to achieve this qualitative improvement can be pursued. Educational planning, for instance, can become even more rigorous. In this connexion, African governments will be able to benefit from the conclusions of the International Conference on Educational Planning which is to be held in Paris next month. In the same way, progress can be made in the utilization of teaching staff, whose professional efficiency could be increased by a wider use of new teaching methods and techniques, such as audio-visual methods and programmed instruction, and by the improvement of laboratory equipment. Finally, the reform of the systems of promotion and selection, and a revision of curricula, should make it possible to remedy the serious wastage rate which, by causing an abnormal increase in unit costs, has the effect of seriously reducing the possibilities of enrolment. I consider that this phenomenon of wastage, which affects, in varying

degrees, the majority of African countries, constitutes the main obstacle to genuine educational progress.

It would, however, give an inadequate idea of the efforts required if I were to do no more than enumerate the administrative or pedagogical measures that need to be taken. In certain African countries, universalization of access to education appears possible only if entirely new formulas are substituted for the traditional solutions, which are often too costly and unsuitable. In this respect the work of your governments cannot be considered outside the context of the general transformation of education which is everywhere proving necessary and the factors of which are changing under our eyes with extraordinary rapidity.

Even more than the inadequacy of resources - which is particularly serious in Africa but which exists in all the developing regions and indeed in varying degrees in all countries - the root cause of this world educational crisis, with its occasionally dramatic manifestations, is doubtless the fact that the content and structures of education are ill-adapted to the requirements of development on the one hand and to the human aspirations of the individual on the other. While educational planning, as I have already said, was originally conceived above all as a means of establishing quantitative training targets to meet development needs it did not, perhaps, take sufficiently into account the individual's desire for the harmonious integration of his personality in a society in which his aptitudes and gifts can thrive and to whose development he can make a useful contribution. The feeling of frustration and the attitude of refusal revealed by the revolt which is at present shaking the ranks of youth in most parts of the world is certainly due, in no small measure, to a realization of the gap that exists between the training received and the opportunities, real or desired, for social integration. This is a major consideration, to which those in charge of educational planning should, in my opinion, pay greater heed in future.

Contrary to what we hear all too often from the holders of a malthusian view of education, it is not the generalized access to a constantly rising standard of education which is responsible for failure to adapt, or lack of employment among the young. Inadequate education or a faulty organization of society - most often both - are the causes of this lack of adaptation and unemployment which are already manifesting themselves in Africa as in other parts of the world. The time has come therefore for those in charge of African education to address themselves to the problem of the real use which education has for the pupil or student considered as an individual, as a producing agent and as a citizen. For this it is not enough to develop and improve school and vocational guidance - a measure which is undoubtedly necessary but unlikely to be of primary efficacy. The essential point is to give education, at all levels, a content

better adapted to the needs of society and to the abilities and aspirations of the individual.

The problem is to provide the greatest possible number with equal opportunities for access to education and to ensure that this education prepares for life, which does not consist only in integrating oneself into a society passively accepted, but above all in taking a useful part in the development and improvement of that society, as well as of oneself. Thus in Africa, a continent with a largely agricultural economy, primary education must to a far greater extent train pupils in rural development while also giving them the means, through life-long education, of continuing to study and to realize their full potential as individuals.

The need to develop scientific and technical education derives from the same preoccupations. It is not only a matter of training enough research scientists and technicians for development requirements, although this is absolutely necessary, but above all, of giving pupils as a whole an education - I might say a culture - imbued with that scientific spirit without which they will not be in a position to understand the world they will have to live in and, subsequently, influence.

This means strengthening, improving and even rethinking scientific education at the secondary level, so as not only to give secondary school pupils the training which they need to specialize in a given branch, but also to enable primary school pupils to receive a more thorough introduction to the scientific universe - an initiation which really should start in the primary school. Here again the problem is less one of educational structures and organization than of culture and ultimate aims.

In this context, we can appreciate the full significance of the part which can be played by those scientific training and research institutions which in English go by the name of "centres of excellence" and which in French might be called "centres d'études avancés" - centres for advanced study. The Organization of African Unity and the United Nations Economic Commission for Africa rightly see in them a means of training in Africa itself - that is, in the conditions which best allow adaptation, and consequently, more usefully than by studies abroad - high grade personnel for the scientific development of Africa. Even more: such institutions are indispensable for implanting scientific culture in African soil by keeping African scientific talent within the continent.

I have given you, Ladies and Gentlemen, a brief summary of the main problems which you are invited to consider and the examination of which will perhaps lead you to draw up a programme of action that will fix the guidelines for the efforts of your governments during the next five years.

It will then remain for you to express your views on the contribution which Unesco can make in carrying out that programme. It will of course

be for the General Conference, the Organization's sovereign body, to decide on any proposals submitted to it in this respect; but there is no need to say that I for my part undertake to study with the greatest possible care any suggestions you may wish to put forward.

On the basis of the activities (some are mentioned in the documents submitted to you), which Unesco has carried out during the period under consideration with a view to contributing to the development of education in Africa, it already appears necessary to intensify the efforts to promote universal access to education - particularly for girls and women - functional literacy, the training of teachers, and the training of scientific staff, especially engineers and technicians.

Although the improvement of systems of education still calls for prior study and research, the results of which will have to be widely disseminated, new possibilities of action are already to be seen in the field of teacher training. For example, the national educational institutes in receipt of assistance from the United Nations Development Programme could, in a second phase, complement the work of the higher teacher training schools by associating research - with increased means - more closely with teacher training. Similarly, rural teacher training schools for primary teachers could, with the help of the Special Fund and Unicef, train teachers who would provide a new type of primary education. Finally, new education and research structures, such as the "centres of excellence" I mentioned a moment ago, could be set up alongside the faculties of science and the engineering schools, to develop the scientific potential of Africa.

When you express your views on the usefulness of each of the various activities which might thus be undertaken, you may perhaps also wish to give your opinion on the advisability of linking such work to regional or sub-regional institutions. Allow me, without prejudice to your conclusions, to say that a great many experiments over a number of years have convinced me that such institutions can really play their part only if considerable means are made available to them and if they can rely on the services of an appropriate infrastructure of specialists at Headquarters. This conviction has been confirmed by the conclusions of an assessment mission which I instructed, at the end of last year, to make an on-the-spot investigation into the working and efficiency of the numerous and varied regional institutes and centres set up and maintained by Unesco in Africa. I greatly appreciated the honesty and realism of their conclusions which will be most useful to me in increasing the efficiency of these arrangements.

Ladies and Gentlemen,

Because of the importance of the problem with which it will deal, and the authority which your high and responsible functions will confer on its recommendations, your Conference, gentlemen, will be of great significance for the future of education in Africa. Although some of the difficulties which I took the liberty of mentioning very frankly to you call for increased vigilance, they in no way preclude reasonable hopes, and the noteworthy progress achieved in past years is a guarantee of final success.

Without claiming a monopoly of co-operation with African countries in education, and while being fully aware of the modesty of its resources in relation to the immensity of the needs, Unesco more than ever wishes to give you its fullest support in a concerted action conducted in collaboration with its sister agencies of the United Nations system, with the United Nations Economic Commission for Africa, with the Organization of African Unity and the Joint Afro-Malagasy Organization. In this context, Unesco is willing to assume fully the conceptual rôle which is incumbent upon it in this co-ordination in view of the central position which education and science occupy in development. It stands ready to help your governments, if they so request, to blend into a coherent whole the manifold forms of assistance which Africa already receives, or may receive in the future, from such financing institutions as the United Nations Development Programme, Unicef, the World Food Program, the International Bank, the Africa Development Bank or the Development Assistance Committee of the Organization for Economic Co-operation and Development. Such are the renewed assurances which I wanted to give you, together with the expression of my most sincere personal attachment and devotion.

But, however valuable the assistance from which they may benefit under international or bilateral co-operative programmes, the free countries of Africa must rely chiefly upon themselves in bringing to a successful completion the vast task of expanding and improving education on which genuine development and independence are based. Above all it is essential that Africa should now rethink the purpose of the efforts it is making in this respect, and drawing so to speak a second breath, start anew on its progress towards ensuring the triumph on its soil of the true kind of development in which economic efficiency, cultural values and human rights march hand in hand. This is my most heartfelt desire, and my appeal to you.

3. ADDRESS BY MR. S.D. BULIRO, ASSISTANT SECRETARY-GENERAL,
REPRESENTATIVE OF THE ADMINISTRATIVE SECRETARY-GENERAL OF THE OAU

The General Information Note for this Conference states that the "weather in Nairobi in July is cool . . ." among other things, and this, together with the generous and friendly hospitality of the President, the Government and the peoples of Kenya, provide what we consider to be the correct environment within which to execute the important responsibilities falling on this Conference.

On behalf of the OAU, it is a pleasure Your Excellency, Mr. Vice-President, Mr. President, Excellencies, brothers and sisters, ladies and gentlemen, to welcome you to this Conference on Education and Scientific and Technical Training in Relation to Development in Africa. As you are aware, the Conference itself followed a request of most African States calling for a joint effort between Unesco and OAU in organizing it. I am happy to report that Unesco and OAU have worked well and harmoniously in the preparations of this Conference, and it is up to you to judge the results of that joint effort. Whatever the position, we all need cool and incisive minds when discussing African educational problems, and a balanced, imaginative but realistic approach, when proposing solutions to those problems. We are sure we are voicing the hopes of the joint Unesco/OAU Secretariat when we say that we hope you will use this Conference not only for exchanging experiences in the successes and failures in the national educational services, but also in proposing solutions that you may have met individually and collectively. It is our hope that out of this Conference, future development in education at all levels and in training in all aspects will be forthcoming for the benefit of all Member States. Unesco and OAU have done what they can to identify some of the problems that are currently met by some Member States and also to propose not only solutions to some of the problems, but also areas of future development.

We of the OAU welcomed whole-heartedly the request that we should co-operate with Unesco in organizing and preparing for this Conference. This co-operation started soon after the OAU was founded in 1963 and has been growing from strength to strength every year. While this was happening we were negotiating an agreement between the two organizations which would institutionalize and intensify such co-operation through, among other things, joint effort and action. It is a pleasure to report that early this month of July, that agreement was signed. In it, an attempt has been made to indicate useful areas of co-operation and what form of contacts and dealings between the organizations could take. It is the hope of the OAU that while such a legal document is helpful in avoiding differences between the organizations concerned, it should in fact stimulate increasing co-operation, consultations and joint effort between such

organizations. It is therefore our hope that now that this agreement between Unesco and OAU has been signed, Africa as a whole, and in particular, the Member States of the OAU, will increasingly benefit from close co-operation between the two organizations. You are aware that while the OAU has wider terms of reference as given to it by its Charter, Unesco is mainly concerned with educational, scientific and cultural matters. The co-operation that is expected between the two organizations will therefore be necessarily restricted to the terms of reference of Unesco.

Turning now to the agenda of this Conference which includes educational matters, it is known that problems of education at all levels within OAU Member States are many, complex and pressing. The provisional agenda before you, which is the result of proposals from Unesco and OAU, attempts to highlight areas where individual or joint effort can be contributed to the eventual solution of some of those problems. It is our view that, without neglecting obvious areas of regional or continental effort, attention should be focused on the state of affairs within individual States and on how to solve problems met therein. As OAU Member States march towards closer and closer unity, it is only through the adequate development of educational services within the constituent parts, assisted where appropriate by regional and continental institutions, that some progress can be achieved by the whole continent.

Taking now the individual educational sectors, and according to the data presented to you, it is found that the expansion of primary school places, has far outstripped the available places in secondary and vocational institutions. It has also been observed that, due to various factors, the quality of that primary education has, in some cases, not been of the required standards. In view of these, and while carrying out desirable expansion, it may not be out of place to examine how best the gains so far at primary level can be consolidated and improved upon. This Conference should address itself, for example, to the problems of repeaters and drop-outs, which have been highlighted in one of Unesco's documents. Could the introduction of a limited system of education at the primary level, provide that individual treatment that could bring out the best in every student and create continuing interest - thus helping to eliminate these two problems? Or could they be eliminated by the abolition of class qualifying tests? Africa wants a solution to these problems so as to remove the undesirable wastage and illiteracy that they bring.

At the secondary educational level, the targets set at the Addis Ababa Conference, have not been met. We are aware that two of the main obstacles to the expansion of secondary education are:

the shortage of funds and the shortage of qualified teachers. For the latter, the OAU secretariat had proposed in 1966, a two-prong attack aimed at balancing the demand and supply of teachers. The starting point of the proposals was that the available and fresh in-take of teachers were inadequate. While building adequate training facilities to meet the demand for teachers, short-term policies should be applied to provide untrained teachers on a temporary basis. The short-term policies could include sandwich teacher-training courses and national service for all school and university leavers in teaching. This would continue until the supply from teacher-training institutions can supply regularly the number of teachers required for the national educational services. We consider that this two-prong attack on the shortage of teachers would eventually solve the problem, while allowing for that expansion of educational services that we all are anxious to achieve within Member States.

The problem of shortage of funds is a more complex one. We think that it should be the subject of discussion between Member States collectively and the African Development Bank to see whether a permanent solution could be worked out. Meanwhile, this Conference on education will be called upon to examine possibilities of establishing an Educational Revolving Fund. Indeed, this matter has already been examined by one of your Commissions. Let us start in a modest way, for example, by creating a fund, financed mainly from African sources, administered by the ADB and guaranteed by the OAU, to give loans for equipping science laboratories. Later on, and resources permitting, the sectors to which the Fund could apply, could be expanded. Contributions into the Fund could also come from outside. Let us show the world what we can do to help ourselves by establishing an Educational Revolving Fund, before going to seek for aid from outside. The fund would help us to expand our educational services at secondary level - a stage where we Africans are now feeling the brakes on our efforts to increase rapidly the number of skilled personnel at the middle and higher levels.

This Conference should therefore exert some of its efforts on examining and proposing alternative ways of expanding our secondary educational services. In this connexion there is a proposal to this Conference, calling for the sharing of expensive educational facilities and services, as a way of increasing vacancies at secondary level, and as a way of ensuring the provision of a good and balanced education to students. This is not a new idea at all, as it has already been applied successfully elsewhere. But we in Africa, who, due to scarcity of financial and intellectual resources, wish to maximize the benefits derived from the available facilities and services, should seriously consider taking advantage of any rearrangement that offers to our children more places at schools and better education.

Whatever is done, the quality of secondary education must be the highest possible for entry into institutions of higher learning and training. Without this attribute, secondary schools might produce students who cannot follow courses at such institutions without extra teaching - circumstances that may slow down economic and social development through avoidable expenses and the wastage of time.

As for the undergraduate institutions which provide the first degrees either in the basic or professional academic levels, we feel that every effort must be exerted to stimulate action at national and sub-regional level. Undergraduate institutions which, as presently conceived, would undertake both the education and training of skilled personnel at the first degree level as well as participate in research in the disciplines concerned, have a very important rôle to play in providing skilled personnel and solutions to problems arising in the economies of Member States. They also are vital stages in the activities and operations of the centres of excellence which are referred to elsewhere below. The OAU is therefore very concerned that the existing undergraduate institutions should be expanded to increasingly undertake the education and training of students as well as increasingly participate in research. Such institutions are not only expected to fulfil specific national demands in pursuit of accelerated economic and social development of each nation, but also they are expected to be a source for, and to provide a living national incentive to higher learning and training, and to advanced search for knowledge.

One would be permitted to elaborate even further on the rôle of universities and colleges at a national level. These places contain some of the best local brains available and the latter should be permitted not only to fulfil their rôle as staff members of academic institutions, but also to play an increasing part in the extra-mural activities within Member States. Their conduct and status within the national body politic are in themselves incentives to younger students to learn and train to the highest levels possible. The research that is undertaken by the staff members as well as the students at these institutions, is expected not only to help in solving problems of economic and social development, but also in acquiring new knowledge that could assist in the raising of the standards of living of citizens of the Member States. There are already within the OAU Member States over twenty-five universities and university colleges, with more being planned. With this in mind, and noting that the targets set at the Addis Ababa and Tananarive Conferences in so far as higher academic institutions are concerned have been met, one would definitely call for still faster rates of increasing vacancies at existing institutions of higher learning and training as well as of establishing new universities and colleges.

At post-graduate level, the picture is slightly different. There are only three or so universities where post-graduate studies are given. The institutions are very expensive to establish, and, the candidates currently available in each State are few in number. Otherwise all post-graduate studies are taken outside Africa. The OAU reviewed the whole field at post-graduate studies, and decided that the interests of Member States, in this connexion, would be served best by having centres of excellence established in Africa. We are very glad this decision was taken when it was taken. The OAU brought this subject to this Conference in order to obtain expert advice possible from the ministers of, and officials from national educational services, and, also, to expand co-operation on all sides. This Conference has already examined at the Commission level, what recommendations should be made to the Assembly of Heads of State and Government which will facilitate the early implementation of that decision, to the maximum benefit to Member States. It is our hope that the very important contributions which were made by delegates on this subject at the Commission level will be confirmed by the plenary. On behalf of the OAU, we would like to make a solemn promise that appropriate consultation and co-operation with Member States will be undertaken at all stages in the programme to establish the proposed centres of excellence. In this connexion, whatever views, proposals and recommendations that this Conference makes, will be passed on to the Assembly of Heads of State and Government which is due to be held this coming September in Algiers, Algeria. Views of the international organizations and of other sources will be sought and handled appropriately.

This Conference is also expected to deal with vocational and technical training. Mr. President Sir, I am aware that many valuable recommendations have already been made in this field by one of the Commissions which has completed its work. The plenary may wish to examine this with a view to ensuring that there is an adequate supply of skill with the required qualifications to man the available and planned services which are prerequisite to the provision of increasing standard of living to our brothers and sisters. These, Mr. President, are some of the sectors of education and training which this Conference has to deal with and make appropriate recommendations to Member States, to Unesco and to OAU.

The recommendations of this Conference should be formulated always with two main points in mind, i. e. the circumstances prevailing in individual Member States and the need to provide increasing standards of living to their citizens. The benefits to Member States deriving from educational services, can only be maximized if all the sectors of their economies play their rôle adequately. Education is provided within developing States, for a specific purpose, i. e. the development of intellectual resources for all the services and activities available

and planned in a given State for the satisfaction of the needs of the masses. Therefore, there must be job opportunities to which those being educated aspire to fill. Without many and varied job opportunities, some of the products of a given educational system will either seek jobs elsewhere - thus creating a "brain drain" - or, they will join the discontented groups with possible grave repercussions to the whole fabric of a nation. Therefore, improvement and expansion of educational services at all levels, should be undertaken concurrently with activities that create more job opportunities in the economic, social and political spheres. To this end, the question of exploiting and developing national resources (e. g. minerals) and of encouraging increasing agricultural production and productivity, is receiving close attention of the OAU. Africa is at present behind, but we have the task and responsibility to bring it early to the forefront among developed nations.

At this stage, Mr. President Sir, I may be allowed to mention briefly the rôle of the OAU among its Member States. It is now a commonly known fact that the OAU has been given a comprehensive role by its Charter in the day-to-day activities and future plans of its Member States. Among other things, the OAU has been requested to co-ordinate and intensify the activities of Member States in these fields. These fields include educational, scientific and cultural matters. It is because of the similarity of objectives in these three fields that the first session of the Educational and Cultural Commission of the OAU, which was held in 1964, recommended, and it was accepted by the Assembly of Heads of State and Government, that the former regional conference of Unesco should be merged into this Commission. Since then, the Commission held another session in 1965 and has not met up to now. The main reason why the Educational and Cultural Commission has not met was that due to the desire to reduce costs that are borne by individual Member States, the OAU decided to amalgamate several Commissions. As a result of that amalgamation, the Educational and Cultural Commission together with two others have been combined into the Educational, Scientific, Cultural and Health Commission. The next meeting of that Commission is planned to be held early next year and it is our hope that those present here and those who are not here will be able to attend that session.

May I also, Mr. President Sir, be allowed to comment briefly on what appears to be a misunderstanding of the rôle of the OAU within its Member States. It appears that some people believe that the OAU is mainly concerned with political matters. As I have already illustrated above, this is not true. The OAU has more than a political rôle in Africa. For those of you who may not know, the OAU is already playing an increasing rôle in the agricultural field. Firstly there are three scientific bureaux which were taken over from

the former Commission for Technical Co-operation in Africa which are still active in this field. These are the Inter-African Bureau for Animal Health which assists in the development of livestock in Africa, the Inter-African Soils Bureau which deals with the development of soils and agronomy, and the Inter-African Phyto-Sanitary Bureau which assists in the protection of plant health in Africa. These bureaux are active in their respective fields within the agricultural activities of Member States. In 1967, the OAU decided to establish regional stocks of food so as to prevent the occurrences of food shortages in Africa. On this subject is hinged the entire programme of the OAU to assist in the increasing production of food and cash crops as a contribution to raising the standards of living within Member States. The Food and Agriculture Organization, the World Food Program and the African Development Bank have already been contacted in connexion with this programme, and efforts are now being made to implement it in stages. In the field of commerce, the OAU decided, among other things, to organize regularly an All-African Trade Fair. At the kind invitation of the Government of Kenya, the first of such fairs is scheduled to be held in this very city in 1970.

In the field of culture, the OAU decided to sponsor regularly an All-African Cultural Festival. Several preparatory meetings have been held to discuss the details concerning the organizing, administering and staging of that festival. Another meeting of the Preparatory Committee of the festival is due to be held in September in Algiers, in order to consider financial matters and it will report to the Assembly of Heads of State and Government soon after it completes its work. The first of such festivals will be held in Algiers, Algeria, in July 1969. Of course the political activities of the OAU are more publicized than activities of the kind that I have referred to above. But I hope that this small search, which covers as it does examples of activities of the OAU in important sectors of our day-to-day life would convince those who were not yet convinced that the OAU has an important rôle to play not only in political matters but also in economic and social matters. Should there be any doubt on this matter Mr. President Sir, I would be happy to elaborate on it during the plenary if it is the wish of any delegation that this should be done.

Before we finish, perhaps we may be allowed to say one or two things on the problem of the future Unesco "presence" in Africa. We already have several regional offices of Unesco in Africa, for which we are thankful. It is our hope that this Conference will examine the terms of reference,

past activities and results of these offices and see how best their future could serve the needs of Africa. The report of the Evaluation Committee on these offices, centres and institutions, appears to point to the need for a review of their terms of reference and operations in order to maximize their usefulness to Member States. It is hoped that even if this calls for co-operative action between Unesco and other United Nations Specialized Agencies, this Conference will not be afraid to say so. Future development of new ones would fall into the pattern established for existing ones. On our part and with reference to the agreement of co-operation that we have signed with Unesco, we would like to assure Unesco that whatever role our Member States may call upon us to play in ensuring that the activities of Unesco in Africa bestow maximum benefit to Member States, we are prepared to obey and act accordingly. We have no doubts in our minds as to the effectiveness of such co-operation and as to the beneficial results that Member States would reap from it. I would personally like to assure Mr. René Maheu that having been constantly in contact with Unesco since 1964 when I started working for the OAU, if the co-operation, understanding and concern to help Africa continues to be the spirit in which Unesco acts, then I for one do not envisage any problems in agreeing on how best Unesco and OAU should co-operate in order to give maximum benefits to Member States. We should add that in this connexion, one should not forget the fact that the Economic Commission for Africa, although being one of the organizations of the United Nations, can contribute usefully to the activities of Unesco and OAU in the educational, scientific and cultural fields.

We do not want to take any more of your time as you have a lot of work to do to bring this Conference to a successful end. You have already started well in the work you have put into the two Commissions. Let us hope that problems and needs have been exposed and defined so that recommendations of the Conference may be based on real issues. As you enter the final and perhaps the most important lap to the end of this Conference, may we be permitted to say the following. While we do not at present have enough resources in Africa to provide comprehensive and all-round good quality educational and training services at all levels, we would be failing in our duty if we do not lay down a firm and sound foundation for such services, or if we fail, through our recommendations and actions, to contribute positively to the efforts of Member States of constantly increasing standards of living in Africa.

ANNEX IV/ANNEXE IV

LIST OF PARTICIPANTS/LISTE DES PARTICIPANTS

I. DELEGATIONS OF MEMBER STATES PARTICIPATING WITH THE RIGHT TO VOTE/
DELEGATIONS DES ETATS MEMBRES QUI PARTICIPENT AVEC DROIT DE VOTE

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Mr. M. G. Kayuza
Secretary-General, National Commission
for Unesco
Mr. D. Butchard
Acting Principal,
Dar-es-Salaam Technical College
Dr. G. Ndaalio
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TOGO

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Ambassadeur, délégué permanent du Togo auprès
de l'Unesco
M. A. M. Ajavon
Censeur du lycée de Tobain, Lomé
M. M. J. Folligan
Directeur de l'Institut pédagogique national

TUNISIA/TUNISIE

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Doyen de la Faculté des sciences,
Université de Tunis
M. Mansour Hadj Slimane
Ambassade de Tunisie à Addis-Abéba

UGANDA/UGANDA

The Hon. Dr. S. J. Luyimbazi Zake
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Under-Secretary, Ministry of Education
Mr. E. H. Rukare
Senior Inspector of Schools
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Senior Education Officer (Planning)
Mr. Alex Smith
Inspector of Schools

Mr. A. P. N. Waligo
Chief Engineer, Uganda Electricity Board

Mr. F. B. Angura
Assistant Secretary,
Ministry of Education

UNITED ARAB REPUBLIC/
REPUBLIQUE ARABE UNIE

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Ambassador of the UAR, Nairobi

Mr. Nabil Abdel Fattah Helmy
First Secretary, UAR Embassy, Nairobi

Mr. Saad El Zarki
Press Attaché UAR Embassy, Nairobi

UPPER VOLTA/HAUTE VOLTA

S. Exc. M. Moise Lankoande
Ministre de l'éducation nationale

M. Joseph Ki Zerbo
Directeur général de l'éducation

M. T. G. Kwende
Proviseur du Lycée technique

ZAMBIA/ZAMBIE

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Minister of Education

Mr. C. H. Thornicroft
Minister of State for Technical Education

Mr. D. C. Mulaisho
Permanent Secretary,
Ministry of Education

Mr. J. Mutakwa
Senior Education Officer

Mr. P. Bowler
Senior Inspector of Schools

Mr. W. J. Phiri
High Commissioner of Zambia to East Africa

Miss Sylvia Kawele Longwe
Personal Secretary to the Minister of Education

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OBSERVATEURS D'AUTRES ETATS MEMBRES DE L'UNESCO

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Secretary, Brazilian Embassy, Nairobi

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Secrétaire général de l'AUDECAM

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S. Exc. M. Joseph Thibault
Ambassadeur du Canada au Cameroun

ISRAEL

Mr. Eliahu Tabori
Second Secretary, Israeli Embassy, Nairobi

REPUBLIC OF CHINA/REPUBLIQUE DE CHINE

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Ambassador of Republic of China in Kinshasa

ITALY/ITALIE

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Secrétaire général de la Commission
nationale italienne pour l'Unesco

FRANCE

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de l'éducation nationale

M. Bernard Clergerie
Directeur adjoint des services de l'enseignement
et de la formation au Ministère des affaires
étrangères (coopération)

PAKISTAN

Mr. Y. Bhutta
High Commissioner's Office, Nairobi

UNION OF SOVIET SOCIALIST REPUBLICS/
UNION DES REPUBLIQUES SOCIALISTES
SOVIETIQUES

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Mrs. N.I. Tchelysheva
Ministry of Education of USSR

UNITED KINGDOM/ROYAUME-UNI

Mr. A. R. Thomas
Under-Secretary in charge of Education
Division,
Ministry of Overseas Development

Mr. Harold Houghton
Education Adviser,
Ministry of Overseas Development

UNITED STATES OF AMERICA/
ETATS UNIS D'AMERIQUE

Mr. Douglas N. Batson
Deputy Assistant Secretary of State,
State Department

Mrs. Betty George
Institute of International Studies,
Office of Education
Department of Health, Education and
Welfare

Dr. Robert G. Johnson
Chief, Education Division, US AID

Miss Marjorie S. Belcher
Attaché for Regional Economic Affairs
American Embassy, Addis Ababa

Mr. John L. Buchanan
Associate Director, Peace Corps,
Nairobi

YUGOSLAVIA/YOUGOSLAVIE

Mrs. M. Vilfan

III. NON-MEMBER STATES/ETATS NON MEMBRES

HOLY SEE/SAINT-SIEGE

H. E. Mgr. Pierluigi Sartorelli
Apostolic Pro-Nuncio to Kenya

Rev. Emilio Joseph Njeru
Secretary of Catholic Education, Meru, Kenya

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REPRESENTANTS DES ORGANISATIONS DU SYSTEME DES NATIONS UNIES

Organization of the United Nations/
Organisation des Nations Unies

Mr. Bernard T. G. Chidzero
Resident Representative, United Nations
Development Programme in Kenya

Economic Commission for Africa/
Commission économique pour l'Afrique

Dr. Ademola Banjo
Head, Science and Technology Section

Mr. Samuel I. Edokpayi
Head, Manpower and Training Section

Mr. Julien Quirino-Lanhounmey
Head, Rural and Community Development
Section

United Nations Children's Fund (Unicef)/
Fonds international de secours à l'enfance (FISE)

Dr. V. K. Kyaruzi
Director, Unicef Office in Lagos

Mr. Eriya Mambalé Kigundu
Assistant Programme and Supply Officer,
Kampala

United Nations High Commission for Refugees
(UNHCR)/Haut Commissariat de Nations Unies
pour les réfugiés (UNHCR)

Mr. Kwame Agyeimane Amoo-Adare,
Regional Liaison Office of UNHCR, Addis Ababa

International Labour Organisation ILO/
Organisation internationale du travail (OIT)

Mr. Albert Tevoedjre
Regional Co-ordination in Africa

Food and Agriculture Organization of the United
Nations (FAO)/Organisation des Nations Unies
pour l'alimentation et l'agriculture (FAO)

Mr. A. E. Chinbuah

World Health Organization (WHO) /
Organisation mondiale de la santé (OMS)

Dr. G. Glynn,
Acting WHO Representative, Office for Kenya
and the Seychelles

Dr. M. F. Yopez

Dr. Edith M. Alexander

International Bank for Reconstruction and
Development (IBRD) / Banque internationale pour
la reconstruction et le développement (BIRD)

Dr. D. S. Ballantine

Dr. Mats S. Hultin

International Civil Aviation Organization (ICAO) /
Organisation de l'aviation civile internationale
(OACI)

Mr. P. C. Timmer
Project Manager,
United Nations Special Fund Project,
Nairobi

World Meteorological Organization (WMO) /
Organisation météorologique mondiale (OMM)

Dr. H. W. Sansom
Deputy Director,
E. A. Meteorological Department

V. OBSERVERS OF OTHER INTERGOVERNMENTAL AND/OR INTERNATIONAL NON-
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OBSERVATEURS D'AUTRES ORGANISATIONS INTERGOUVERNEMENTALES ET
NON GOUVERNEMENTALES

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ORGANISATIONS INTERGOUVERNEMENTALES

African Development Bank / Banque africaine
de développement

Mr. David Nabeta, ADB Director,
Jinja, Uganda

Commonwealth Secretariat

Mr. H. W. Springer, Assistant Secretary-General

Joint Afro-Malagasy Organization / Organisation
commune africaine et malgache

M. Albert Ekue, directeur des affaires culturelles

Organization for Economic Co-operation and
Development / Organisation pour la coopération
économique et le développement

Mr. Francis Wells,
Head of the Economic Development Division

East African Community / Communauté de
l'Afrique orientale

Mr. James Walukaka-Abwao,
Under-Secretary,
Recruitment and Training

B. INTERNATIONAL NON-GOVERNMENTAL
ORGANIZATIONS / ORGANISATIONS INTER-
NATIONALES NON GOUVERNEMENTALES

(Category A)

African Society of Culture / Société africaine de
culture

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professeur à l'ENS de Bamako

International Co-operative Alliance / Alliance
coopérative internationale

Mr. J. J. Musundi,
General Secretary of the Kenya National
Federation of Co-operatives, Nairobi

International Social Science Council / Conseil
international des sciences sociales

M. F. N. Agblemagnon

International Council of Scientific Unions / Conseil
international des unions scientifiques

Dr. W. K. Chagula, Principal,
University College,
Dar-es-Salaam and President East
African Academy

International Confederation of Free Trade Unions /
Confédération internationale des syndicats libres

Mr. Paul S. Kanyago,
Research Officer, Kampala

World Conferation of Organizations of the Teaching
Profession (WCOTP) / Confédération mondiale des
organisations de la profession enseignante
(CMOPE)

Mr. Stephen J. Kioni
Professor Francis C.A. Cammaerts,
University College of Nairobi

International Association of Universities (IAU) /
Association internationale des universités (AIU)

Dr. A. T. Porter,
Principal,
University College, Nairobi

(Category B)

Catholic International Education Office /
Office international de l'enseignement catholique

Rev. I. M. Onyango,
Education Secretary-General,
Kenya Catholic Secretariat,
Nairobi

Rev. James Delaney, C.S. Sp.,
Education Secretary,
Kenya Catholic Secretariat, Mombasa

Rev. H. M. Hemelrijk, Educational Secretary,
Kisumi

Commission of the Churches on International
Affairs / Commission des églises pour les
affaires internationales

Mr. Allan J. Gottneid,
Secretary for Christian Educational Research,
Evangelical Lutheran Church of Tanzania,
Arusha

Friends World Committee for Consultation /
Comité consultatif mondial de la Société des amis

Dr. Filemona Fundi, Indire,
Senior Lecturer in Education,
University College, Nairobi

International Association of University Professors
and Lecturers (IAUPL) / Association internationale
des professeurs et maîtres de conférences des
universités

Dr. J. M. Waithaka, Lecturer, Department of
Botany, Executive Member of Academic Staff
Association,
Nairobi University College

International Council of Women / Conseil
international des femmes

Miss Eva Ricketts, University Lecturer,
Member of the National Council of Women
in Kenya

International Union for Conservation of Nature
and Natural Resources / Union internationale pour
la conservation de la nature et de ses ressources

Dr. D. P. S. Wasawo, University College,
Nairobi

The World Alliance of Young Men's Christian
Association / Alliance universelle des unions
chrétiennes de jeunes gens

Mr. Fritz Pawelzik,
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Development Programme,
Nairobi

World Assembly of Youth / Assemblée mondiale
de la jeunesse

Mrs. Eugénie Dorothy Hughes,
Youth Council of Kenya

World University Service / Entraide universitaire
mondiale

Professor Joseph M. Mungai, Chairman
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Association des universités entièrement ou
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M. Driss Amor

International Federation of Business and
Professional Women / Fédération internationale
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Dag Hammarskjöld Foundation / Fondation
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Dr. Lars Olof Edström,
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Phelps Stokes Foundation / Fondation
Phelps Stokes

Mr. F. Patterson, President

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l'Unesco
Mr. C. Flexa Ribeiro
Assistant Director-General for Education, Unesco/
Sous Directeur général pour l'éducation de
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M. J. D. Buliro
Assistant Secretary-General of OAU/
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Mr. G. Pognon
Assistant Secretary-General of OAU/
Secrétaire général adjoint de l'OUA

Joint Secretaries-General of the Conference/
Secrétaires conjoints de la Conférence

Mr. L. Fernig (Unesco)
Mr. J. D. Buliro (OAU)

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Mr. C. Flexa Ribeiro (Unesco)
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Assisted by/assistés de
Mr. R. Ochs (Unesco)

Mr. A. O. Odelola (OAU)
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Mr. I. Hizekiel (OAU)

Representative of ECA/Représentant de la CEA

Mr. A. Banjo

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Mr. F. Warsama (OAU)

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Mr. A. Banjo

Additional resource officers/Autres conseillers
techniques

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Mr. E. Solomon, Mr. G. D. Bishop,
Mr. A. Salmon, Mr. W. Fishwick,
Mr. F. A. Varley

OAU:

Mr. Hizekiel

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Mr. Y. Lijadu (Radio, film, TV/Radio, cinéma,
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