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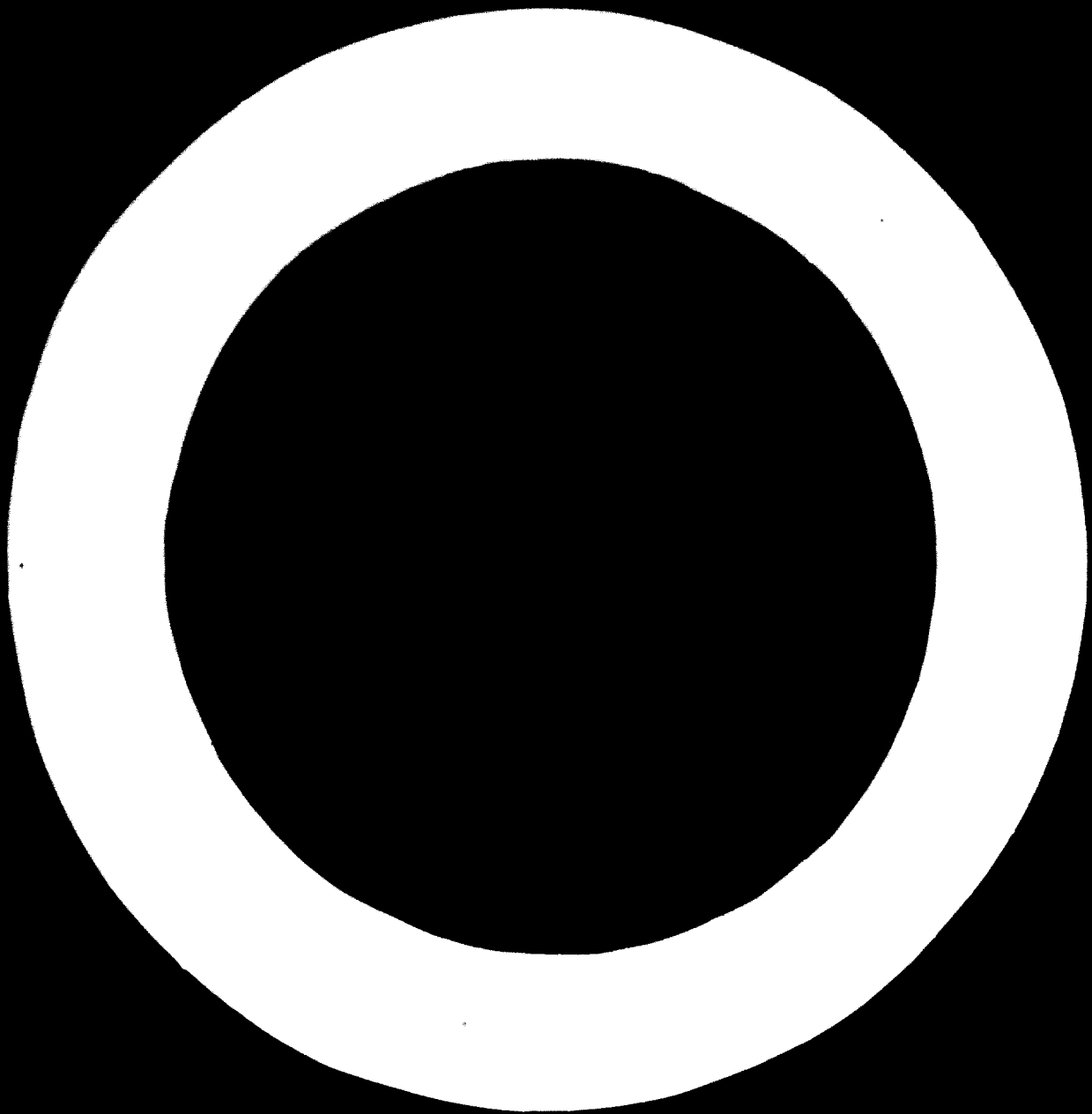
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Symposium on Industrial Development in Africa
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REPORT OF COMMITTEE I



Industrial programming and project evaluation

1. In an introductory statement the secretariat underlined project evaluation as an essential link between an industrial plan and the individual project. Before the financing body could accept an industrial project it must satisfy itself that it would be a paying proposition. Four approaches to programme evaluation had been recognised as a result of the Inter-Regional Symposium on Industrial Project Evaluation held in Prague in 1965.
2. The first of these was the workshop approach, whereby officials and others designated by their respective governments could obtain training in project evaluation or in the identification of investment opportunities, the selection by comparison of projects submitted, the evaluation of projects in the framework of national plans, etc. The second approach consisted in the establishment of permanent machinery for industrial evaluation. Examples of this could be found in the industrial research and studies centres now being developed in Tripoli (Libya) for the Maghreb countries, and on a national basis in Tunisia. The third approach, in operation in Tanzania, consisted in putting a group of project evaluation experts at the disposal of the Government. The fourth approach which would be studied further, it was hoped, at the projected World Symposium on Industrial Development, consisted in viewing an industrial project against a world background as regards raw materials, markets, capital, to determine whether or not it would be a viable proposition.
3. It was requested that in view of the far reaching recommendations of the Prague Symposium on project evaluation and its relevance to the present

Symposium, the secretariat of the ECA should see to it that these recommendations were made available to the delegates. Another recommendation of the Prague Meeting which received attention was that regarding the holding of another inter-regional symposium to consider the location of industries, whether sub-regional, multi-national or at the national level. It was hoped that such a conference would take place some time in 1967.

4. It was suggested that owing to the limited resources of many African countries it would not be possible for all of them to have their own programme evaluation centres. A way out would be to expand an already existing training centre like the Dakar Institute to incorporate project evaluation in its programme of courses. Thought should also be given to the establishment of project evaluation centres either at regional or sub-regional levels, so that countries which could not afford centres of their own could benefit from the regional, sub-regional or multi-national ones.

5. It was emphasized that special importance should be given to the national profitability factor as compared with the commercial profitability in the process of evaluation of industrial projects in developing countries.

6. It was suggested to endorse the recommendation of the inter-regional symposium held in October 1965 in Prague concerning the establishment by the U.N. of a Manual on Project Evaluation, preferably with a separate volume referring to specific factors of interest to African developing countries.

7. It was considered that since final decisions on the relative priorities of industrial projects in developing countries were mainly a matter of policy decisions in each country, the U.N. should speed up the formation of

training workshops on Industrial Project Evaluation to form a nucleus of national experts in this field.

8. The representative of the African Development Bank pointed out that so far as project evaluation was concerned it would be advisable to arrange for the African countries, according to appropriate methods to be determined, to pool their human resources and experience in the field of industrialization, since any individual African country would have difficulty in undertaking the necessary studies alone, and therefore has to resort to foreign study bureaux, the independence and sincerity of which must later be verified - something which very few African countries can do on their own account. By pooling their resources from the studies standpoint, the African countries as a body would then have the possibilities and experience in most fields of industry to be able, if not to carry out all the necessary studies themselves, at least to undertake some of them and to keep a serious check on studies being carried out on their behalf by study bureaux located outside Africa.

9. The following conclusions were reached:

- (a) The overriding need is for a great intensification, with UN and other assistance, in the number of industrial projects for which detailed feasibility and engineering studies as to their soundness can be undertaken. The other conclusions should be taken within this context;
- (b) Since an industrial project can only be considered as a part of the industrial development programme of a country, which latter is in itself a part of the general plan for the

country's economic development, an industrial project should, therefore, be evaluated within the framework of the general strategy of industrial development. A project report should point out how the proposed project fits in with the broad national objectives and the development programme of the country;

- (c) Commercial profitability alone is not a sufficient criterion in developing countries seeking accelerated industrial development. National economic profitability occupies a central place in various considerations applied in appraising industrial projects. The introduction of the measurement of national economic profitability will be a major advance in improving evaluating practices in developing countries. Examinations of commercial profitability, however, also have an important role to play;
- (d) The follow-up of approved projects in developing countries has been impeded by difficulties in the execution of projects in the form of delays in the planning time-schedule or overruns in costs. Follow-up should, therefore, be made through continuous re-appraisal of the project in the course of implementation and full use be made of the feed-back information made available through the process of follow-up. The use of network theory including critical path method in planning, implementation, construction and follow-up of industrial projects should be further explored;

- (c) The UN is called upon to speed up the organisation of training workshops at national and multi-national levels to help train a nucleus of local personnel who can apply improved practices and procedures in evaluating industrial projects. The widening of the scope of activity of the Institute at Dakar to cover evaluation problems should be considered;
- (f) The UN is also requested to prepare a manual on industrial project evaluation which can be used by evaluating agencies and educational and training institutions in developing countries. The preparation of a special volume for the service of African developing countries would be welcomed;
- (g) The Symposium suggests the establishment of an African Institute for Industrial Promotion as a positive contribution of the UN in its efforts to promote industrial development;
- (h) The Symposium suggests that a special seminar or symposium be organised at an inter-regional level to discuss the principles and factors involved in the choice of location for industrial projects and industrial complexes;
- (i) To offset the present shortage of African personnel familiar with project evaluation, the African countries should pool whatever technical knowledge and practical experience they may have on the subject.

Manpower and planning

10. In introducing the subject of manpower and planning, the secretariat pointed out that one of the limiting factors to accelerated economic growth

was the lack of manpower, in the form of skilled workers and entrepreneurs. Developed countries like Japan and Germany had clearly demonstrated that their economic progress had been due more to improved skill and management than to availability of capital.

11. With a few exceptions the African countries have not been able to make adequate provision for trained technical and managerial personnel; consequently they were obliged to rely on expatriate personnel in this respect. Apart from the high cost involved, this process of reliance on foreign manpower was not the answer to the shortage of manpower. It was estimated that by 1975 manpower requirements could be as follows:

Engineers and scientists	51,700
Technicians and foremen	111,900
Managerial staff	26,800
Skilled workers	1,722,000

12. These estimates could serve as a rough guide for re-evaluation of African training policies and strategies in the field of industry. It was necessary to make realistic manpower estimates based on:

- (a) comprehensive and phased national development plans;
- (b) economic priorities and targets;
- (c) manpower surveys showing current supply and demand by skills and economic sectors and development trends and anticipated needs.

13. The secretariat concluded by stressing the need for positive steps to train workers at all levels and urged that in the institutes of learning the dignity of labour should be emphasized.

14. The ILO representative dwelt mainly on the contribution of his organization to industrial development, particularly manpower. The ILO

was carrying out large-scale activities of a mainly operational character in regard to the training of manpower and to management development and productivity, which were vital to the success of a policy of industrialization. In 1962, ILO operational activities covered 73 projects with 145 experts; in 1964, 80 projects with 250 experts; in 1965, over 100 projects involving more than 500 experts. In Africa many countries benefit from the ILO training schemes. In the UAR, the Government with the help of ILO had established an Instructor Training Institute in Cairo, which prepared the instructors required by a large number of highly specialized vocational training centres where some 80 separate occupations were being taught over a period ranging from a few months to three years. In Nigeria, some 400 instructors and about 1500 foremen and supervisors were being trained under a national training scheme for which the ILO was executing agency under the UN Development Programme.

15. In the field of management development and productivity, the ILO was undertaking several projects in different parts of the world. In Africa there were short-term projects in this field now in operation in Tunisia, Algeria, Ghana and Guinea, while long-term projects had been established in Sudan, Uganda, Tanzania and Kenya.

16. Long-term projects had also been drawn up by the Governments of Ethiopia, Zambia and Malawi with the assistance of ILO. In view of the extreme scarcity of entrepreneurial skills in Africa, all ILO Management Development and Productivity projects in the region included special programmes for the promotion of African entrepreneurship, which constituted a keystone in the long-range economic development of the countries in Africa. The ILO representative concluded

by mentioning the international Centre for Advanced Technical and Vocational Training set up in Turin in 1965 with the co-operation of the Italian Government. When in full operation the Centre would cater for several thousand people. The programmes at this Centre have been designed for five distinct levels: skilled workers, foremen and supervisors, instructors, technicians and managers. In addition to the Italian Government some African countries, notably the Central African Republic, Libya, Madagascar, Morocco, Nigeria, Tunisia, Uganda and the UAR had also made contributions towards the establishment of the Centre.

17. In the discussion it was pointed out that developing African countries did not have the time to go through all the stages of industrial development of the advanced countries nor could they afford merely to copy their standards of skills. Training should be specific and this would naturally lead to improvement of skills. Developing countries should plan their industrialization as if they were in a time of war. They should embark on crash programmes of development and relate their systems of education at all levels to the needs of the country.

18. Four criteria were suggested for developing countries: speed, quality, efficiency and proper organisation. If development programmes were phased, and the time-tables adhered to, making the best use of proper training media, speed would be achieved. High quality must be insisted upon from the beginning, otherwise poor standards would set in and manufactured articles could not hope to compete on the world market. Efficiency through the proper exchange of experience between school and life and between theory and practice must also be stressed and aimed at from the start. Efficiency

should be the main criterion for selecting and placing personnel in jobs. Proper national vocational guidance should be established in order to mobilise effectively the national abilities along education levels and ladders of skills. Proper organisation would enable the realisation of the objectives which the nation had set itself. It was suggested that a special institute for the training of human resources should be established, which should include a centre of documentation in all major languages of Africa. It was pointed out that while the difficulties of manpower and training could be depressing, comfort should be taken from the fact that even in the developed countries much of the training and skill had been acquired through on-the-job training. It was the industries themselves which had helped to develop skills rather than long processes of training schemes.

19. It was suggested also that too much attention tended to be given to capital and national resources in industrial programmes at the expense of manpower. Skilled labour shortage was the main bottleneck in the realisation of development programmes.

20. It was also pointed out that education could be geared to the needs of development. People could be taught to read and write through rural development programmes. Even the primary school curricula of the first five years could be adjusted to the needs of rural life. During the next stage, that is from the sixth to the ninth year, emphasis could also be on rural life, but at a higher level. It was only the more talented who succeeded in getting through the ninth grade, that should make their way to polytechnics and other higher institutions of learning.

21. The following conclusions were reached:

- (a) It had been made clear from the survey made by ECA of the manpower requirements and the training facilities and possibilities in the African countries that an immediate organized effort should be made to help bridge the gap between supply and demand in the various categories and levels of manpower needed for the industrial development of the African developing nations;
- (b) Training on the job offers the quickest and least expensive means for those skills and occupations suitable for this method of training, but fuller co-ordination of formal training facilities within plant should be sought to promote the full utilization of all existing training facilities in the preparation of all categories of skills and professions.
- (c) Accelerated training, retraining and upgrading of labour should have an important role in developing countries as this enables large numbers of workers to be made available quickly for specific jobs to make up for the shortage of skilled manpower for the present and for the immediate future;
- (d) Planning for manpower requirements should be one of the main objectives in the development programmes of all African nations. Lack of skilled manpower has proved to be a limiting factor in development in most African developing countries;
- (e) Training of technicians, instructors, supervisors and managerial staff should be planned at the regional and sub-regional levels, the location of specific specialized training institutions

being selected and distributed among developing countries according to studies to be made by the specialized agencies of the UN;

- (f) Special UN centres for the training of African national specialists in problems of industrial development should be organised and run by the UN in the African countries or groups of countries, with local development problems and projects as case studies;
- (g) The establishment of a training institute for human resources development in Africa, including an adequate centre of documentation in all major African languages should be aimed at by the UN;
- (h) Exchange of experiences, information and visits among African countries in the field of training and productivity should be organised and encouraged.
- (i) Co-operation among African countries should be expanded by making available techniques and systems arrived at and offering easy access to available training facilities and recruitment of the needed instructors and experts in the fields of training and productivity. Thus the African continent would make the most of its own possibilities before turning to outside sources;
- (j) Expansion of available facilities in Africa for higher education and research should be studied;

- (k) A special symposium on human resources development including training, education and productivity should be organized for the region of Africa.

Financing of industrial development

22. The subject was tackled from two aspects: domestic financing and external financing. The secretariat stressed that domestic financing was not given the emphasis it deserved when countries came to consider the question of financing their industrial development schemes. Small-scale industries, for instance, would benefit considerably from domestic financing if the rate of domestic saving could be stepped up.

23. Perhaps too much was made of the vicious circle between low incomes and low savings in countries with a relatively stagnant economy, and there was a general recognition that despite sacrifices and difficulties there must be higher savings from domestic sources. When such an approach was adopted it would be seen that the so-called vicious circle could be broken. Investment generated income, which in turn made possible increased savings. It was also recognized that where domestic financing was forthcoming external financing might increase. It should be remembered that industrial development programmes could not be financed from external sources alone, even if this were desirable, and that sometimes potential investors were inhibited from initiating investment in industrial enterprises owing to insufficient facilities, or inadequate awareness of facilities, for complementary financing.

24. Other points which received general recognition were:

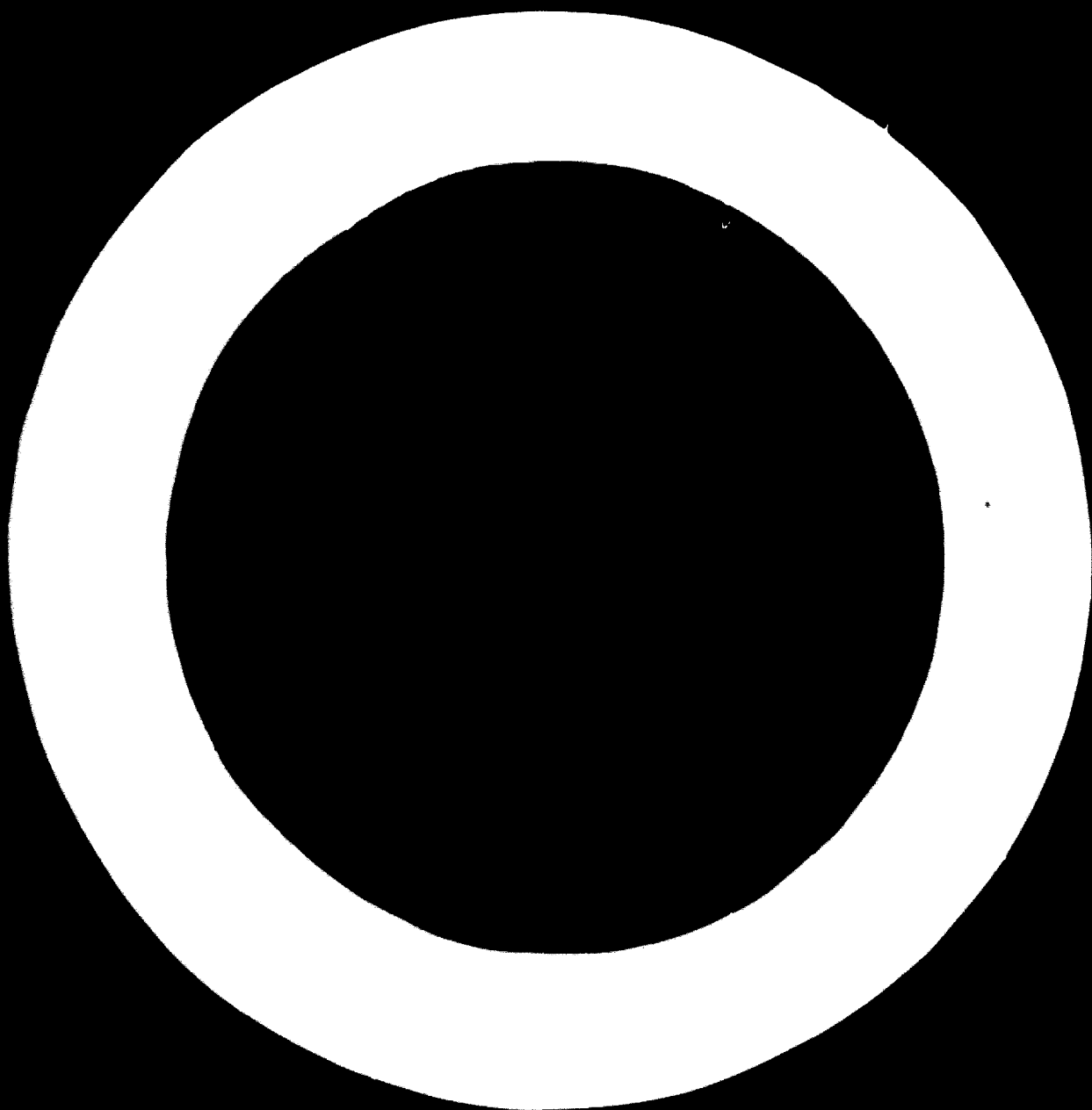
- (a) The need for financial institutions to mobilize domestic saving for local investment, for instance, cooperative banks;
- (b) The need for creating or strengthening industrial development banks;
- (c) The establishment of financial institutions to help small-scale industries obtain capital equipment, loans at reasonable interest rates, and foreign exchange to pay for imported raw materials and equipment;
- (d) The setting up of specific agencies like industrial development corporations as a means of promoting industrialisation in State or private sectors or in joint State/private sectors;
- (e) The manipulation of fiscal policy in various forms, as a device to promote and generate savings and new forms of revenue and to improve existing tax systems; a number of African countries were doing this: of particular interest was the experience of one country in imposing a tax on sugar to finance the building of a new dam;
- (f) The promotion of a system of ploughing back profits for the financing of industries and related agencies such as marketing boards for purposes of industrial development;
- (g) The representative of the African Development Bank described in detail the structure and financial methods

of the African Development Bank and the manner in which it would finance investment projects in general and industrial investment projects in particular. Although at the moment the Bank had at its disposal only the resources accruing from the paid-up portion of its capital - a capital entirely subscribed by independent African States - such resources were a sufficient proof of African solidarity and constituted a nucleus to attract supplementary foreign capital. In view of Africa's needs in capital, the Bank was currently trying to influence countries providing capital to contribute within the framework of the Bank - all necessary provisions for receiving such sums being contained in the Bank's statutes - to "Special Funds", to enable the Bank to grant long-term loans at a low rate of interest, particularly for projects relating to infrastructure or to cultural and social services. The Bank was also pressing for the establishment of a "special fund" to reduce the interest rate on loans floated by African countries on capital markets, more particularly for less profitable or long-term agricultural or industrial projects.

The representative of the African Development Bank also outlined the conditions governing the Bank's activities as laid down by the Board of Directors at

its last meeting, in an endeavour to adapt methods of financing to prevailing conditions in Africa. They were briefly as follows

- (i) Possibility for the Bank to grant loans either to Governments of member States or to public, semi-public or private enterprise in member States. In the latter case, the Bank would require the national participation by way of capital and personnel to be substantial.
- (ii) Possibility for the Bank to take action either through ordinary shares (IBRD type) or through participation in capital (IFC type), or else by means of special loans (IDA type), if the Bank succeeds in raising special funds.
- (iii) Necessity for the Bank, in conformity with its statutes, to grant priority to multinational projects without excluding national projects.
- (iv) Possibility for the Bank to grant specific loans for individual projects, or overall loans - particularly to national or sub-regional development banks - to finance a series of projects within the framework of an overall programme.
- (v) Adoption of two interest rates based on the degree of profitability of the project.
- (vi) For carrying out projects, priority will be given to African commodities and services, provided the cost is not too high in relation to that of imported goods and foreign services.



- (b) General recognition was given to the preference for trade to dependence on external financing, which, in any case, could not continue indefinitely.
- (c) It was agreed that price stabilisation for the primary products on which most African countries depended for their exchange earnings was essential and the international bodies should help towards this goal;
- (d) African countries should examine carefully the conditions under which external financing was made available to them. They should insist on low interest rates and a period time of repayment spread over a long period. They should be careful, too, about the concessional terms they offered. Concessional terms should often be avoided where they cut across a Government's essential sources of income, and competition in offering concessional terms should be avoided;
- (e) agreement was unanimous on the point that external public financing should preferably not be tied to specific industrial projects and should be given more freely, nor should it have strings attached to it. It was recognised that no country would give financial aid for nothing, all the same, donor and receiving countries should negotiate the terms so that both sides benefit from the transaction;

- (f) There was a suggestion that external financing for multi-national projects should be channelled through consortia or consultative groups formed on a national or multinational or sub-regional basis;
- (g) Suppliers' credits should be carefully looked into in view of their huge cost and the risk of paying unduly high prices for the goods and services received;
- (h) African governments should study the question of foreign exchange and national reserves carefully and take necessary action to prevent an outflow of capital needed to finance industrial development. Similarly the operations of commercial banks should be carefully supervised so that there was no outflow of the much needed capital;
- (i) Industrial estates were recommended as particularly suitable for attracting foreign capital and encouraging national investment. In view of the cost of establishing such industrial estates, assistance from financing bodies and UNDP is particularly advisable.

27. The following conclusions were reached on the questions of internal and external financing:

Internal financing

- (a) African countries should make great efforts to increase their national financial resources, and the possibilities in that respect were still far from exhausted. Unfortunately, the tendency in the African countries was not to make full use of such possibilities;

- (b) Industrial development programmes could not always be financed entirely by foreign capital, even if this were desirable. Investors were often discouraged by a real or imagined lack of internal financing.
- (c). There were several ways of increasing national financial resources: the use of appropriate fiscal instruments, administrative austerity, stimulation of savings through premium bonds, savings certificates, etc.; the use of development banks and reserves accumulated through marketing organizations, etc. African countries should also start industrial development banks or, if they already existed, should extend their field of action. marketing boards often had considerable resources. Such resources could contribute substantially to project financing.
- (d) An increase in savings was not enough. An effort should also be made to use them properly. The establishment of more rigid systems of financial controls and of bodies to promote small-scale industries, to facilitate the granting of loans, and foreign exchange for capital imports might sometimes be advisable.
- (e) It was recognized that external aid is never gratuitous. Nevertheless it was suggested that international finance organizations and developed countries might

be more flexible, more liberal and less restrictive in granting financial assistance. Due note was taken of the endeavours of the African Development Bank to adapt financing conditions to the specific conditions of development in Africa. It was agreed that countries providing capital should respond to the Bank's initiative and set up a "special fund" to enable the Bank to grant loans at a low or reduced rate of interest and repayable over a long period.

External financing

- (f) It should be the aim of external financing to help to break the vicious circle of low income and small savings capacity;
- (g) It should be stressed that in many cases financing was not in itself sufficient to promote industrial development and that often technical assistance, expert personnel, for food aid as provided under the United Nations World Food Programme were also necessary;
- (h) It should be stressed also that, however great the internal effort, in many cases it was not sufficient to meet all the needs of Africa, and that therefore external assistance was required. It was pointed out that the existence of sufficient infrastructure might encourage both national and foreign investment, so that finance organizations, whether national or **multi-national**, should make a special effort in that respect;

- (i) Foreign aid should go hand-in-hand with efforts to improve the conditions of trade. Stress should be laid, more particularly, on the need to stabilize export commodity prices of the developing countries, to lower or abolish barriers to intra-African trade, and to export African products, particularly manufactured goods, to the developed countries;
- (j) It was recognized that external aid is seldom gratuitous. External finance organizations and the developed countries should be requested to be more flexible, more liberal and less restrictive in granting financial assistance.
- (k) African countries should bring all possible attention to bear on the conditions governing the granting of external financial/assistance. In particular, suppliers' credit should be carefully examined before being accepted;
- (l) The foreign currency problem should be considered carefully. Banking activities should be supervised with a view to restricting or eliminating any leakage of capital.

Industrial research

28. The aims of industrial research were stated to be as follows: to create new technology, to adapt known technology to local conditions and to maintain processes and operations in industry

either created or adapted at the highest efficiency. These objectives could be obtained in a number of ways, for instance, (a) through applied research into discovering new processes and methods which promote the expansion of existing or the development of new industries or for improving the technical processes or the better utilization of raw materials or waste products, (b) research in order to adapt known processes of operation to local conditions, (c) industrial testing and quality control, etc.

29. The organization of services connected with industrial research required a large staff of specialists, costly equipment and facilities and high annual recurrent expenditure. Most African countries would find the cost involved in industrial research beyond their means. Thus two alternatives were suggested.

30. First multi-service arrangements with the objective and functions defined earlier, to serve a group of countries.

31. Secondly, a nucleus of technology in each of a group of countries by provision of specialised laboratories each working for a group in that field under an overriding Council which would harmonise and co-ordinate the research programmes and direct as well as administer the institutes in question.

32. With limited resources in finance, and qualified personnel, African countries would do well to relate the industrial research programmes to their immediate needs.

33. A distinction was made between pure academic research for its own sake and applied research. It was not always easy to

apply the results of research to industries. Sometimes the personnel capable of transferring the results of research into production might be in extreme short supply. Certain developed countries had been able successfully to apply the results of their research to industries and the African countries could profitably benefit from their experience.

34. The Committee generally agreed that because of limited resources industrial research should be on a co-operative basis, either regional, sub-regional or multi-national and that African countries should place emphasis on applied research, which should be closely linked to the development plans of individual countries.

35. The representative of the UN Advisory Committee on Science and Technology, associated with the secretariat in introducing the subject, stressed the major role of Science and Technology in industrial development. He stated that the needs of different countries differed in relation to population, resources, economic potential, consumption patterns, national aims and plans and consequently the extent and value of industrial plans differed in content. Stress was laid upon the urgency of building scientific and industrial infrastructure needed in African countries.

36. Reference was made to the outline of a short-term 5 year plan and a longer term 15 year plan for the development of Science and Technology in the countries of Africa. Support and recommendations under these plans covered the need to establish

research centres, documentation and information centres, training institutes, consulting services, etc., at national and continental levels. National research centres it was suggested would help to determine local needs and meet local requirements.

37. The representative of the Advisory Committee informed the Symposium of the Advisory Committee's recommendation that a network of institutes should be developed in each country, designed to attack the problems directly relevant to the development of the country concerned in such fields as agriculture, industry, etc., through the application of existing knowledge and through research. Special attention should be given to the development of adequate systems of dissemination of scientific and technological information. The Advisory Committee also called for the full utilisation of existing institutes especially those going into disuse.

38. As a first step, the ECA regional meeting on Science and Technology accepted the establishment of some of the institutes and centres, e.g. standardization, information and documentation, geological centres, on an all-Africa basis, to serve as training centres of personnel to man later established national institutes and thereby also obtain co-operation on a regional level.

39. Reference was made to the recent proposal by the Secretary-General of the United Nations to expand U.N. technical assistance to developing countries as a 5 year plan towards accelerated exploitation of renewable and non-renewable natural resources.

40. The OAU had established the "Science, Technology and Research Committee" and a "Scientific Council for Africa" and the Advisory Committee for Science and Technology had recommended close co-operation between ECA and OAU.

41. The following conclusions were reached:

- (a) Industrial research should be basically planned to meet the development needs of each African country in general, and each country should be encouraged to build its infrastructure in industrial research;
- (b) Specialized research centres should be established in the various countries for the purpose of co-ordination of research projects of similar or complementary nature and to tackle research projects of common interest to a group of countries;
- (c) A regional scientific information and documentation centre should serve to disseminate technical information and results of research activities on a continental level. This would greatly contribute to helping each country to establish its research programme in the specialized fields which are of particular interest to it. Existing research facilities should be fully utilised before building new ones and African countries should use existing research facilities to help other African countries;

- (d) It should be emphasised that there is importance in the speedy introduction of design and consulting activities in industry. Such activities will contribute substantially towards industrial development in African countries;
- (e) Developing countries should give immediate attention to the adoption of research programmes to deal with their problems of development;

Transport and export of manufactured products

42. The secretariat introduced the **subject** on the basis of its report on industrial development (document E/CN.14/AS/IV/7), economic co-operation and transport. It was pointed out that transport and industrialization were closely linked. The feasibility of establishing an undertaking depended on the dimensions of the market, which in turn depended on communication facilities for reaching the customer.
43. Attention was called to the existing structure of the African transport system which split up the African market, concealed its geographical dimensions and paralyzed industrial development. The Great African Lakes region was cited as an example.
44. In that region 6 great lines of penetration starting out from Port Sudan, Mombassa, Dar-es-Salaam, Beira or Lourenco-Marques, Lobito and Matadi penetrated deep into the interior of the African continent, terminating close to an imaginary line drawn from Juba to Albertville (1,200 km as the crow flies). Traffic along the lines of penetration (consisting exclusively of railways and navigable waterways) was heavy, so average transport costs were very low. To them were added highly discriminatory tariffs which varied according to the type of product, and decreased considerably with distance, so that for

products considered most beneficial the long-distance tariffs might be as low as 0.6US cents/t km, or even lower in the Sudan.

45. On the other hand, the axes of integration which enabled - or had once enabled - trading between the African countries, usually consisted of fair or mediocre roads on which transport rates were from 3 to 6 US cents/t km.

46. This disparity in tariffs between the lines of penetration and the axes of integration had split up the African market in favour of imported products and to the detriment of African products. At the same cost (in certain cases) imports could cover ten times the distance on the lines of penetration that African products could cover on the axes of integration.

47. The result was that industrialization possibilities were masked by the divided market, while transport economists and industrial planners were caught in a vicious circle. Transport economists could not economically justify any considerable improvement in the system, due to lack of actual or predicatable traffic in the absence of any industrial or trading programme at the international level. Further, lack of transport facilities prevented industrial planners from realizing the extent of the potential market, and consequently led to the shelving or postponing of certain industries which in a rebuilt market, would be immediately profitable.

48. To break the vicious circle, an over-all approach was proposed. First, industrial planners might be offered a priori a hypothesis for rebuilding the market: an inter-connexion of the railways and an international transport tariff. Second, industrial planners, agricultural experts, etc. might be asked to study on that basis all industrial establishment possibilities, agricultural specializations and so forth which would become feasible against the background of a rebuilt market. Then on the basis of the data supplied by the various experts, the volume of traffic resulting from such activities could be estimated so as to decide a posteriori whether the initial hypothesis was valid.

49. It was pointed out that the Great African Lakes region seemed particularly suitable for such an approach. Located in the heart of Africa, it was naturally protected by distance from import competition. Densely populated, it was one of the greatest potential markets in Africa. Lastly, it had vast natural resources and tremendous reserves of hydro-electric power. It therefore seemed an ideal location for establishing an industrial development axis from the Sudan to Zambia.

50; To illustrate, some indication was given of the distances and costs involved. Length of line to be built, some 2,000 to 3,000 km, perhaps less (economic and technical studies and negotiations between States could alone determine the exact figure). At an average cost of 100,000 US \$ /km, that would mean spending 200,000,000 to US \$ 300 million.

51. In view of the fact that the current African network, comprising some 80,000 km of railway line, was built in less than a century, i.e., at an average rate of about 800 km. per annum, it did not seem over-ambitious to consider building an inter-connexion covering 2,000 to 3,000 km, to permit the industrialization of a large part of the African continent.

52. Total expenditure likewise appeared to be within the bounds of possibility when compared with other major projects in Africa (the Kanji, Akosneba, Kariba and Aswan dams each cost over US \$ 200 million), or the transport programmes of seven Latin American countries which, for a 7-year period, cost more than US \$ 9,000 million.

53. The secretariat stressed the need for co-ordinating studies as a whole, and cited the committee set up to study the development of the Mekong Basin in South-East Asia as an example. That committee, consisting of Laos, Cambodia, Viet-Nam and Thailand, co-ordinated all the studies carried out by the big United Nations family with a good deal of outside assistance (from over 20 countries, 3 foundations and 4 private companies), thanks to which the committee had so far had at its disposal about US \$ 27 million for studies alone.

54. In view of the studies already undertaken by the ECA on industrial development programming, 500,000 to 1,000,000 US \$ would cover the initial work on the project.

55. The following points were given special recognition:-
- (a) to build up the market, it is essential that goods traffic in the Great Lakes Region, should be facilitated. Multi-lateral and bilateral assistance should indicate to what extent it can contribute to the elaboration or implementation of such plans;
 - (b) transport links bear directly on the promotion of industrial projects and these should be developed at the national, sub-regional, multi-national and regional levels, in close co-operation between the African States. Establishing axes of transport to facilitate integration demands sub-regional or multi-national efforts helped by external financing agents;
 - (c) the African countries should standardise their road signs and decide on a uniform system of traffic, either to the right or to the left. A trans-Africa highway was also recommended;
 - (d) differences existed in technical characteristics of African railways (gauge, coupling, braking system). Standardization was required;
 - (e) improved transport was needed, in view of its direct bearing on location and growth of industrial enterprise (iron and steel works at Tororo - North Cameroon cement works);

- (f) to facilitate exports of manufactured goods, it should be stressed that proper axes of integration would help to develop intra-African trade, the aim of all African countries; but pending that long-term project, immediate steps should be taken such as abolishing restrictions on personal travel or on free movement of goods and capital;
- (g) African manufactured or semi-manufactured products meet with considerable difficulties when it comes to selling in the developed countries. But it was pointed out that African-manufactured or semi-manufactured goods, of comparable quality to those of the developed countries, sell well on the European and American markets. Similarly, there was no difficulty in marketing cocoa-butter. The ECA should be asked to study the markets, sector by sector, in respect of manufactured or semi-manufactured products from African countries. UNCTAD should be asked to collaborate in all such studies to facilitate sales of finished or semi-finished products in the industrial countries;
- (h) an intra-African organization should be established, to promote sales abroad and ensure the necessary publicity. This would be of particular interest to countries unable to maintain special sales-promotion

services with a view to foreign trade. Finally, the importance of transport in industrial development should be stressed with a view to establishing international links, particularly on the Trans-Sahara route. Transport was the most promising field of co-operation for the African States and should be given every stimulus with a view to building up the market and facilitating industrial development.

56. The following conclusions were reached regarding transport:-
- (a) transport links bear directly on the promotion of industrial projects. Such links should be developed at the national and multinational level;
 - (b) while penetration lines from ports and frontiers to centres of activities are a matter for individual countries, axes of integration and main communication arteries covering more than one country demand multinational efforts with assistance from external financing sources;
 - (c) African countries should adopt a unified road signs traffic code; as well as uniform railway gauges and should solve all other difficulties that now stand in the way of international communications. A specific study to this effect should be undertaken by ECA;

- (d) co-ordination between industrial development projects and transportation projects should be made if projects are to achieve their objectives entirely;
- (e) transport proves to be the most promising field of co-operation among African countries and efforts in this direction should be vigorously pursued;
- (f) since the promotion of trade among African countries is the desired objective of all African countries, efforts must be made by each African country to facilitate and encourage free movement of businessmen and goods between African countries.

57. There was agreement to stress the need for promoting the export of manufactured and semi-manufactured products from the developing countries to developed countries to overcome their balance of trade deficits and to be able to import their requirements of capital goods and materials for their industrial programmes.

58. It was agreed also that industrial projects and plans should take account of export possibilities and opportunities and make arrangements for promoting and achieving these.

Industrial standardization

59. In an introductory statement, reference was made by the secretariat to Document E/CN.14/AS/IV/14 and to the resolution

and recommendations of the inter-regional seminar on the promotion of industrial standardization in developing countries held at Helsingor, Denmark, in October 1965. Different aspects of standardization were then defined and treated. Standardization is the process of formulating and applying rules for an orderly approach to a specific activity for the benefit and the co-operation of all concerned, and in particular for the promotion of optimum overall economy taking due account of functional conditions and safety requirements; it is based on the consolidated results of science, technology and experience. Standardization may be either functional or dimensional. Functional standardization includes all standards dealing with "fitness for the purpose". Dimensional standards achieve: (a) simplification, (b) unification and typification; and (c) inter-changeability.

The aims of standardization are to achieve: (a) overall economy, (b) protection of consumers, and (c) safety and protection of health and life.

60. Some details of the experience at standardization in some of the African countries that have been giving serious thought to the subject, were given. All delegations recognized the importance of standardization not only for improving the quality of goods produced but also to give meaning to African economic co-operation and trade. Standardization will make for rationalisation of spare parts and help the mobility of skilled

labour. Where standardization is tackled in the early stages of a country's development it tends to reduce costs.

61. The problem of standardization has been made more difficult by the fact that African countries have inherited differing systems, which constitute an inhibiting factor at present among African countries.

62. The necessity of establishing institutes for standardization was recognized. It was also recognized that such centres or institutes are costly to establish and shortage of qualified personnel was another bottleneck among African countries.

Because of limited resources both in funds and manpower it was agreed that, in view of the general desire of all African countries to have uniform standards, institutes or centres of standardization should be on multi-national levels as a start. Such centres should adopt uniform standards and pool their resources as well as experiences. The help of the ECA, UNDP, UNOID, UNESCO and other international bodies like ISO was requested in the establishment of such centres; including the necessary testing laboratories, quality control centres and help to set up an African standardization centre or institute.

63. It was further recognized that the sooner the question of standardization was tackled by African countries, the better. It was agreed that standardization should start with small things like electrical appliances, road signs, one system of driving throughout the continent, and then extend to the bigger sectors of industrial enterprises.

64. The following conclusions were reached:-

- (a) Since the introduction of standards in the early stages of a country's development tends to reduce cost, it is recommended that each African developing country not possessing standard institutes should attempt to set up at the earliest possible time, an appropriate machinery or institution for the elaboration and implementation of its national standards;
- (b) as co-operation between African countries in the field of standardization and the unification of standards among them is essential if co-operation in other fields is desired and intra-African trade is to flourish, the quick formation of an African centre for standardization* to promote work in standardisation, quality control, and legal and industrial metrology in the African countries along internationally unified lines, is recommended;
- (c) financial and technical assistance from the UN and its specialized bodies is desirable in the establishment of machinery for standardisation, both national and multi-national.

Health aspects of industrialization

65. The secretariat introduced the subject and attention was directed to the WHO paper prepared on the subject, which dealt with the human aspects in development, emphasising health as

essential element in all development programmes, since human beings are the most important development resource and the central factor in development.

66. As regards the industrialization drive in Africa it was stated that African countries were both at an advantage and a disadvantage. The advantage stems from the fact that there was the benefit of the experience of the developed countries. On the other hand, although industrial development in Africa entailed in many cases considerable expense, costs in providing infrastructure and general services to industry, provide also opportunities and challenge in planning for the comfort of the workers, their health, recreation etc. in physical planning of industry are enormous. The developing countries could profit from the experience of the developed countries to provide better living and working conditions for the gainfully employed.

67. In planning for the health, welfare and happiness of industrial workers note should be taken that they are members of a family and a society, and both should be provided for in the general plan. For instance, the members of the family left behind in transferring groups of populations from agricultural to industrial areas should be catered for, otherwise social disorganization with its subsequent behavioral changes and mental disorders will follow.

68. It was recognized that adverse influences of industrialization upon health were due to the rapid transfer of large

groups of population from agriculture to industry, from villages to industrial centres and cities. If the working environment is not designed according to occupational health principles, accidents and occupational diseases would occur as well as unnecessary strain and fatigue of the human body. As regards the new social environment of rapidly created industrial centres, overcrowding, bad housing or slums may result; unsanitary disposal sewage refuse and industrial wastes may result in air and stream pollution. Defective food and water hygiene may lead to increased incidence of communicable diseases. Where families were separated as a result of the transfer of populations to new industrial centres and towns, will disrupt the traditional family life, and might result in social disorganization and maladjustment. The impact of urban life on the diet of rural immigrants varies considerably. There are several incidences to indicate that the diets of rural people can quickly deteriorate when they move to urban centres with a subsequent detrimental effect on health.

69. There was recognition of the need to take preventive measures so that the ills and diseases referred to above do not occur or are reduced to a minimum. Certain provisions were suggested:-

- (a) Health and medical services;
- (b) the guarding of machines and provision of poisonous protective equipment to prevent accidents;

- (c) adequate sanitary facilities;
- (d) visits of health officers both to the factories and the residential areas;
- (e) a comprehensive housing scheme;
- (f) regulated working hours;
- (g) paid holidays;
- (h) canteen facilities in factories, etc.

These and other measures would help to ensure the health of workers and provide for their welfare and happiness.

70. It was pointed out that where industrialists plan for the health and welfare and happiness of their employees, the output was generally much greater in the long run. But employers should not be relied upon alone to plan for the health and welfare of workers. In agreement with the trade unions, governments should intervene through legislation on working conditions to ensure that these employers took adequate measures to see to it that their workers are healthy and happy.

71. In conclusion, the question under discussion - health aspects of industrialization - could be divided into two broad categories:-

- (a) health conditions and services in the community;
 - (b) health conditions and services at places of employment
- Both are closely related and complementary to each other.

72. The following four points emerged from the discussions:-

- (a) Co-ordination of action and thinking on the part of African Governments on what should be done in the field of social and health aspects of industrialization. The OAU could be a good medium for doing this;
- (b) individual Governments could do much in this field by themselves either (a) by providing for housing, health and recreation facilities and schools, etc., and (b) by using their regulatory and supervisory powers to see to it that conditions of workers were improved with the help of the trade unions, and making their own legislation on working conditions;
- (c) in seeing to the health aspects of workers, note should be taken of the fact that workers were a part of society. Hence, these services should be provided for them in the framework of the society in which they lived. People in the community other than the workers should be allowed to use hospitals and clinics built specifically for workers attached to a particular industry, where such facilities for the public do not exist. Pensioners should also be taken care of;
- (d) physical planning and factory layouts should take into account facilities for improving the health of workers and providing for their welfare.

73. The following conclusions were reached:-

- (a) The necessity to plan industrial projects, from the very beginning, with due consideration to the necessary health measures for the control of the working environment and the prevention of accidents and occupational diseases;
- (b) to plan from the very beginning for an efficient preventive and curative occupational health service for the personnel providing replacement and periodical physical, First Aid medical care and health education and counselling. Bearing in mind that the cost of such services is more than repaid by the increase of production and the reduction of cost (through the reduction of absentensism and the increase in productivity);
- (c) to give enough care for the creation of a healthy environment outside the factories themselves, such as community health and medical services, housing facilities, community water supply, safe means for the disposal of sewage refuse and industrial wastes and other community services and facilities;
- (d) to prepare and have available the skilled personnel needed for medical service in factories,
- (e) to develop the local manufacture of articles and products needed for the expansion of such services

in a developing country such as pharmaceuticals, easy made equipment, etc....;

- (f) to put specifications and standards for the industrial products, especially in the food industries and alike that conform with health principles;
- (g) to educate and train workers properly in the use of machines and tools before starting work, as a preventive measure against accidents and enforce other preventive measures relevant to the different industries;
- (h) to pass laws and regulations for health care of the workers and ensure their enforcement;

Industrial statistics in Africa

74. In an introduction by the secretariat, the need was stressed for the collection of comprehensive and uniform statistics of industrial production in Africa if the present programme of regional and sub-regional industrial expansion was to be properly guided and directed. Industrial statistics were also essential to the improvement of the national accounts in which so many countries are deficient.

75 Reference was made to the secretariat paper on the subject : Document E/CN.14/AS/IV/10 of 27 January 1966, which brought out clearly that the statistical information presented in the report was not complete. Co-operation of the various countries with the ECA secretariat was stressed to help compile the necessary statistics. The paper also discussed the taking of a general Census of Industrial Production, covering all sectors; agriculture, mining, manufacturing, energy and services, etc.

76. From the discussion it was made clear that the incomplete information contained in the secretariat paper was partly due to long and slow communications with the various countries and the ECA and partly due to the shortage of experienced staff and inadequacy of facilities in many national statistical centres. It was also mentioned that countries occasionally encounter suspicion when collecting information from industrialists.

77. There was also need for the improvement of methods to enable a truer picture of industrial positions to be obtained from time to time. Questionnaires should be so framed as to elicit information easily and unequivocally from those expected to provide it. A matter which deserved

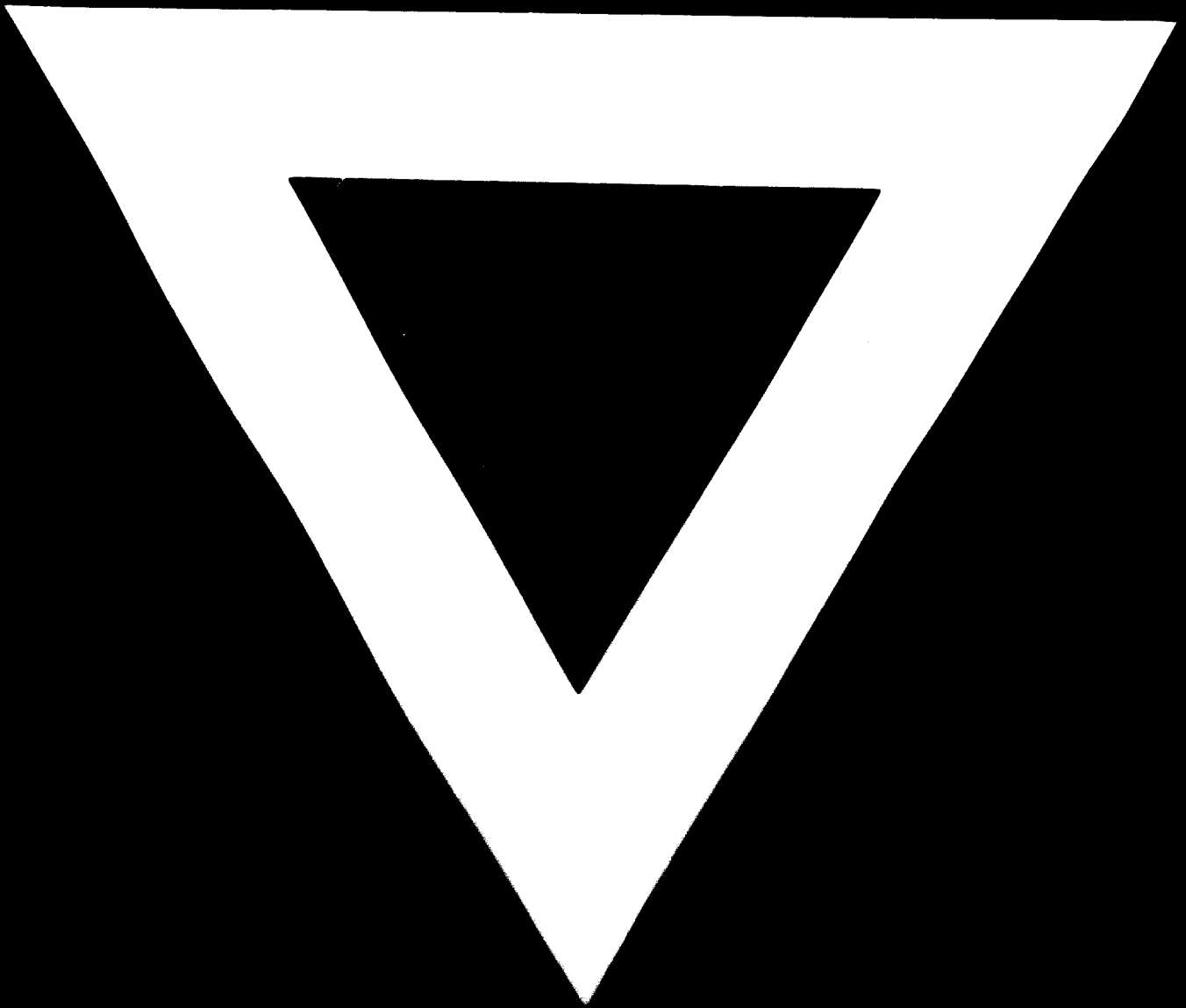
attention was the question of secrecy on the part of the officers of statistics centres and the need for such officers to inspire confidence when they set about the task of collecting data.

78. The suggestion from certain delegations that the holding of industrial censuses, being a costly and time-consuming undertaking, should be carried out at fairly long intervals and thoroughly was found to be the best that might be done under the circumstances. Since some engaged in industry in African countries were illiterate and also moved from place to place, the registration of industrial workers became difficult and incomplete. Industrial censuses held at fairly regular intervals provided a truer picture of the industrial position.

79. Delegates received with interest the communication presented on the principles and methods to adopt in the preparation and operation of an industrial census.

80. The following conclusions were reached:-

- (a) All African developing countries should take industrial censuses as frequently as possible;
- (b) Statistical information should be made available in greater uniformity and consistency within the framework of UN recommendations; and an improvement of statistical methods should be made to enable a truer picture of industrial positions to be obtained;
- (c) Successful industrial development in Africa called for a high degree of co-operation between countries and this is one of the principal factors which should also be borne in mind in organising industrial statistics.



29.3.74