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Training Workshop for
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Addis Ababa, Ethiopia - 17 - 24 November 1970

FINAL REPORT

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C O N T E N T S

A N N E X E S

I.- INTRODUCTION

Background and Purpose

1.- The Industrial Development Board in its Third Session (Vienna, 24 April to 15 May 1969) stressed the importance of standardization and the need to give special attention to this activity in developing countries.

The United Nations had sponsored in 1965 an Interregional Seminar on the "Promotion of Industrial Standardization in Developing Countries" in Helsingör, in co-operation with the Royal Government of Denmark. Another meeting was jointly sponsored in 1966 in Moscow by CID (predecessor of UNIDO) and DEVCO on the occasion of the General Assembly of ISO in Moscow.

2.- In order to approach the problems of standardization in developing countries in a systematic manner, this Workshop is being now organised for the English speaking African countries in co-operation with the United Nations Economic Commission for Africa (ECA) as a first of a series to be organised in subsequent years. The overall purpose of the Workshop is to review and discuss:

(1) the role of standardization in the countries of Africa and its contribution to industrial development with particular reference to specific sectors or products and its contribution to export promotion;

(2) problems involved in the establishment and operation of a National Standardization Body;

(3) the change from the Imperial to the Metric System;

(4) the necessity for a sustained testing and the establishment of a national quality control programme including the unification of testing methods and certification;

(5) the needs for training at the national and regional level.

Furthermore, it is expected that the Workshop will provide a forum for the exchange of experience of the participating countries of Africa in their standardization activities and their achievements in this field as well as their plans for the future on the one hand and the experts from developed countries on the other, thereby fulfilling a training function as well as providing guidelines for possible future work of UNIDO in this field.

Organization

3.- The Training Workshop for Personnel engaged in Standardization was held at the Africa Hall, Addis Ababa, Ethiopia, from 17 to 24 November 1970. The Workshop was organized by UNIDO (United Nations Industrial Development Organization) in collaboration with ECA (UN Economic Commission for Africa) and ISO (International Organization for Standardization). Mr. R. Schmied, Industrial Development Officer, Industrial Institutions Section, UNIDO, and Dr. A. Banjo, Head, Science and Technology Section, ECA, were Director and Technical Director of the Workshop, respectively.

4.- The Workshop discussed organizational, procedural, operational, financial and promotional aspects of standardization activities in developing countries. Discussions were based on several papers prepared by experts as well as on papers presented by participants and other background material.

Opening Session

5.- The Workshop was opened by a welcoming address given by Mr. Zawdu Felleke, Acting Director of the Standards Section, Ministry of Commerce, Industry and Tourism, to the participants, experts and observers, on behalf of the Imperial Ethiopian Government. Introductory statements were also given by Mr. G. E. A. Lardner, Chief, Division of Economic Research and Planning, ECA, Mr. W. Artels, International Organization for Standardization (ISO) and Mr. R. Schmied, UNIDO.

Attendance

6.- The Workshop was attended by:

- Six experts with executive positions in National and International Standards Organizations, from the following countries: India, Poland, Sweden, Switzerland, United Kingdom, Yugoslavia;
- Ten participants from the following countries. Ethiopia, Ghana, Kenya, Nigeria, Sudan, Tanzania, Zambia and the East African Community;
- Three observers from: Malawi, the U.S. National Bureau of Standards, and the IEC (International Electrotechnical Commission).

Election of Officers

7.- The Workshop unanimously elected the following officers:

- Chairman: Mr. Zawdu Felleke (Ethiopia)
- Vice-Chairman: Mr. David O. Ogun (Nigeria)
- Rapporteur: Dr. Maurice N. Dangana (East African Community)

Agenda

8.- At its first Session the work programme and agenda were unanimously adopted with a slight amendment to the former, to provide for the presentation and discussion of a paper by the IEC (International Electrotechnical Commission).

Documentation, Report and Working Language

9.- Documents prepared in connection with the Workshop included the following: information papers and discussion papers presented by the experts in advance of the Workshop, as well as information papers distributed at the Workshop. A list of these documents is given in Annex 3. In addition, statements were prepared by the participants and the IEC, and distributed at the Workshop: these papers are given in Annex 2.

10.- At its closing session, the Workshop unanimously approved the draft report of the discussions that took place. The recommendations formulated by the participants and the experts were carefully considered and unanimously approved.

11.- English was the official working language of the Workshop.

Closing Session

12.- At the end of the last discussion session, a 16 mm colour-and-sound film was presented by Zambia on the subject of "Metrication in Zambia".

At its closing session the Workshop was addressed by Mr. G. E. A. Lasdner, Chief, Division of Economic Research and Planning, ECA, and Mr. H. Schmied, UNIDO. The closing statement was made by the Chairman of the Workshop, Mr. Zawdu Folleke, Acting Director, Standards Section, Ministry of Commerce, Industry and Tourism, Imperial Ethiopian Government.

II.- THE DISCUSSIONS

Organization and Operation of a National Standards Body

13.- Introducing the paper, Mr. J. M. L. G vin, a Technical Director of the British Standards Institution (BSI) stated that the advantages of standardisation are well-known to participants and what is important is to convince others of these advantages. In setting up a National Standards Body, one needs co-operation from many quarters: Government, manufacturing interests and other interests as well. Any successful attempt in setting up a National Standards Body is bound to involve a good deal of publicity which entails educating people through lectures, written papers, etc. The advantages could conveniently be covered under four themes:

- clarity in commercial transactions,
- fitness for purpose,
- reduction of variety,
- interchangeability.

14.- From a wider view standardization helps towards the achievement of greater efficiency in ensuring that human effort is directed to the most economic ends. As a result of the increased efficiency, a continuous improvement in the standard of living should take place.

15.- A résumé of the functions of a National Standards Body could be made through progressive stages of the development of standardization activity. Progressively, the succession provided for.

- A company standard used in an industrial or commercial concern for guiding its purchasing, manufacturing and sales operations,
- A national standard produced by a National Standards Organisation;
- An international standard or recommendation resulting from an agreement between those countries which have a common interest in the subject.

16.- These stages represent successive steps in the process of standardisation, but developing countries do not necessarily have to follow the same process. In effect, they could approach the problem by inverting the order of succession and beginning at the end of the process. By getting together interested parties in the country, by consulting standards of other countries and particularly by consulting ISO specifications, it is possible to agree on what is a suitable standard and adopt it without waiting for suggestions from below.

17.- Whatever method is used, standards must command the confidence of both the producer and the user so that at some stage in drafting the standards all the interested parties must be given a chance to express their opinion. They must be consulted.

18.- With regard to actual organization and establishment of a National Standards Body, it is advisable to start in a limited way with a small nucleus organization to prepare for the wider functioning of the standards body. Representatives from various interested groups of the community should be consulted. It is essential that the projects undertaken should be those that can succeed in order to build up the confidence of interested parties.

19.- A Standards Council to provide advice and support should be established. The degree of government participation in the Council will naturally differ from country to country depending on local conditions.

20.- In initiating a standardization programme, it is important that due consideration should be given to the particular economic and social conditions that exist in a country, including the regional structure. Similar considerations must be borne in mind when studying the best methods of applying to developing countries the standards techniques which have grown up over the years in industrialized countries.

21.- As a first step, a survey is required of the fields in which the need for standards and their enforcement is most urgent in relation to economic plans and objectives. These include:

- Exports;
- The home market;
- Imported goods;
- Safety regulations and codes, building regulations, etc.

22.- Physical requirements.

- In the initial stages it is necessary to employ a skeleton staff. The senior officer responsible for organisation, for information, for negotiation with the variety of interests concerned, for planning and publicity, will need to be of high calibre. He will need a supporting staff of secretaries to committees, of editing publications and of running the sales department. Secretaries to committees are of vital importance. They need three qualities: a certain technical background, efficiency in their work and the right personality.

- From the outset, the staff will have to create a library or develop any existing one,
- Testing facilities are of fundamental importance. Some will probably exist in educational, research organization, or in associations of producers or manufacturers. A central testing laboratory as part of the standards authority may sooner or later be necessary. The existence of an independent testing laboratory and its use by purchasers can do much to develop trusted standards.

23.- The application of standards is ensured in two ways, either through imposition by legislation or implementation by persuasion and voluntary adoption. It is impossible to generalise on which mode of implementation is better. In the United Kingdom and other industrialised countries, manufacturers and users are already conditioned to appreciate the value of standardization and the principle of voluntary adoption is generally accepted. In developing countries however, benevolently operated legislation is likely to obtain the most rapid immediate results. However, the minimum amount of imposition is probably the best answer. It is also preferable that the legislation should make cross-reference to the standards body's publications.

24.- In the discussion, it was brought out that publicity techniques differ from country to country and depend on whether overall or partial standardisation is intended to be covered. In countries embarking on standardisation on a large-scale, publicity could be undertaken in a general way in order to get the backing of the people concerned. It was pointed that much of this type of publicity has already been done in most of participants' countries through government backing; but the process must be continuous. With regard to specialized publicity intended for a particular group, it is essential to ensure that the people concerned are consulted, otherwise there would be difficulties later on. This is particularly true with publicity directed at exporters, manufacturers and all the people concerned with the commercial side of the venture as well as any government departments concerned. A sustained effort of explanation of the motives is necessary. This view was shared by

most of the experts who emphasized that when setting up a national standards body, it is vital to gain the confidence of all parties concerned, and convince them of the need to have a unified and centralized documentation. In this perspective, direct contacts are usually fruitful.

25.- The need for concerted efforts to arouse standards-consciousness in the countries concerned was re-emphasized. All media of publicity should be used. Popular articles should be published in the local press in addition to technical articles for the specialized press. Radio discussions need to be organized on subjects appealing to a large audience and lectures to be delivered to educational and technical institutions. Annual "Standards Conventions" on topics of general interest and "Industry-wise" Conferences may be organized in addition to frequent press conferences given by officers of the National Standards Body.

26.- During the discussions, it was also emphasized that whatever structure is decided upon, the first step must be to designate the supreme authority for management of the standards body, i.e., the Council or Board, etc. There are many advantages in not confining this Supreme Authority to government officials only. It is preferable that it should be reasonably large, with a smaller executive body to supervise the day-to-day functioning of the organization. On the other hand, technical committees for the formulation of standards need not be necessarily large but should represent a wide cross-section of interests concerned.

27.- As to the question of merging standards and weights and measures bodies, the Workshop was of the general feeling that while in their initial stages the two institutions could be merged, they could, however, be separated after their specialized functions have developed. At present, the two institutions function as one body in some countries and are separated in others.

28.- The Workshop equally discussed the question of mandatory and voluntary application of standards. It was apparent from the views expressed that imposition of standards could be done through an appropriate individual ministry if it is felt that any standard should be rendered compulsory. The National Standards Body should preferably concentrate on the preparation of standards leaving it up to the government to determine which standards could be made compulsory. Where, however, such responsibility has been delegated to the National Standards Body, its supreme authority (Council, Board, etc.) shall determine the status of the standards.

29.- As for the location of the National Standards Body, the Workshop was of the opinion that for ease of access, the site should preferably be situated near the centre of the city with testing facilities located in the industrial zone of the city.

Regional Standardization

30.- A paper on this theme was presented by Mr. V. Korenić, UNIDO Adviser on Industrial Standardization. In order to avoid any misunderstandings in the use of terminology as employed in the body of the paper, Mr. Korenić defined the important terms relevant to the subject. They include:

- National Standardization
- Sub-regional or multinational standardization
- Regional standardization
- International standardization.

31.- Treating the subject in retrospect, Mr. Korenić pointed out that the aim of standardization since its introduction at the beginning of the twentieth century, was essentially to establish national standardization primarily to foster a more rational and accelerated national industrial development.

32.- As a result of an extremely rapid industrial development, a tremendous standardization activity sprung-up both at the international and regional levels. Regional standardization bodies very soon began to elaborate their own standards.

33.- This activity is inconsistent on the African continent in so far as each country has continued to use industrial standards of the former metropolitan power. Lack of any form of indigenous standardization has thwarted local industrialization and has increased capital costs through heavy holding stocks of components for various makes, sizes and designs and reduced possible economic savings and industrial possibilities through larger volumes of the same product dumped into the national market.

34.- In regard to international trade, the chances of getting prices for primary as well as manufactured products might be facilitated through commodity groupings brought about by regional standardization efforts in order to obtain the the necessary collective bargaining power so much needed to influence trading patterns with industrialized nations.

35.- Once established, regional standardization will give a strong impetus to economic co-operation between member countries. The flow of products within the region will be facilitated, thereby enhancing a common market for the region and implementation of standards will be cheaper.

36.- The 1965 Lusaka Conference on Standardization and Rationalization made a move to this effect by recommending the establishment of an East African Standards Institute within the machinery of the East African Community aimed at strengthening existing national models of standardization in individual countries of the sub-region. Likewise, the Maghreb countries have made similar efforts and succeeded in establishing their Maghreb Centre of Industrial Normalization. In fact, a number of organizations in the world are presently engaged in sub-regional standardization.

37.- Member countries of such bodies are bound to align their national standards to those of the sub-region. Such standards are implemented directly through their national legislations.

38.- Once the need for sub-regional standardization is recognized, four possible sources could provide the basic material for formulating the necessary regional standards: international recommendations, foreign national standards, existing national standards and those originally prepared by the region.

3.- In introducing regional standards relating to common units of measurements efforts should be made to adopt the S.I. units. The changeover to the S.I. is an urgent problem. Equally urgent are regional standards for semi-processed and processed agricultural products, road design and construction, road traffic signal times and traffic signs, postal and telecommunications systems, railway design, construction and operation, electric power supply systems, sea port and harbour design and operation, banking systems, and foreign trade documents.

40.- A general discussion was engaged in an attempt to determine a "region" with a view to looking into the feasibility of "regional standardization". It was noted that the term, as employed in the export promotion activity of an established regional standards body, operated by mutual agreement of a group of countries situated in a geographical sub-division of the United Nations economic region, in drafting and publishing regional standards to be implemented in all member countries.

41.- In this connection, the Workshop was informed that many countries of Africa have neither the manpower nor the necessary funds to afford national standards organizations, the only avenue left to them is multi-national co-operation and to seek assistance towards the establishment of one standards body for an economically viable group of countries. Furthermore such national bodies cannot afford to participate in all international standardization activities to influence recommendations that are arrived at. A multinational body would, however, be in a better position to influence the formulation of international recommendations that are suitable to the area it covers.

42.- Within this region, a full-fledged regional body would co-ordinate existing standardization effort and bridge the gap between international standards and national standards within the region. It would in fact meet the principle of multinational approach recognized by the ECA as the most effective means of achieving rapid economic development in Africa.

43.- In the course of the discussion it was felt that what is rather required would be to provide a co-ordinating machinery between standards bodies within the region. The idea of a "clearing house" was suggested as a possible institutional machinery that could serve this purpose. The Asian Standards Advisory Committee (ASAC) of the United Nations Economic Commission for Asia and the Far East (ECAFE) was given as an example of such an institutional arrangement.

44.- To illustrate the activities of such a machinery mention was made of a recent paper prepared by the ISO Secretariat for countries in the region. The paper recommends, inter alia free exchange of information between standards bodies in the region, encouragement of an exchange of technical personnel and experts, co-ordination of technical assistance programmes, organised by various United Nations agencies, encouragement of creation of national standards bodies and their membership with the ISO, approach to the ISO and IEC with a view to obtaining the reduction of subscriptions of developing countries, constitution of a study team to recommend the type of assistance to be given to countries where national standards bodies do not exist, etc.

45.- During subsequent discussions, it was suggested that a central co-ordinating body in the form of an Advisory Committee could be established within the ISO Secretariat. Such a body would be of a similar status to that of the Asian Standards Advisory Committee which serves purely as a "clearing house". One of its first tasks would be to conduct a survey of the existing situation with a view to determining standardization requirements of the region. The suggestion seemed acceptable to the Workshop.

International Standardization

46.- Mr. W. Artels of the ISO Central Secretariat introduced the paper by defining the ISO as an international organization whose mission is to promote the development of standards in the world with a view to facilitating international exchange of goods and services and to develop co-operation in the sphere of intellectual, scientific, technological and economic activity.

47.- At present the ISO has two categories of membership Member Bodies and Correspondent Members. The former are national standard bodies which have agreed to abide by the Constitution of the ISO subsequent to their admission into the Organization.

48.- Correspondent membership has been created for countries interested in standardization but who have not as yet set up a formal organization engaged in preparing standards. Correspondent members receive all ISO documents and have the right to register as an observer member of any of the ISO Technical Committees.

49.- Developing countries have an interest in seeking ISO membership. By participating in international standardization programmes, they have at their disposal already formulated ISO Recommendations reflecting the latest international agreement on technological matters. These constitute ready-made solutions to many of their problems or, at least, invaluable guides to more rapid solution of these problems.

50.- There are, however, problems of infrastructure to be overcome; absence of a National Standards Body in a country, scarcity of technical data, insufficiency of resources, etc. For all these and other reasons, the National Standards Bodies of most developing countries are not often in a position to participate fully in the technical work of the ISO and to undertake secretariat responsibilities.

51.- Many other obstacles still complicate their active participation in international standardization work. Lack of financial means stands in the way of sending appropriately briefed delegations to ISO and IEC meetings often held in Europe. It has been suggested that the United Nations may be able to render financial assistance in this regard. In addition a certain number of international meetings on standardization may be held in developing countries. But even under most favourable circumstances, developing countries are still in a weaker position due to lack of facilities to collect and present sufficient basic technical data in support of their standardization projects on the international level.

52.- To correct this shortcoming, DEVCO has recently circulated to developing countries (member bodies and correspondent members) an enquiry into their most urgent needs in the field of standardization. The aim is to provide for a short-cut channel for developing countries to bring their urgent requirements to the attention of ISO.

53 - In the course of the discussion, the Workshop was informed that the status of correspondent membership is in principle intended to be one for a limited duration. At some stage after the national standards organization has been set up and has started functioning, the correspondent member is expected to apply for full membership of the ISO.

54 - With regard to attachment courses for personnel engaged in standardisation in developing countries, the Workshop was informed that the ISO Central Secretariat frequently receives visitors who usually stay for 1 to 7 days to discuss their problems. It was suggested that such personnel would benefit from attachments to National Standards Bodies some of whom already receive personnel from abroad, and organize training courses for them. The developing countries concerned could request for UNIDO followships to send such personnel either to an organized training course or to visit some National Standards Bodies including the ISO and the IEC Secretariats.

55.- On the question of implementation of ISO Recommendations through embodiment into the national standards of the members of ISO, the Workshop was informed that whilst it may be necessary to embody ISO Recommendations into national standards, it may not be economical to accept every ISO Recommendation in the approved form without modification as such Recommendations are normally the result of a compromise and may not necessarily be adequate to socio-economic conditions of developing countries. With regard to the status of ISO Recommendations it was noted that ISO is presently considering the possibility of publishing ISO Standards.

International Standardization in the Electrotechnical Field

56.- The paper on this theme was presented by Mr. Jacques Blanc, of the International Electrotechnical Commission (IEC), who, on behalf of the IEC General Secretary, thanked the organizers of the Workshop for having invited their organization to present its views on international standardization.

57.- He informed the Workshop that IEC was founded in 1904 in order "to standardize the nomenclature and ratings of electrical apparatus and machinery". Since its inception, the IEC has been regarded as the source of objective international recommendations for the electrotechnical field.

58.- As a result of its sixty years of activity, the IEC is now in a position to make available to all countries a set of valid world-wide recommendations prepared at a rate of over 3,000 pages a year covering all aspects of electrical and electrotechnic engineering such as equipment for the generation, transmission and distribution of electrical energy, electronic and communications equipment, electro-medical equipment, electrical household appliances, and many other items of direct importance for countries engaged in electrification efforts.

59.- Commenting on standardization activities, Mr. Blanc stressed that the main difficulties encountered in defining "standardization" is that these activities are so intimately linked with the development of technology that it is difficult to draw a line between standardization and other facets of design, production and testing. Standardization of plugs and socket outlets, for instance, is not merely a question of mechanical standardization but entails electrical compatibility which depends not only on local wiring rules but also on the network that is earthed at the generating station or elsewhere.

60.- For the reason mentioned above, the IEC has set up a Technical Committee (TC 64) to deal with the electrical installations of buildings in addition to a Sub-Committee (SC 23) working on a single plug-and-socket system that would be applicable in all countries throughout the world. One of the main factors which led to the setting up of this Technical Committee was the desire to meet the needs of developing countries which were brought to the attention of

the IEC Council by UNIDO and UNESCO. The Technical Committee is to ensure that developing countries do not face the same obstacles confronted in industrialized countries due to divergencies in voltages, distribution systems and wiring rules.

61.- Mr. Blanc informed the Workshop that all over the world, there is a growing trend to use IEC publications to be embodied in national standards without modifications. This trend should result in appreciable advantages for developing countries which will be able to follow these publications with confidence.

62.- In the course of the discussion that followed, it was pointed out that a merger between ISO and IEC would be impracticable in the present circumstances, partly for historical reasons but mainly because both are functioning as economically viable institutions which do not need to be disturbed. It was noted, however, that very close relationship exists between the IEC and the ISO which facilitates the necessary co-operation in common fields.

Standardization and Export Promotion

63.- Introducing the paper on this theme, Mr. Lars Wallden, Chief Engineer of Technical Department, Swedish Standards Institution, explained that the definitions of standards and standardization need to be understood before applying them to export promotion. Whereas standardization is a process of formulating and applying rules for an orderly approach to a specific activity for the benefit and co-operation of all concerned, a standard is a result of a particular standardization effort. Various particular applications of standardization were given with the help of visual aids. They included terminology, basic standards, dimensions, variety reduction, quality levels, test methods, certification, sampling and inspection.

64.- Export promotion cannot be disassociated from these applications of standardization to products and processes. There being a large number of standardization subjects, and each subject having its own requirements, the time factor should not be underestimated when considering the introduction of standardization in any project.

65.- For many reasons, it is impossible to expect rapid results in standardization activities. The rights of a new standards institution must be made known, and the administrative procedures streamlined. The capacity of the technical department of such an institution can only permit the start of some few projects whose selection is a multi-faceted problem. The Japanese products, for instance, have only recently reached a reputation of being of high quality, when a few decades ago the situation was different. This change has come about because the authorities made up their minds that Japanese products should be known for their high quality, and introduced the necessary specifications with a central organization for inspection and certification. Within ten years the change was apparent.

66.- For a standards project to produce positive results, a firm policy must be laid down, a working programme must take rather long time into account, and certification marks should be introduced to indicate conformity with standards.

67.- Quite often, standardization of export products is given as the solution for crises in a country's economy. The explanation is rather of a "superstitious" nature. In fact, more savings can be realized with standards for domestic routines and imported products. In some cases, however, the export situation may justify a very concentrated standardization work on a few export products. This may apply to tea, coffee, hides and skins, grain and timber.

68.- In some countries official approval is necessary for all goods to be exported. This requirement is justifiable in developing countries. It implies that the standards institution of the country has its own standards mark which for a certain fee can be used on all products meeting the requirements in the standard.

69.- At the outset of the discussion on the subject it was made clear that quality is what the user requires of an object, that is to say, its conformity with a standard, and the producer is responsible for making the product to the standard. From the commercial point of view, an industrial purchaser will normally resort to sampling and testing goods received from the producer to ensure that the goods comply with the requirements of the relevant standards.

70.- The Workshop was informed that research on specifications for tea is underway in various national standards bodies but that there are as yet many technical difficulties to be overcome. In some cases draft standards on tea have been prepared. In the case of India, the government has already prohibited the export of tea grown in certain areas of the country as well as tea improperly packaged.

71.- It was noted that this subject involved the question of standards and quality control which was due to be discussed later. Accordingly, it was agreed that further comments be reserved until the relevant paper had been presented.

Standards, Quality Assurance and the Internal Market

72.- Introducing the paper on this theme, Mr. J. M. L. Gavin, a Technical Director of the British Standards Institution (BSI), defined quality control as the overall system of activities whose purpose is to provide a quality of product or service that meets the needs of users. It is the manufacturer's task to have a Quality Control System that is applicable not just to one individual item but to mass production.

73.- In order to ensure conformity with a standard, a Quality Assurance System has been instituted which involves continual survey of the adequacy and effectiveness of the quality control programme. In essence, quality assurance is a system of activities whose purpose is to provide an assurance that the overall quality control is in fact being done effectively.

74.- In general terms, quality control is the manufacturer's business while quality assurance aims at making sure that quality control is doing what it should. In brief, quality assurance is meant to dispel doubt.

75.- Four reasons dictate the need for the involvement of a National Standards Body in quality assurance, first because it issues the specifications, secondly to uphold the reputation of the standards organization, thirdly, to maintain feed-back information on actual manufacture and fourthly to hold the balance between the manufacturer and the user as an independent body.

76.- The extent to which such involvement should go is a matter for individual national standards bodies to determine. Since their primary responsibility is the preparation of standards, quality assurance could be regarded as a secondary business.

77.- There exists a number of fields to which the concept of quality assurance could be applied. They include:

- The protection of the consumer
- The quality of locally produced goods for the home market
- The quality of imported goods
- The comparison that will be made between the quality of locally produced goods and that of imported goods
- The effect of that comparison
- The quality of exported goods.

78.- For practical purposes, the concept of quality assurance is applied through certification which is an assurance given by a competent organization, independent of trading interests, that goods are consistently in conformity with standards. The object of certification is to provide an assurance that will satisfy the user without further inspection and testing, that the products conform to standards that have been as precisely defined as possible. In this connection, Mr. Gavin informed the Workshop that the BSI have recently defined their certification scheme in accordance with the ISO Recommendation ISO/R 189 and are advocating for its adoption in international certification schemes.

79.- A number of advantages are expected to flow from such a service; to the manufacturer, an impartial expert and continuing check that his quality assurance scheme is satisfactory, to the quality control manager, a supporter and adviser; to the user, an impartial assurance that quality and reliability are being well looked after, to the marketing manager, a considerable additional tool for selling purposes.

80.- In the discussion that ensued, it was explained that the main aid to maintaining quality are standards which in essence could be considered as a "metre-stick" for quality assurance, for quality of local goods, for health and safety, and for the vital business of export promotion. Even in some countries where standards are generally voluntary the Government includes demands of export trade as well as the requirements of health and safety among the criteria for compulsory standards. Thus India requires export goods to conform to ISI standards and to undergo testing and inspection in compliance with the certification scheme. Japan was also quoted as an example where, in addition to product standards, many detailed standards for quality control, export inspection and checking at shipment have been developed.

81.- Basically the same method - that of regular checking of the manufacturer's own quality control procedure - is used by all standards organisations in providing a certification service. In the United Kingdom a manufacturer asking to come into the scheme is told about the obligations it imposes. On his formal application, he is visited by a representative of BSI who inspects his own quality control arrangements in detail, records what the practices are and takes samples of products for which certification is required, for independent testing against the standard. If both inspection and testing reports come up to the requirements of the standard, and the specific requirements of the scheme of supervision and control devised by BSI, he is granted a license to use the Certification Trade Mark of the Institution.

82.- The actual supervision and control varies between countries and articles. In BSI for instance, it is laid down that the minimum inspection to be undertaken must be twice a year but varies between twice a year and ten times a year depending on the article manufactured. Generally speaking, the frequency of the necessary verifications, audits and the evaluation of quality factors that affect the specification, production, inspection and the use of the product or service depends on the confidence entrusted in the manufacturer.

83.- The fee for certification covers the full cost of running the certification scheme and varies from product to product. The maximum fee so far imposed by TSI is 2% of the selling price of the product. In India the fee ranges between 0.1 and 0.5% of the cost of the product.

84.- It was the feeling of the meeting that in order to avoid confusion and to properly run the Quality Assurance Scheme, there should as far as possible be only one standards mark under the full control and supervision of the National Standards Body.

Priorities for Standardization in Specific Sectors

85.- Introducing the paper on this theme, Mr. Lars Wallden, Chief Engineer of Technical Department, Swedish Standards Institution, pointed out that an analysis of priorities for standardization must be made separately for each country concerned and special regard should be taken as to the degree of development reached, the main export products and standardization activities in existence. The time factor must be accepted where any change of importance is envisaged and great attention should be paid to education at all levels. The capacity of the standards institution will influence upon the working programme.

86.- Mr. Wallden cautioned that a complete working programme from another country should not be adopted without a thorough study. It is essential to note the different needs of developing and industrialized countries. Although the latter have run established standards bodies for over fifty years, it does not follow that the achievements of these bodies are fifty years ahead of their sister organizations in developing countries.

87.- For a logical sequence related to the building up of standards, standardization of dimensions is important but does not constitute the only working task of a National Standards Body. There are other standardization subjects in various standardization domains that might require urgent attention.

88.- A standards body achieves an important first step by establishing accurate fundamental standards for the needs of commerce and production. Measuring devices used in trade will then need to be inspected. The units used must be stated and defined in order to develop sound rules for an inspectorate. In this respect, it should be observed that many developing countries receive aid from various countries and the result is a proliferation of unrelated units. Indeed, the metric system is spoken of as the ideal one. Since it has varying applications, the National Standards Body will have made savings and other auxiliary benefits by adopting the SI which is presently rapidly spreading. All national standards and official documents will have to use the accepted units consistently.

89.- Once fundamental standards have been established, consideration could be given to particular standardization activities such as: house carriages, screw threads, cams, health and safety, pipes, electrotechnical apparatus and devices, gas cylinders, test methods for concrete, paper and steel.

Practice for Standardization

90.- Discussion on this theme concerned essentially the use of SI units and the general criteria employed in choosing priorities for standardization. With regard to the former, it was explained that SI is a coherent system of units founded on six basic SI units and some derived SI units with special names and some other derived SI units with complex names. It was pointed out that the ISO Technical Committee principally concerned with units and symbols has recognized that some departure from strict purity and coherence are acceptable for practical reasons if agreed internationally. For instance, pure SI would acknowledge only decimal multiples and sub-multiples of the second of time measurement, whereas the minute, hour, day, month and year are in everyday use internationally. Similarly the division of the circle into 360° is a recognized international practice but is not part of the SI.

91.- With regard to the latter, it was equally pointed out that any decision to undertake new projects is within the competence of the supreme authority for standardization (Standards Council, Board, etc.). As the Supreme Authority is generally large, a smaller group within it (Executive Committee for instance) should be entrusted with the responsibility of approving new projects on the

advice of the staff of the National Standards Body. The criteria for choosing new projects is the economic value of each project but the decision should be made by a small group within the Supreme Authority. Other guiding criteria would be, importance of economic field, degree of economic benefits, importance as export item, capacity as import substitute, level of consumer protection, availability of testing facilities and technical background information, status of standard (mandatory or voluntary), volume of production or revenue yielding capacity through marking, level of co-operation of producers and traders, location of production unit (domestic or foreign), and ease of adoption and implementation of the standard. Equally to be taken into account is the physical and financial capacity of the institution. This depends particularly on the staff and facilities available.

92.- Introducing the paper on this theme, Mr. S. Janicki, Director of the Polish Research Centre for Standardization, Warsaw, made it clear that training for standardization is a continuous process aimed at improving standards personnel qualifications. In a number of institutions, programmes have been established for elementary training geared towards familiarization with standardization rules. At higher levels of learning, however, standardization is not provided for under normal curriculae.

93.- Existing training programmes on standardization in various educational institutions provide for random training at various levels and are essentially characterized by specialised profile. There is need for organized courses at different levels for both the national and company standardization staff. Programmes for this purpose should provide for three levels of instruction leading to scientific degrees.

94.- The first level, is meant for students having medium or higher technical or economic educational backgrounds. The programme for this level should be prepared in a way to provide general competence in the preparation of draft standards, in gathering statistical data, their necessary interpretation and the capability to observe the influence of standardization on industry. The programme should cover the role of standardization in national and international economies. This level of training does not sufficiently equip participants to undertake independent standardization work.

95.- The second level is meant for company and national standardization staff. At this level, the programme should provide them with the necessary competence in the preparation of standards. They should be able to work out technical and economic interpretation of standards, analyse statistical data and use classific tion and coding systems. Students for this type of training should have higher technical or economic educational background as well as general knowledge of economic problems and those related to their specialized fields. Through the programme they should be conversant with international standardization and the various bodies involved in it.

96.- The third level is meant to provide for mastering the theory of standardization and scientific methods of programming standardization work. Participants at this level should be conversant with such scientific disciplines as mathematics, physics and chemistry. The programme should cover the principles of contemporary information theory, systems of industry management and the use of descriptive language in standardization work. Equally to be covered are problems of international trade in relation to standardization according to international requirements. Qualified students should be able to treat a scientific subject in a technological or economic field for a doctoral degree in technical sciences.

97.- In addition to training programmes for standardization personnel, specialized courses should be prepared for people associated with standardization work. The courses may be operated at two levels; the more and managerial levels. The former is to provide mechanics, foremen, etc., with basic information on employment and utilization of standardization in production and the latter is to provide managers with information on the effectiveness of standardization as an element of technical and economic processes of production.

98.- Examples of various training schemes as provided by the British Standards Institution, the Association Française de Normalisation, the Polish Standards Committee, the Soviet Institute of Standardization Science, the Swiss Standards Committee and the West German Standards Committee were given. Each scheme has its own duration, varying from 3 days to 1 year. The actual training takes various forms (courses, seminars, conferences, symposia, etc.) depending on the level of training and the candidates to be trained.

99.- In order to provide highly qualified lecturers, especially for higher level training, sub-regional, regional and international co-operation is necessary. Uniformity of training ultimately leads to uniformity of standardisation activities in various countries.

100.- During the discussions, it was re-emphasized that the training programme in standardisation should be carried out at various levels and should take into account whether the trainees are expected to work primarily in a national standards body or in a manufacturing unit as company standards engineers.

101.- To bring out the differences in the two situations, it was explained that the Indian Standards Institution (ISI) has training courses for standards engineers to work at the national level as well as for training of company standards engineers. The former consist of several phases such as acclimatisation study, practical training and training for exercising responsibility. The programme for company standards engineers provides training in standardisation methods and practices with a view to creating a nucleus of company standards engineers capable of independently organising standards activities in companies.

102.- The fundamental difference between the two situations is that while the standards engineer in a national standards body has to concentrate on the organisation and conduct of meetings, reconciliation of diverging viewpoints, alignment of national standards with international standards and so on, the company standards engineer needs more emphasis on correlation of different company functions, coding documentation and information retrieval, drafting and drawing practices, and the like.

103.- The training programmes of the Indian Standards Institution are open to overseas trainees and are in fact being so utilised.

104.- It was noted, in the course of the discussion, that different National Standards Bodies in developed countries run training programmes in essence similar to the one outlined above and that most of them have training facilities for personnel of developing countries. Particular mention was made of training courses organised in France, Britain and USSR which are also used for trainees from developing countries.

105.- On the question of recruiting the right personnel for a National Standards Body it was suggested that for specialized personnel such as librarians, editors salesmen inspectors etc. their professional background should serve as a criterion. As for technical secretaries and the like who have to run various committees developing countries will have to depend largely on facilities that can be offered by other countries or which could be organized by international effort. Trainees of this category will require high educational qualification with a technical background. Fellowships for this purpose can be obtained from UNIDO and many National Standards Bodies in developed countries are anxious to help.

Adoption of the Metric System and Basic Standards

106.- Presenting the paper on this theme Mr B. S. Krishnamachar Deputy Director General of the Indian Standards Institution (ISI) recalled the main stages through which the system of measurement had evolved since early days of human civilization. The adoption of the metric system as a practical measure was part of the general increase in administrative activity in Europe which followed the French Revolution.

107.- Since 1875 all international matters concerning the metric system have been the responsibility of the Conférence Générale des Poids et Mesures (CGPM) which was constituted following the Convention held in Paris in that year. The CGPM meets in Paris, and controls the Comité International des Poids et Mesures (CIPM) and various Sub-Committees as well as the Bureau International des Poids et Mesures (BIPM).

108.- In about 1900 practical measurements in metric units began to be based on the metre, the kilogramme and the second (the MKS System). The ampere was adopted by the IEC in 1950 as the fourth basic unit, giving the MKSA System. This System was further developed and extended in 1960 by the CGPM by the addition of kelvin and candela resulting in a rationalised and coherent system of units which was designated as "Système International d'Unités" or SI.

109.- In the sense that it employs existing metric units as basic units, the system is not new. What is new about it is the concept that from the six basic units alone, there should be derived, through scientific first principles, units for any and every other required quantity.

110.- The fundamental advantage of the system is the use of the decimal procedure in all operations and nearly twenty-six countries have either made it the only legally accepted system or are in the process of doing so. The latest countries which are in the process of going metric are the United Kingdom, Eire, Kenya, Pakistan, Tanzania, Ghana, Kuwait, South Africa, Uganda, Zambia, New Zealand and Australia, have announced their intention to change over.

111.- National Standards Bodies in countries where they exist, have played an important role in the change-over to the metric system by providing the necessary metric standards aligned, where possible, to international recommendations. In this exercise, the main task of the standards institutions has been:

- Preparation of basic standards to assist in the change-over;
- Procedure to be adopted for conversions;
- Retrication of existing standards, and
- To evolve a policy for the preparation of new standards.

112.- In the context of the change-over to the metric system, the following constitute the basic standards.

- Guide for specifying metric values in standards;
- Guide for interconversion of values from non-metric to metric values;
- Guide for precise conversion of inch and metric dimensions to ensure interchangeability;
- Rounding of numerical value from non-metric to metric;
- Guide for adoption of rationalized metric values, and
- Guide for the use of preferred numbers for specifications of values, quantities, etc.;
- Physical quantities, units and symbols.

113.- The change-over from one system of weights and measures to another system is always a complicated problem. The more industrial, advanced a country is, the more complex is the problem. It is, therefore, important that developing countries should give consideration to this question at the very early stage of development to minimize the cost of such change-over.

114.- To effect the change-over, careful planning is necessary so that national economy is least affected. In engineering fields, the change could involve raw materials and semi-finished products, tools and measuring equipment, equipment and finished products, and process industries. Legal difficulties experienced in these fields include: question of a demand for the metric products, testing, planned wearing out of existing equipment geared to products in the inch system, continued manufacture of spare parts in the inch units and entering to the export market using the inch system.

115.- The fields that will be affected by the change-over include: engineering industries, trade and commerce, postal, education, transport, construction industry, printing and stationery, land records, railways, revenue accountings, etc.

116.- The main items of cost include: replacement of weights and measures by the public, trades industry and other users; conversion of weighing machines; other miscellaneous costs to the industry, transport and trade; costs to Government on publicity, replacement of weighing and measuring instruments and other equipment in public undertakings; changing of milestones on highways, etc.

117.- In conclusion, Mr. [illegible] suggested that for the success of the metric reform in any country it is necessary:

- As a first step to create the legal base for the new metric regime. This may be done by enacting a legislation providing standards for weights and measures which should be placed on the Statute Books;
- To build up weights and measures organizations in the country with the whole time responsibility of carrying through the metric reform;

- To appoint qualified officers to man the organizations for the enforcement of weights and measures and provide proper training in order to enable them to carry out their work satisfactorily;
- To educate the general public about the use of the new system of weights and measures by means of all possible publicity media;
- To introduce decimal currency as an adjunct to the implementation of metric reform;
- To keep the law relating to the enforcement of weights and measures under constant review and make it flexible so that it can be applied without too much alteration to the fast changing conditions of trade and industry during the period of change-over;
- To devote due attention to the field of education and change the curriculum, text books and the teaching at one time to the use of metric system;
- To urge the various disciplines in the early stage of the change-over to draw up detailed programme of implementation having regard to their special circumstances;
- To set up national laboratory like National Physical Laboratory (NPL, India) for the maintenance of basic reference standards; though standards laboratory is a necessity for every country, the maintenance of basic reference standards is very expensive and time consuming. Hence the smaller developing countries may not be able to justify the high cost involved in setting up a full-fledged metrological standards laboratory. In such cases either a collaboration may be worked out with the countries in the neighbourhood having such laboratories or a liaison may be established with the International Bureau of Weights and Measures;
- To formulate on a priority basis at a very early stage national metric specifications for commodities and products which should as far as possible be formulated in conformity with the recommendations published by the ISO and IEC.

110.- In the discussion that ensued, it was explained that the fundamental difference between SI and other metric systems is that the International System (SI) is a coherent system, that is to say, the product or quotient of any two unit quantities in the system is the unit of the resultant quantity.

For example, in any coherent system, unit area results when unit length is multiplied by unit length, unit velocity when unit length is divided by unit time, and unit force when unit mass is multiplied by unit acceleration.

119.- Regarding Government subsidy to industry for the change-over, it was pointed out that in India no special grant was given to the industry for their conversion. Equally in the United Kingdom the official policy is that no special grants would be made available from public funds to cover the costs of change since the long-term economic performance will more than balance the immediate outlay. However, replacement of capital plant and machinery for manufacture will, in many cases, be subsidized by normal income-tax and corporation tax allowances.

120.- As to the provision of weights and measures, it was felt that it would be useful if the Government made them readily available to ensure that the pace of change is uniform in all trades.

121.- The Workshop noted that the conversion of Weights and Measures to Metric, should preferably be effected trade by trade, and only by geographical areas of if such affected areas are small. The Workshop further noted that in going metric, a country should change over completely from the old to the new units because experience has shown that to have the metric system alongside existing practice retards progress and the end result is waste of public funds.

122.- With regard to metrication and decimalisation of the currency, the Workshop was of the view that although decimalisation of the currency is compatible with metrication, it is not necessary that the two operations should be undertaken simultaneously. However it may be advantageous to combine the two operations. In fact the United Kingdom situation is coincidental and in any case the bodies responsible for the two operations are entirely different and have no common programme.

III.- RECOMMENDATIONS

The Workshop made the following Recommendations:

1) THAT, in view of the particular interest it attaches to training of personnel engaged in standardization, similar Workshops be organized on a recurrent basis.

2) THAT developing countries of Africa be encouraged to set up viable National Standards Bodies and that to this effect further UNIDO and other forms of international assistance be made available.

3) THAT a central co-ordinating body in the form of a Standards Advisory Committee be set up within the ECA Secretariat. Such a body would serve purely as a "Clearing House" and one of its first tasks would be to conduct a survey of the existing situation with a view to determining standardization requirements of the region. Co-operation between UNIDO and ECA in this respect is necessary.

4) THAT: - national standards should be aligned to ISO and IEC Recommendations to the maximum extent possible;
- consideration be given for assistance to enable developing countries to participate actively in the elaboration of such Recommendations;
- the activities of DEVCO be intensified.

5) THAT quality control and certification schemes be operated by National Standards Bodies and that there should, as far as possible, be only one certification mark in each country;

6) THAT National Standards Bodies of developing countries should to the maximum extent possible provide certification for all exports;

7) THAT the selection of priorities for subjects for standardization should be based on immediate economic and social benefits of the country concerned. In addition, the establishment of basic standards such as for quantities and units should be given highest priority;

8) THAT, in view of the vital importance of training of personnel for the successful operation of a National Standards Body and the limited resources of developing countries, technical assistance be made available in this regard and arrangements be made for UNIDO fellowships for attachment of trainees from developing countries to well-established National Standards Bodies.

9) THAT efforts be made to promote the training of company standards engineers.

10) THAT developing countries of Africa should adopt the SI and that further UNIDO/UNESCO assistance be made available in the field of metrology.

[redacted]

[redacted]

1.- [redacted], Acting Director of the Standards [redacted], Ministry of [redacted], Industry and Tourism of the Imperial Ethiopian Government

In welcoming those attending, Mr. Zaude Fikiche said that the Workshop was the first one of its kind ever to be held in Addis Ababa and indeed on the African continent, and it wished the group to standardization in African countries.

He noted that although standardization has attained a wide significance in the present world, it is not a new activity. On the contrary, modern standardization is just an aspect of an activity originating from the laws of nature which, with the increasing needs of industrialization, has become defined as a code of behaviour. In essence, standardization is to industrialization what culture is to all types of society. The level and stage of standardization characterize the development of industry and trade of a country. In effect, standardization is a determinant factor in the creation of order, the elimination of waste and the reduction of unnecessary variation and consequently provides the basis for industrial and economic development.

It is in fact an integral part of science and technology. For neither science nor technology would have developed without the standardization of units of measurements, of terms, symbols, formulae and the like. In the application of science and technology to industry, standardization provides the basis on which such application can take place for economic benefits to ensue.

In the modern world, the development of the factory system and the mass production of goods are essentially geared to standardization. Without the possibility of interchangeability of parts and components, no investor would dare undertake a large-scale production of manufactured goods.

The aims of standardization in general, are to achieve overall economy, protection of consumer interests, and safety and protection of health and life. The attainment of these aims could be a task of this workshop. The advantages of standardization are either obscure or impossible to quantify. That is why the need to appreciate and recognize these benefits at the national level in order to introduce standardization and realize its consequential benefits.

As much as developing countries have the task of accomplishing practically overnight what the developed countries have done through a suitable period of time, a supply of adequate standards is necessary to make the exercise successful. The experiences gained in developed countries could be adapted to this effort.

In conclusion, Mr. Zambo Pelican hoped the experience gained through the Workshop would be pertinent and of utmost importance to those attending.

3.- Statement by Mr. S. A. A. Lartey, Chief, Division of Economic Research and Planning, ECA Secretariat:

In inaugurating the Workshop, Mr. Lartey reminded those attending that the ECA Secretariat has for countries been much troubled over the issue of standardization, the contribution of which to social and economic development could be almost revolutionary.

The need to establish economic viability in African countries was realized as far back as 1961-62 when the ECA accepted that the future of African social and economic development could not only depend on the management of an increasing number of agricultural primary commodities in surplus supply on world markets. Structural transformation of the African socio-economic system, based on an accelerating rate and widening range of industrialization, was essential.

The ECA Secretariat then felt that a multinational approach to the problem would provide the solution as individual African markets for industrial goods were too small for the optimum size of technological production units. It was therefore essential to combine several national markets. In essence, this meant combining the volume and

pattern of urban consumption. The studies prepared by the ECA Secretariat have clearly demonstrated the advantages of multinational approach.

Industrialization means innovation. Innovation is easier in buoyant than in stagnant or declining economies. Urban markets would not be enough for this purpose. Thus the integration of the larger part of African national economies (rural society and subsistence output) with the urban sub-system is a necessary pre-condition.

Mr. Lardner continued that this would fail - at the national and multinational level - if the variety of industrial products required for a particular technical function were larger than necessary since total output would be divided into an unnecessary number of small batches, and this would either rule out local manufacture or require excessive protection to cover high unit costs.

Indeed, experience shows that as industrial development accelerates, there emerges an increasingly acute problem of allocation of scarce foreign exchange between imports of new plant and equipment, and import of spare parts and components to keep existing plants going. Where a large number of plants are put out of action because of lack of imported spare parts and components, the industrialization process may not only slow down but reverse itself. The local infrastructure of spare parts and components on a national or multi-national basis, rendered possible because of policies and instruments for devising and enforcing standards ought, for these reasons, to be an important part of industrial development policies and plans.

Mr. Lardner further pointed out that another important value of standardization lies in the promotion of labour productivity. Since in Africa, the bulk of the actual physical work of production in the modern sector depends on the population actually in employment, and since this work force, whether on the plantation, or in the mines or at a construction site or on the factory floor, is illiterate or semi-illiterate, it follows that its productivity depends on the standardization of processes,

tools, equipment, which facilitates the use of job breakdown and audio-visual techniques in teaching and in raising productivity.

On the question of specification for quality, Mr. Luther stressed that quality engineering and quality control are concepts scarcely present in the minds of economic planners: Yet their widespread application is essential in determining price-quality relationships, and in judging how much protection should be provided for infant industries and for how long. In Africa, in particular, where the bulk of the agents of production and distribution in the modern sector will inevitably be engaged in the medium and small-scale business, the technique of displaying convincingly the advantages of standardization and of the improvement and maintenance of uniform quality will require special attention.

In conclusion, Mr. Luther hoped that at the multi-national level, the universal trend towards the adoption of the metric system will open the way for common standards for all Africa, since there is no real alternative to close and effective co-operation between countries if industrial progress is not to be stifled by the limited possibilities offered by the small populations and low level incomes of African States.

3.- Statement by Mr. W. Artale, Central Secretariat, International Organization for Standardization (ISO)

Conveying the greetings of the Secretary-General of the ISO, Mr. Artale said that the ISO Secretariat is very much interested in multinational approach to standardization, particularly in African countries and was keen on obtaining information on difficulties experienced by these countries. There is a growing consciousness of the need for standardization at supranational level in various parts of the world including Africa, as a result of demands from newly industrialized and industrializing countries and from companies operating at multinational level. Regional standardization is acquiring a new value as it is increasingly practiced by groups of countries with common economic problems and interests.

Some African countries have already become full members of the ISO, through the National Standards Bodies, others are correspondent members through some authority responsible for the introduction of standardisation. Through co-operation in the international standardisation, they will have at their disposal the already formulated ISO Recommendations which will constitute ready-made solutions to many of their problems or, at least provide invaluable guides to the more rapid solution of their problems. Through ISO membership, these countries have a possibility of benefiting not only from technical help offered but also from the organisational and operational experience of all the National Standards Bodies comprising ISO membership.

The Workshop provides a similar opportunity for the exchange of experience between participating countries in their standardisation activities. The ISO is at the disposal of all countries engaged in national standardisation programmes and is anxious to assist in any way.

4.- Statement by Mr. F. Schmied, Industrial Development Officer, United Nations Industrial Development Organization (UNIDO)

Thanking all participants, experts, observers and various bodies for the contribution they were making to standardisation work, in particular to this Workshop, Mr. Schmied reminded all those attending of the overall purpose of the Workshop.

Mr. Schmied stressed that the Workshop should provide a forum for the exchange of experience between the participating countries of Africa in their standardisation activities and their achievements in this field, as well as their plans for the future, on the one hand, and experts from developing and developed countries on the other hand, thereby fulfilling a training function and providing guidelines for possible future work of UNIDO and ECA in this connection.

The need for national, regional and international standardisation is being recognised not only more and more but also at an accelerating pace by governments, trade, commerce, industry as well as by consumer

organisations. On the other hand, and in the coming years, standardisation will certainly have to play its part and contribute to an orderly industrial development within the framework of the Second Development Decade. Further, standardisation together with fully co-ordinated and integrated quality control procedures, overall industrial production and the required testing laboratories and facilities provide one of the effective means of lowering existing technical non-trade, non-tariff barriers between all countries, developing and developed.

In conclusion, Mr. Schmied said that as far as UNIDO was concerned the most important achievement of the Workshop should be to come to practical conclusions and recommendations so that participants could return to their countries with a number of ideas which could be put to practical application and which would help them in their efforts to set up, operate and develop their national standardization activities. On the other hand, UNIDO would as a result, be in a position to identify the requirements and areas where possible assistance could be most rewarding.

ANNEX 2

STATEMENTS BY PARTICIPANTS AND OBSERVERS

1. Statement by the Participant from Ethiopia

Introduction: Constructive efforts in standardization were initiated in Ethiopia about two years ago when a Standard Section was established in the Ministry of Commerce, Industry and Tourism to undertake studies and surveys as regards the possible introduction and promotion of standardization and quality control. In these efforts the Ministry was assisted by the United Nations Industrial Development Organization (UNIDO) which provided experts to be engaged in the proposed work of standardization. Such a study finally resulted in the recognition of standardization by the Imperial Ethiopian Government as an important activity and, consequently, the Ethiopian Standards Institution (ESI) was established.

The Ethiopian Standards Institution (ESI) is probably the youngest National Standards Body in the family of such existing bodies in the world, but doubtless, it will not be the last, since standardization is being adopted by many other, particularly African, countries which cannot afford to fail to benefit from the advantages of standardization for an accelerated economic and industrial development.

The ESI was established as an autonomous body of the Imperial Ethiopian Government by Order No.64 of 1970 published on 29 September 1970 in the 30th Year No. 1 of the Negarit Gazeta. It was necessary to create such a legal basis in order to enable the preparation, publication and implementation of future Ethiopian Standards (ES) mainly for the following reasons:

- The need for improving the standard of living of the Ethiopian people and the continued expansion of trade and industry made it necessary to introduce and promote standardization and quality control;
- The protection of domestic consumers and the securing of wider foreign markets for Ethiopian products demanded the promotion of standardization and quality control ;

These objectives are believed to be better achieved through and served by, a national standards body entrusted with the preparation and promotion of standards on national and international basis, and charged with ensuring the adoption of such standards with respect to practices, processes, materials, products and commodities.

Building: The essential duty of the ESI is to prepare and publish a range of standards that will be economically useful to the country, nationally recognized and adopted in practice. Such activities shall be carried out within the frame of annual programmes of work which shall establish principal working fields and priority areas by considering the major economic fields and needs of the country.

Since standardization is a co-operative activity, it is the duty of the ESI to co-ordinate the preparation of standards and ensure that they are drafted by representatives drawn from all interested sectors of the economy. Such a method of work ensures that standards represent all viewpoints and that they are exactly adapted to national economic needs.

It is also the duty of the ESI to publicize and implement its Standards Mark in order to promote quality control and, consequently, protect the interest of the consumer as well as create a wide export market for domestic products. Such an effort is an invaluable contribution to the technological progress of the country.

Functions: Besides its basic function of preparing and publishing compulsory as well as optional standards relating to practices, processes, materials, products and commodities, the ESI has also such other important functions as for instance, to promote standardization and quality control, to develop and implement the Standards Mark to those materials, products and commodities which meet the requirements of the relevant Ethiopian Standard, and to establish mutual co-operation with other national, regional as well as with international standards bodies.

Organizational Structure: The ESI is organized so as to be able to fulfil its duties and functions in the most convenient and rational way. The Standards Board and the General Manager are its governing organs.

The Technical Committees together with the Secretariat being its main technical working organs.

The Standards Board is the top organ of the ESI consisting of nine members representing different interests - seven mostly interested Ministries, the Haile Selassie I University and the Chamber of Commerce of Addis Ababa.

Technical Committees are set up by the Standards Board for particular economic and industrial fields, the members of Technical Committees being representatives of different interests such as producers, users, traders, research people, government representatives, institutions, etc.

Technical Committees may establish Sub-Committees charged with the study of one or several items. When it is necessary to deal in detail with particular points or problems, Working Groups may be created. Secretaries of all such technical working organs are appointed by the General Manager from among the ESI technical staff members.

Working Procedure: Standard proposals are elaborated on the basis of an annual working programme adopted and approved by the Standards Board. Annual Working programmes are, generally, prepared on the basis of:

- General policy decisions and directives as determined by the Standards Board
- Provisions contained in the Five Year Development Plans as regards the general priorities of economic and industrial branches
- Requests made by interested factories and institutions accompanied by prepared preliminary standard proposals or factory standards
- Suggestions made by Technical committees, and
- Studies made by the ESI considering the needs of the country as regards the different sectors of the economy, industrial branches, export and import products in the light of the prevailing different standard documents, international recommendations, etc.

The procedure adopted for the preparation and publication of Ethiopian Standards are based on principles which are more or less

already acknowledged world wide, i.e.,

- Standard proposals have to be circulated for public comments before being adopted so as to collect and study the viewpoints of those interested and affected parties;
- Standard proposals have to be put for discussion, together with received public comments, at the meetings of relevant Technical Committees, and eventually Sub-Committees and Working Groups consisting of experts drawn from the most interested sectors such as producers, consumers, traders, researchers, government institutions etc.;
- Draft Standards are submitted to the Standards Board for approval only after they are adopted and recommended by the relevant Technical Committee.

The public is notified of approved Ethiopian Standards through a Legal Notice published in the Negarit Gazeta bearing the title, reference number, status (compulsory or optional), edition, date of approval by the Standards Board and effective date of each ES. The public is also notified of published Ethiopian Standards through different means of mass publicity such as newspapers, radio and television.

Principal Working Fields: It is quite natural that the major economic fields or sectors of the economy are clearly distinguished and the problems of highest national importance, associated with these fields or sectors, be dealt with at a very early stage.

The main products, materials and commodities of the country should be considered first. These may be items produced for the home market as well as for export. Anyhow, agriculture, which constitutes 60 per cent of the Gross Domestic Product and over 90 percent of present exports, is in general, accorded the highest priority.

Standardization must also guide the activities of new industries on the basis of worldwide standard and experiences. It is therefore considered that the building and timber industries, the mechanical and chemical engineering fields, the printing and textile industries, together with the associated basic and safety standards should be given the second priority list.

With certain exceptions which may require the immediate publishing of standards to stop unsatisfactory imported products, the minor sectors of the economy such as metallurgy, electrical and transport engineering, packaging and mining are in general accorded lower priorities.

Particular Activities. Although agriculture is, in general, given the highest priority, it does not mean that all activities concerning agriculture are given top priority. In fact, a particular or certain activity of a lower priority economic or industrial field might be accorded, because of the importance or nature of the problem, an equally high priority status as some agricultural products or activities.

It is therefore only imperative that a list of priorities by activities must be decided upon in order to establish a true programme of work. The following criteria has been adopted to decide upon and prepare such a priority list of particular activities:

- importance of economic field
- degree of economic benefit
- importance as export item
- capacity as import substitute
- level of consumer protection
- availability of technical background material
- availability of testing facility
- status of standard - i.e. compulsory or optional
- volume of production or operation
- revenue yielding capacity to the ESI through marking
- level of co-operation of producers, traders and/or consumers
- location of production unit - i.e. domestic or foreign
- ease of adoption and implementation of standard

Implementation of Standards Mark: The Standards Mark is an official mark of certification and it is the exclusive property of the ESI. Nobody may use the mark in connection with materials, products and commodities unless granted prior permission by the ESI. The ESI permits any producer or trader to use the mark through a licence in connection with materials, products and commodities which meet the relevant Ethiopian Standards. The procedure concerning the approval to use the Standards Mark is established and governed by particular Regulations (legal act) which determines the necessary certification operations and the obligations of the Standards Mark Contract.

Summary: The Ethiopian Standards Institution (ESI) was recently established in order to introduce the norm to standardization and quality control in this country. The United Nations Industrial Development Organization (UNIDO) has been instrumental, through the provision of technical assistance in the form of experts, in creating the Institution.

The duties and functions of the ESI are determined by Order No. 64 of 1970 and its organization chart and working procedures are established by the Standards Board, the highest organ of the Institution.

According to the different prepared rules of procedure, detailed provisions are established concerning:

- the organizational set-up and related job descriptions
- the working procedure of the ESI in preparing and publishing Ethiopian Standards (ES)
- the working procedure of the Standards Board
- the working procedure of Technical Committees (TC).

In addition, other relevant documents are prepared for adoption by the Standards Board, i.e.,

- The Guide for the Presentation and Formulation of ES
- The System of Classifying and Numbering ES
- The Administrative Manual of the Institution.

Finally, principal working fields are established and the general programme of work as well as the programme of work for 1970-71 prepared. During the first meetings of the Standards Board different Technical Committees are to be set up in order to discuss the first group of standard proposals and enable further activity concerning the publication of the first Ethiopian Standards in accordance with the adopted rules of procedure.

2. Statement by the Participant from [illegible]

The National Standards Board was established by a decree of the National Liberation Council on August 1[illegible], 1967. Its functions are

- -

(a) To establish and promulgate standards with the object of ensuring high quality in goods produced in Ghana, whether for local consumption or for export;

(b) To promote standardization in industry and commerce,

(c) To promote industrial efficiency and development; and

(d) To promote public and industrial welfare, health and safety.

Its membership is constituted as follows:-

- The Minister responsible for Industries, who is its Chairman,
- The Director of the Institute of Standards and Industrial Research, and
- A representative from each of the following organizations: Ghana Academy of Sciences, Ghana Chamber of Commerce, Ghana Manufacturers' Association;
- A representative from each of the following Ministries: Ministries of Trade, Industry, Economic Affairs, Agriculture and Health.

It is expected in the near future to give the Consumers' Association representation on this Board.

The activities of the National Standards Board come under two main heads: Establishment and publication of National Standards, and Quality Control of products of Ghanaian industry. The Board has been assigned by the Government, the overall responsibility for the quality of locally manufactured products. Products imported into the country from outside sources are also expected to comply with the standards set by the Board.

In the establishment of national Standards, the Board acts upon the advice of Technical Committees each of which has a defined scope authorised by the Board. Membership to a Technical Committee is by appointment of the Board. There are five (5) such Technical Committees now:

(i) Building and General Construction Standards Technical Committee

(ii) Food and Drinks Standards Technical Committee

(iii) Electrical and Electronic Standards Technical Committee

(iv) Cognate Materials Standards Technical Committee

(v) Drugs Standards Technical Committee

Each Technical Committee has in turn set up small Working Parties on special single aspects of its field, using expert knowledge available

on the Committee itself as well as drawing on expertise outside it. The members of these Committees are eminent Scientists and Technologists from our Universities, Research Institutions, and Government, as well as technical men from the Manufacturing Industries and large buying organisations.

A proposal for a new standard can be made by Government, Industry or any individual within the society. Such a proposal first goes to the Technical Committee for screening, it is then taken up at the working party level where a first draft is written. It is this draft which serves as the basis of subsequent discussion between manufacturers and consumers. Comments and suggestions received during this period are then incorporated into a second draft which after passing through the prescribed stages, is approved by the National Standards Board as a National Standard.

Standards Library: The National Standards Board has established a Standard Library which contains the Standards publications of most countries of the world. The library also serves as an important source of industrial know-how for manufacturers in the country in developing their products.

Industrial Design Centre: To promote quality consciousness among manufacturers as well as consumers, the Board has started an industrial design centre. This consists of an exhibition space where manufacturers can display some of their products and consumers can visit and offer comment or criticism on the products. The design centre thus provides a focal point for manufacturer and consumer to meet and exchange ideas toward the improvement of quality goods. It is hoped that the Centre will also help foster healthy competition among manufacturers and thus lead to improve presentation and packaging of products. Comments and criticisms on products displayed are invited from the general public and then passed on to the manufacturers concerned. At the moment more than ten firms have their products on display.

Quality Control - Certification and Marking: With the approval of the Government, a Certification and Mark Scheme has been prepared by the Board. The necessary legislative instrument was recently passed by the National Assembly. The scheme is to be effective as from 1st January, 1971. Certification and Mark Schemes are used by the Standards Organisations of many countries to provide assurance of quality to the Consumer on the one hand, and to encouragement for continued production of good quality products to the manufacturers on the other hand. The "Mark" adopted by the Standards Board is based largely on an ancient Adinkra sign which denotes "Critical examination". Every producer who wishes to convince his customers that his product is up to Standard can do so by marketing with this mark. He would however have to place this product under permanent supervision of the National Standards Board. For a manufacturer to qualify for the issue and use of the Certification Mark, the Standards Board will conduct the following exercises: initial testing of products, routine inspection of factory; continuing testing of products; checking of labelling and coding and checking record keeping.

Achievements: Many standards have been finalised as Ghana Standards. Among those that have been printed are the following:

Safety Requirements for Household Electrical Appliances and Accessories
Processed Tomato Concentrates
Canned Sweet Corn
Canned Yams
Specification for Ordinary and Rapid-hardening Portland Cement
Canned Pineapple
Specification for Toilet Soap
Canned Pepper Puree
Specification for Carbolic Soap
Standard Specification Voltages for AC Transmission Systems and Standard Frequency
Canned Grapefruit
Specification for Aluminium Building Sheets
Specification for Galvanised Corrugated Steel Sheets for General Purposes

Others that have been prepared and are in the process of printing include some 60 standards in the field of food and also in building materials, electrical and electronic equipment and organic materials.

In the field of textiles, the following draft standards have been prepared:

Textile Labelling Code
Quality for ordinary shirts
Quality and measurements for complete outfits
Size measurements for Shirts
Size measurements for men's trousers
Real Wax Print
Real Wax-Block Print
Real Java Print
Imitation Wax Print
Imitation Java Print
Fancy Print
Sewing Thread for garments

The Scientific Personnel of the National Standards Board have already paid a number of visits to factories in and around Accra, Kumasi and Takoradi. Initially, the aim was to inform manufacturers of the existence of the Board and learn of some of their production problems on the types of home-produced goods.

Subsequently visits have been made to these factories to collect samples for testing and analysis.

The results of these analysis and their interpretation have been sent to the factories concerned and where necessary they have been advised on how to improve methods of production and the quality of their products. It is expected that this advice will soon be reflected in the goods they produce.

In the field of food alone, about 29 food samples have so far been analysed involving the performance of approximately 1000 chemical examinations, and visits to about 24 factories.

Through the work of the National Standards Board, a great improvement has been effected in locally produced mirrors.

At the request of the Ministry of Trade, Industries and Tourism, the National Standards Board has conducted an exercise of testing and analysing the flour produced by the two main flour mills in Ghana.

Sometime manufacturers who have applied for loans from the Investment Bank to enable them to buy and their businesses have been directed to the National Standards Board. The factories' standards board analyses their products and the reports on these are sent to the Bank.

Export Promotion: In prevailing circumstances in Ghana, in which it is vital that all efforts be made to improve the economy of the nation, the importance of standards and product quality control in the Export Promotion drive of the Ministry of Trade and Industries cannot be over-emphasized. It is recognised that in this exercise which is so necessary for obtaining foreign exchange, "first impressions" on the quality of produce can make or mar external markets. The extreme importance to the national economy of the quality of the products of Ghanaian industry should be recognised. Made-in-Ghana goods to be an effective substitute for imported goods on the local market must be of good quality. In this respect, locally produced goods can be vital saver of foreign exchange. Also on foreign markets in our export drive, our products can be a vital earner of foreign exchange. The quality of locally produced goods is therefore of great importance to the national economy.

Metrication: A memorandum prepared by the Director of the National Standards Board setting out the need for a change from the "Imperial" to the "Metric" (S.I.) System of weights and measures, and the benefits of this change to industry, trade, commerce and education, and indeed to the whole national economy of Ghana, was submitted to the Minister of Trade and Industries. In response, ministerial approval was given in April 1970 for the establishment of a Ghana Metrication Committee under the Chairmanship of the Director of the National Standards Board.

The Metrication Committee is charged with the responsibility of studying the implications of the change of "Metric" and advising Government accordingly. It has set up sub-committees which are studying the following aspects of the assignment: Industry, Trade and Commerce, Education and Technology. The Committee expects to report to Government early in 1971.

Training: As a new organization, the National Standards Board has not been without initial problems. Some of the major ones are difficulty in obtaining technical personnel with the requisite experience, and testing facilities.

The technical work involved in standardization requires personnel who have a sound Scientific/Technological background as well as industrial experience

Such personnel are difficult to find, and where they are available, they have to choose between the Board and industry, and the choice often goes in the direction of industry since industry offers better remuneration.

The National Standards Board, therefore, has initiated a vigorous training programme for its technologists. So far, with fellowships from foreign governments as well as United Nations, the following is the situation:

(i) One graduate has already completed post graduate training in industrial quality control, in Holland, with Netherlands Government fellowship, and has returned to Ghana.

(ii) One graduate is in post-graduate training in Textile Technology in the United Kingdom, with United Kingdom Government Fellowship.

(iii) One graduate is in post-graduate training in Polymer Technology (plastics etc.) in the United Kingdom and Japan, with U.N. fellowship.

(iv) One graduate is in post-graduate training in Food Technology in the United Kingdom, with U.K. Government fellowship

(v) A Netherlands Government fellowship is being processed for one Engineer to proceed to Holland for post-graduate training in industrial quality control.

(vi) An Indian Government (SCAAP) fellowship is being processed for one officer to proceed to India for training in standardization.

(vii) An Australian Government (SCAAP) fellowship is being processed for one officer to proceed to Australia for training in Standardization.

Benefits of Standardization: As has been the case in more industrialised countries, there are many advantages that society in a developing country can derive from standardization and industrial quality control. Society depends on standards to improve production, encourage trade, and provide for judicious use of goods and services. Standardization, therefore, offers innumerable advantages, short as well as long term, to consumers, manufacturers and the national economy as a whole.

To the consumer, standardization provides needed assurances regarding quality, reliability and safety; it provides the consumer with a common basis for judging not only locally produced goods but also imported ones.

For the manufacturer, standardization fosters planned production from raw materials to finished articles; it eliminates waste, increases output, simplifies stock-keeping, and cuts down production costs; the quality mark

affords protection against competition from substandard products, and enhances the marketing prospects of the manufacturer's products.

In the national industrialization programme, two areas of emphasis have been identified as the most effective in improving the national economy. These are the local production of import substitutes, and the manufacture of products for export. By the one industrial activity the country hopes to conserve foreign exchange; while by the other it expects to earn foreign exchange.

Success in any of these activities depends to a large extent on the quality of industrial production. Made-in-Ghana goods must be of good quality if they are to be an effective substitute for imported goods. Also on foreign markets, made-in-Ghana goods must be of good quality, if they are to compete squarely and thus earn foreign exchange.

To the national economy, therefore, standardization enhances international trade resulting in foreign exchange earnings; it improves national production in terms of quality and reliability, and leads to reduction or elimination of disputes over orders and contracts.

Standardization establishes order in industry, trade and commerce, assists in improving productivity of man and machines, raises living standards, and makes life easier for all whether their economy is developed or developing. To developing countries, in particular, it assists in ensuring sound industrialization and in stepping up economic progress.

The chain of action for the achievement of national industrial stability through product quality control has three main links. These are Government, the manufacturer and the consumer. The principal arms of Government in this respect are the Ministries of Trade and Industries and of Finance and Economic Planning. The National Standards Board is therefore entitled to the maximum support from these arms of Government. The National Standards Board also appreciates that, like all other standards organizations in various countries, it requires the co-operation of both the manufacturer and the consumer. On its part, the personnel of the Board have through visits to factories and marketing centres, encouraged the development of this co-operation. The Board, in fact, sponsored the establishment of the Ghana Consumers' Association which was officially inaugurated in February 1969.

3. Statement by the Participant from Kenya

To start with the time available in composing this article has been very short. It may therefore in some places not have a logical sequence.

The subject of standardization has been of great interest to the East African Community countries, but in particular this has been so in Kenya. The formation of a Bureau of Standards became a pressing problem after the formation of the Export Promotion Council in Kenya. It was felt that without a Bureau of Standards the Kenya goods for export would be at a disadvantage in the world market. But before such a Bureau could be formed the Kenya Government needed an expert to:-

(a) examine the standards problems and make recommendations for modifying standards to East African requirements;

(b) advise on the feasibility of establishing a National Standards Institute;

(c) review the facilities of the materials prepared by the Ministry of Works and advise how best the present facilities should be exploited and;

(d) draw up a proposed plan for establishing a National Standards Institute which will cover immediate requirements and on a longer term basis to outline proposals for the establishment of a comprehensive Standards Institute.

Such an expert was appointed and produced a report known as the "Glass Report" which made recommendations on the above mentioned four problems. Before the Kenya Government could go ahead and set up its own National Bureau of Standards, the East African Standing Committee on the Metric System and Bureau of Standards decided that there should be standardization on an East African basis. The Kenya Government therefore suspended the formation of the Bureau of Standards as it was felt that the East African Standards Institute would be of greater benefit to the East African Community countries as opposed to each country having its own national standards.

UNESCO was asked to send a mission to East Africa and Ethiopia on the question of setting up a Metrology and Instruments Centre for East Africa. The expert produced what is known as the Lehany Report and technical assistance has been requested from UNESCO in setting up a Metrology Centre and Instruments Centre for East Africa.

After lengthy discussions by the East African Standing Committee and Bureau of Standards it was felt that each country should set up its own National Standards Institute to be co-ordinated by the East Africa Standards Institute. This recommendation is being put before the governments of the three East African partner states.

To try and drive home to the decision-makers the advantages of standardization is sometimes not a simple matter as it has been found in certain developing countries. In Kenya we are fortunate since this is clearly recognized. The question that now has to be decided is how the National Standards Bureau is to be formed. The immediate problem that arises is whether such a body should be or should not be a Government Department. There are problems of making it wholly a Government Department or for that matter wholly a voluntary body. After serious discussion at the East African Metric Standing Committee it was decided that it should be formed by statute, i.e. making it a kind of corporation which therefore means that the running machinery of this body does not need to conform strictly to government ways of running their offices and activities.

To initiate a National Standardization programme will first require that a man of experience, suitable qualification, be recruited to draw up a programme for standardization and its development stages. Such a programme to be approved by a governing body that has a final say in standardization unless directed otherwise by an East African Standards Institute governing body.

Before a National Standards Institute can draw up a programme, the question of the funds to run the Institute must be taken care of. In East Africa it is anticipated that government should give a grant of about 85% of the total expenditure and the private sector should contribute the remainder. If an industry would for example like to use the certificate mark of the National Standards Institute then a fee will have to be paid. Whether such a fee should be paid to the National Standards Institute or to the government body responsible for the enforcement and checking of standards is yet to be decided.

It is my opinion that the question of priorities as to which items should have a standard laid down for them, should depend on the Standards Institute after considering the benefits to be gained by the consumer in the country or the benefits that will accrue to the country as a whole when an item is

made to a certain standard. It is felt that in developing countries where too much is at stake standards cannot be left to be applied voluntarily. Most standards governing goods for export and those governing goods that are in constant consumer demand, must comply with the standards laid down. There are too many people who will be interested in reaping the fruit of the results of standardization without complying with the standards, because they are doing this on a short-term basis or because they will play on the ignorance of the consumer.

Since the three partner states of East Africa, i.e. Kenya, Uganda and Tanzania form the East African Community, it is of absolute importance that the standards shall be common for the three countries. Since the East African Standards Institute will be for the purpose of coordination, it is hoped that common standards will be achieved without too many problems and duplication of effort. This will be further simplified when these countries become members of ISO.

At the present time we are faced with a few problems such as lack of manpower for the setting up of standards suitable for this country. However, we do have now testing centres, where items can be tested to determine whether they comply with a standard of an external country such as that of the B.S.I. To mention a few of such centres: the Ministry of Works Materials Branch, the Government Chemist, the University College Nairobi and the Weights and Measures Department for Legal Metrology.

The second problem we had was the widespread use of the Imperial System in preference to the Metric System (SI). It was decided in 1968 to abolish the Imperial System in the East African Community countries and leave the S.I. as the only legal one. To supervise this the East African Standing Committee on the Metric System and Bureau of Standards was formed. It has done a great deal but there is still much to be done in the field of commerce but still more in the field of engineering, architecture and the construction industry. One of the problems the Committee is facing is its decision that the items most commonly used by the consumer (they number about fifty) will be packed for sale in certain quantities such as:- 50g, 100g, 200g, 300g, 400g, 500g, 1 kg, and multiples of 1 kg, 50ml, 100ml, 200ml, 300ml, 400ml, 500ml, 1 litre and in multiples of 1 litre.

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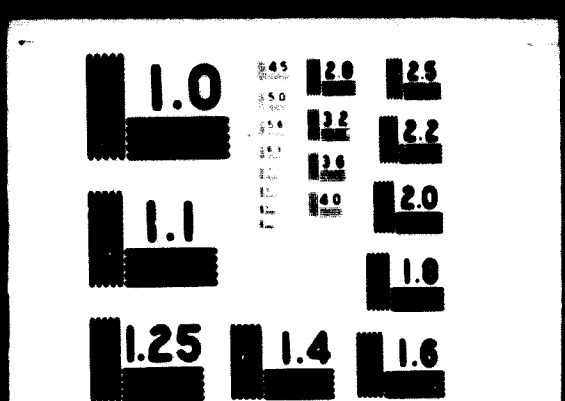

There is no problem for the volumetrically packed goods, as this has actually reduced the number of tin sizes. On the side of weight packed goods, this has resulted in the number of tin sizes increasing, because of the different specific gravities of the items involved. The prime concern for us in this case was to standardize on weight and measure as opposed to tin sizes. It was felt that the consumer would be better protected because he will have to watch for tin size to determine what he needs to buy.

At the present time the other government role in standardization will be enforcement of the standards laid down by the Standards Institute and are compulsory. Legislation is in the preparatory stage for this purpose. The enforcement it is hoped will be done by the Department of Weights and Measures in the Ministry of Commerce and Industry which is the Ministry that will be asked to sponsor the setting up of the Standards Institute. Training for personnel in the enforcement branch of the weights and measures is already done but it will be necessary to offer these officers more advanced training whenever scholarships are available.

It is difficult at the present time to say what the Standards Institute will look like. I would rather leave it and solve the problems as they come, using the experience of those who have gone before us.

There are many points that should have been set forth in this paper but as said in my introductory paragraph the notice received was so short that it might be better to discuss the other points during the Training Workshop.

4. Statement by the Participant from Nigeria

That "standardization is not new", was the view so lucidly expressed by the International Organization for Standardization in a paper submitted here last month to the ECA/UNESCO Regional Symposium on the Utilization of Science and Technology. Standardization had been unconsciously applied in ancient history although within limited areas of application and perhaps without consistency. No company or organization could continue to function effectively without some concept of a standard, for this is the basic requirement of any system of control. What is refreshingly new about standardization is the development of more and more scientific standards, jointly, by groups of

people and nations, to bring scientific and technological research and practices into the real mainstream of the welfare of mankind.

In Nigeria, standards exist at the levels of individuals, organisations, companies and trades, but these, in some cases, lack definition, and in all cases they need national coordination and acceptance. The practice is to adopt a foreign standard (usually British) and adapt it to Nigerian situation. Although a system of controlling weights and measures was inherited from the British, our need for a national standards body was felt as Nigeria prepared for national independence, over ten years ago. Since then, expert opinions have been collected at home and abroad about the establishment of an organization most suitable for the Nigerian situation. In 1966, the Federal Executive Council decided to establish the Nigerian Standards Organisation as an arm of the Federal Ministry of Industries, and early this year, I was appointed its Assistant Director, to understudy a competent international expert Director when one was found, and, in his absence, it fell to my lot to establish the nucleus of a national standards body. Considerable work was done by able administrators before my time to ensure that the organisation started on the right foot and, today it has an establishment of: Assistant Director, Librarian, two Technical Officers, Secretarial and auxiliary staff.

Work is mainly in three areas:

(i) First, we have designed an organisation structure which provides for a competent standards council and technical committees with legislative support (this is currently receiving the approval of the Federal Executive Council).

(ii) We have established the nucleus of a library of standards which also serves as an agency for foreign standards.

(iii) We are working on various projects, such as:

(1) metrication changeover; (now receiving the approval of the Federal Executive Council);

(2) compiling inventory of standards, testing facilities and personnel, and standardisable products throughout the country;

(3) investigation into the standards of quality of locally manufactured products with a view to establishing national standards and systems of quality control.

Only recently we were admitted to correspondent membership of the International Organization for Standardization.

I am particularly delighted to be here not only because of this wonderful opportunity of learning the correct methodology for doing my job but more especially because of the second chance it offers me to make further acquaintance with a distinguished expert, Major-General Gavin, whom I had the honor of meeting last August in London, during an inspiring study visit of the British Standards Institution.

5. Statement by the Participant from Sudan

Introduction: Sudan has realised the importance of standardisation long ago. Early in 1961 the Ministry of Commerce Industry and Supply invited Professor C.A. Genove, Divisional Chief Officer - British Standards Institution, to give advice on the matter and study the possibility of establishing a national Standardisation body. After viewing the structure of the Industry, he recommended that a small panel of experts with technical qualifications and sound knowledge of the conditions under which imported goods and materials are used should first be appointed. This panel, which should later develop into the official Sudanese Institution for Standardisation, should, as a first step, obtain the official standards applying to certain imported products, and should study at home, and through short missions to the factories of the Countries of Origin, the possibilities of improvement or simplification to suit local requirements and conditions. Tentatively Specifications should be prepared and should be kept under constant review during their applications. Unfortunately for various reasons it was not possible to put this recommendation into effect.

Specification and Technical Testing Division at the Institute: The Industrial Research Institute which commenced operations in 1965 is a National non-profit making Institution, that is being established by the Government of Sudan with assistance from the United Nations Development Programme (Special Fund Project). According to its act the Institute is supposed to assist in the preparation of Standard Specifications for Industrial and Commercial Products, so a small section was formed to start the work on Standardisation. The work accomplished by this section before the formation of the Sudanese Organisations for Standardization could be summarised as follows:-

(1) Establishment of a Library containing most of the National Standards. (Complete Set of British, Indian, etc.),

(2) Preparation of about 10 draft Standards for different Industrial products which are manufactured locally,

(3) Assisting the Ministry of Industry and Mineral Resources in formulating the constitution of the Organization for Standards Specifications;

(4) Publishing a manual to be a guide for members of the sub-technical committees.

Sudanese Organization for Standardization (SOS): In 1968 the S.O.S. was formed in accordance with the Organization and Promotion of Industrial Investment Act 1967. The Act gives the Organization the authority for:

a) Issuing Standard Specifications by which the manufacturing enterprises shall be bound;

b) Issuing Standards for raw materials used in Industry;

c) Establishing unified code of practice. It is now an ISO Associate Member and a member of the Arabs Organisation of Standardization and Metrology (ASMO).

A Council in which most of the interested official and non-official bodies were represented was then formed, headed by the Permanent Under-Secretary of the Ministry of Industry and Mineral Resources. The Council set up four permanent committees for:

a) Spinning and Weaving Industries

b) Engineering and Metal Industries

c) Food Industries

d) Chemical Industries.

Technical sub-committees were then established to cover these various aspects. Seventeen technical sub-committees are now in full swing. Their achievements up to date are:

1)	Draft Standards Discussed and approved	9
2)	Draft Standards under discussion	12
3)	Draft Standards not yet discussed	32

Problems:

1. Standardization has been started for a short period. The S.O.S. is not yet in full swing. There is a terrible shortage in trained standards officers.

2. A large number of industrialists were originally merchants and are therefore profit-oriented rather than quality minded. It takes a longer time for them to appreciate the essence and benefits of standardisation in their industries.

3. There are no consumers organisations to look after the interest of the user. This makes the Standardization process lose one of its principle drives.

4. It is usual to find in the Sudan in one type of industry that the machinery is imported from different countries, each following its own standard. When Standards are to be set for such industry its manufacturers have diversed views and practices and it takes longer to reach an agreement.

5. The fact that Standards are to be published in two languages, Arabic and English, presents difficulties in translation.

Potentials: Sudan is now starting an era of planning its industry. The Government has drawn a five year Development Plan. The role of Standardisation in this era is great, especially if we are going to get the maximum of the plan's schemes. Standardisation Seminars and Symposia should be organised for key personnel. The Sudanese Organization should be strengthened. This may be done by:

a) Asking the UNIDO for a Standardisation Expert.
b) Increasing the Organisation's staff.
c) Initiating a Training Programme for the staff.

6. Statement by the Participant from Tanzania

Way back in 1963 the name "Weights and Measures Bureau" was changed and the department had to be called "National Bureau of Standards". The idea behind this was to expand the department and embody the duties of a Standards Institution. But in 1965 the three East African countries came up with a new idea of setting up an East African Bureau to look after the standards of various products, and consequently Tanzania had to withhold the idea of going it alone.

The need for standardization has long been realised throughout East Africa and only in 1968/69 have practical steps been taken to set up the East African Standards Bureau. This is a regional project involving Kenya, Uganda and Tanzania. In recent months the East African Standing Committee on Petrication and the Bureau of Standards recommended that the East African Standards Institution should be supported by the three National Standards Institutions from Kenya, Uganda and Tanzania. Under this recommendation my Ministry of Commerce and Industries is now preparing the setting up of the National Standards Institution.

Since the start of our preparations in August 1970 we have been busy trying to get the right qualified person to prepare plans for the Institution; unfortunately all this effort has not materialized yet. We need a qualified person to start the ball rolling because all the preliminary investigations for the possibility of setting up either an East African or Regional Institution have been carried out by various experts both from developed countries and the United Nations. We hope this Training Workshop will give us some ideas as to how we can get the expert to start our National Institution.

In Tanzania there are some testing facilities for many industrial products. Although these are not sufficient at the moment, we feel they will serve the purpose particularly at this time of infancy of the National Institution. The following are the recommended testing centres:

(i) The Government Chemical Laboratory under the Ministry of Health tests all food products, poisons and many other chemically prepared goods.

(ii) The Dar es Salaam Technical College under the Ministry of Education tests all electronic appliances, concrete bricks/blocks and other small building materials.

(iii) Testing Centre, which is under the Ministry of Communication and Works, tests all heavy duty building and construction materials.

(iv) Each industry has its own testing laboratory and the Institution will from time to time assess their suitability for being registered as national testing laboratories for their particular products manufactured.

We feel there will be no need for the National Standards Institution to embark on building its own testing laboratories as that is a extremely expensive project only to be undertaken at regional level.

Tanzanian products for export are mainly agricultural and their standards will be dictated by the importing country. The Ministry of Agriculture sees that they are up to the required standard before being exported. Most of the industrial products manufactured locally are mainly used within East Africa. But such products must be of the same standard as the imported ones and we feel that some national standards should be formulated. Some products like iron sheets, cement, cotton products, etc. are exported to the neighbouring countries. Standards are required to be set for these products so that the importing country can compare them with other similar products from other countries.

Tanzania is a young developing country and her industries are young. But we believe that establishing a National Standards Institution now is vital, rather than waiting until all industries grow bigger and increase in number. Therefore we look forward to learning more on this subject from our honourable consultants and participants of this Training Workshop and go back with new throughts which we believe will help us build a real and reliable National Standards Institution.

7. Statement by the Participant from Zambia

Last year the Government of the Republic of Zambia decided to accept the recommendation of a Working Party it had set up in 1968, to the effect that Zambia should adopt the metric system of weights and measures as soon as possible. Most of the countries with which we had important links of trade or culture were already metric or were making arrangements to change, and it was felt to be most unwise to allow our country to slip behind and become out of date.

In September last year a special Metrication Department was created in the Ministry of Trade and Industry under an Assistant Secretary, Mr. D.A.W. Glendening and with a specialist Publicity Officer. The Minister of Trade and Industry, the Hon. Humphrey Mulemba, M.P., then appointed an eight-member Metrication Board to advise him, charged with the task of working out a comprehensive programme for the adoption of the metric system in Zambia, introducing some

measures by the beginning of 1971 and completing the programme by the end of 1973. This Board is 50 per cent Government and 50 per cent private sector as the Minister wishes to be sure of getting a balanced view of the problems involved and the means of overcoming them.

Obviously a considerable amount of study was required on the problems which have arisen in the countries which have already embarked on a metrication programme. Consequently, Mr. Clendening and myself visited Kenya towards the end of last year to obtain first hand information and we now sit as observers at meetings of the East African Community Standing Committee on the Metric System and the Bureau of Standards. Information is also exchanged with other countries such as the United Kingdom and other Commonwealth countries.

The Metrication Board of Zambia, as co-ordinator for the whole complex of metric change, has set up a number of specific committees with responsibility for producing their own metrication programmes for particular sectors of the country's economy. Care has been taken to see that the views of commerce and industry are represented on each committee.

The Metric System Act: The Metric System Act has been passed by the Zambian Parliament and assented to by His Excellency the President, Dr. Kenneth Kaunda, in October 1970. This Act follows quite closely the Kenyan Metric System Act, and it establishes the metre, the kilogram and the litre as the standard units of length, mass and capacity in Zambia, defining the litre as a cubic decimetre. The Minister responsible for Trade and Industry is empowered by this Act to publish orders making it compulsory to convert to metric weighing or measuring equipment used in trade, and specifying a date after which it will be unlawful to use non-metric equipment in trade. The Minister's powers may be exercised within a particular region or may be applied to a particular trade. Preliminary notice has been given in the national press, radio and television of the regional programme which is proposed and orders are now being drawn up.

Mining: The two Zambian Mining copper companies report that little difficulty has been experienced in metricating their operations. Teething troubles have occurred but have been few in number. They in effect started introducing certain measures of the metric system in January this year since the London Metal Exchange began transacting its business in metric tons during

the same month. The new Kalengwa Mine in the North-Western Province of Zambia is solely operating in metric terms and it is hoped that both mining companies will be able to complete metrication of all their operations by the end of next year.

Construction: The Buildings Branch of the Government Public Works Department has produced two Metric Guides, for Building Designers and Building Contractors. Some architects are now working entirely in metric and more and more projects going out to tender will be in metric. Arrangements have been made to adjust the sizes of locally manufactured components such as bricks, window and door frames and sheet roofing to accord with the 10 centimetre module. It is obvious that for some time to come a large proportion of imported building components will be in imperial sizes and this will raise problems, particularly for the Quantity Surveyor. However, on the sites where buildings are currently being constructed from metric designs, the contractors report that they are experiencing no special difficulty.

Agriculture: Arrangements have been made to market the 1971 crop in metric units. This will also apply to tobacco auctions, despite some initial reluctance. Fertilizer will be supplied in 50 kg bags and staff of the Department of Agriculture are giving advice and instruction on seed planting in kg per hectare, planted centimetre apart on centimetre ridges, dressed and top dressed in kilogram of fertilizer per hectare.

Some controversy was engendered by the decision, largely based on economic grounds, to convert the existing 200 lbs standard bag of maize to a 90 kg bag, representing only a marginal rounding off. It had been hoped by many that the opportunity would have been taken to introduce the more manageable 50 kg bag.

Education: By January 1971 all forms of education in Zambia will be using SI units. The University of Zambia started using SI units in March this year, and they were closely followed by many of the colleges and secondary schools in the country.

Secondary schools have adopted a phased programme of introducing SI units, and the primary schools have been carefully preparing introductory material for their teaching institutions. During the 1971 examinations our pupils will write their examinations in mathematics, science, geography and technical subjects by using SI units only.

Transport: A new version of our Roads and Road Traffic Regulations has been prepared and will probably be published in January next year, to come into force in January 1972. Meanwhile, milestones are being replaced by kilometre stones and signboards are being changed to show distances in kilometres.

Zambia Railways expect to introduce a metric tariff between February and April 1971.

Petrol, Oil and Lubricants: A programme has been worked out with the Oil Companies of Zambia to convert all retail petrol pumps in the Republic during the period April to November 1971, to indicate sale by the litre. Lubricating Oils are already on the market in 0.5 litre cans. Whilst both one pint and half litre cans are on sale concurrently it has proved to be very difficult to persuade motorists to take the trouble to examine the oil they purchase to ensure that they are paying the right price for the right size.

Post Office: It has been agreed that postal services will be metricated as from 1st July 1971. Following the complaints raised in East African countries when adjustments in postal charges at the time of metrication led to an effective increase in postal rates, enquiries are now in hand with the General Post Office with a view to avoiding such a position arising if possible.

Customs and Excise: The Metric Customs Tariff will be published when the new Budget is introduced into the Zambian National Assembly in January 1971.

Pre-packed Articles: Although the Metrication Board of Zambia expressed an early preference for using the decimal series of sizes (100g, 200g, 500g etc.) to standardize pre-packed items, it has become apparent that many of our main supplying countries, notably in Europe, favour the fractional series (125g, 250g, 375g, 500g etc.). Moreover, many of our domestic manufacturers expressed a preference for the fractional series on economic grounds, and consequently the new metric version of the Sale of Articles Regulations will permit either series to be used, but not both in the same range of products.

Retail Marketing: The trades of butcher, grocer, greengrocer, market stallholder, draper, general dealer, fishmonger and hardware merchant will be the first to be affected by orders made under the powers now conferred upon by the Minister of Trade and Industry under the Metric System Act. Three of the

eight Provinces of Zambia will be covered by such orders during 1971, and the first effective date is 1st March 1971 for Kafue Township, near Lusaka in the Central Province, and Kalulushi Township in the Copperbelt Province. The onus is therefore now on traders in the areas concerned to arrange for their weighing machines to be converted to metric or replaced.

This problem of physical conversion is obviously one which is likely to cause us many problems. The "key" company is W. & T. Avery (Zambia) Limited, a wholly owned subsidiary of the U.K. Company. Supplies are, of course, obtained from the United Kingdom, but because of the many demands made upon it, there may be a delay of some months before the parent company is able to despatch the items required, and once despatched there may be another protracted delay before they reach landlocked Zambia. The problem is aggravated by the frailties of human nature. Traders prefer to wait until the last possible minute before dealing with the problem which is almost upon them, and appeals to the commercial community to place early orders for the conversion of equipment have met with very little response so far. However, the Government of the Republic of Zambia has ordered 10,000 basic sets of metric weights from India to cope with anticipated sudden rush from small traders.

Beverages: The beer trade in Zambia is in two distinct parts. There is no trade at all in the draught mild or bitter type of drink. All of the bottled "lager" type trade is in two sizes, neither of which has been referred to by the actual quantity contained in the bottle and neither of which contains a specific imperial measure. The standard returnable bottle has contained 13⅓ fluid ounces and the Government of Zambia has ordered that this bottle can be retained with the contents rounded off at 375 millilitres (ml). Similarly, the smaller non-returnable "dumpy" will have its contents rounded off at 340 ml. Therefore, the brewers will be in their fortunate position of being involved in very little capital expense as a result of metrication.

By contrast the "traditional" Zambian type of beer, based on fermented maize, is sold almost entirely draught, normally in quantities of a quart. This trade is mostly in the hands of local authorities. Obviously, the dispensers must be changed to dispense in litres, and although the existing quart containers will comfortably hold 1 litre, replacements will have to be ordered in litre sizes.

The bottle of milk has almost disappeared from Zambia, and has been replaced by the triple. It has been agreed with the Dairy Produce Board that from 1972, 0.25, 0.5 and 1 litre triples will be marketed.

Finance: Like most countries that go over to the metric system, the Government of the Republic of Zambia has decided to pay no compensation, but some forms of financial relief are given, such as the suspension of customs duties on the importation of new metric weighing or measuring equipment, and on spares for conversion, and the waiving of sales tax for testing metric equipment. The cost of the operation to the Government is substantial, but not frightening.

Zambian traders have been advised that VIS and "ATA" planning can keep the costs of conversion down. The Metrication Board of Zambia has told the Zambian public that metrication is a fundamental change made with the object of gaining major economic and industrial benefits. It is, therefore, not considered to be unfair to expect the public to bear their own initial costs if they do find that they have to replace equipment.

Publicity: We do see it as the responsibility of the Government to prepare the public for the change. As a matter of policy, we publish and issue leaflets and books free of charge. So far we have issued:-

a) Zambia Goes Metric. This is an explanatory booklet of 16 pages explaining why Zambia was going metric, what the main advantages were, the principal features of the metric system, with a few simple conversion factors and tables. This originally appeared in English only, but has since been published in Nyanja, Chibemba, Lozi, Tonga, Bemba, Luvale and Lunda.

b) Programme for Metrication. This was issued to explain how we proposed to go about changing over, and in particular to explain why time was necessary for planning.

c) The Use of SI Units in Zambia. In view of the existence of different variations of the metric system in different countries and the confusion likely to arise from this, we thought it advisable to take early decisions on technical matters where clarification was required, and to make definitive statements on the definitions or terminology to be adopted. This was based on the recommendations from technical professional bodies and to workers in technical fields.

And we hope to have available by the end of this month:

d) The Effect that the Introduction of Metric Units in Zambia. This is intended to explain in some detail the ways in which the introduction of the metric system is likely to affect the average man.

> It covers in a very simple way, all common retail trade, dealing with prices, length, mass, capacity, speed, temperature, area etc., and includes [illegible] type problems. The booklet will also accompany [illegible] posters [illegible] its own without reference to [illegible].

In addition to the issue of booklets, we have designed and issued wall posters, and advertise through the press, radio and television. Here, arrangements [illegible] regularly to publish special metrication supplements, and we are scheduled very shortly to sponsor our own radio and television programmes. We have also produced a 20 minute film suitable for showing by the mobile film unit of the Government Information Services in the rural and urban areas.

Conclusion. I would like to conclude my short contribution to this Workshop by quoting the last paragraph in an editorial article in one of our daily newspapers published on our Independence Day, 24th October 1970:

> "Lastly, the adoption of the metric system has been a radical change which only comes once in the life of a nation. It affects us all in our everyday life and it is such a change that it can only be successfully implemented with the support of the public, the press and everyone concerned. If the public is uncooperative [illegible] the metric system [illegible], [illegible] to the public will be [illegible]. The Government took the decision to change to the metric system and Parliament has approved this decision, it is now the task for everyone to help speed the process of change and forget arguments about the merits of the decision to go metric."

Without going into unnecessary detail I think that this is all I can tell you about the metrication programme in Zambia at the present time. Our planning is largely done, but our difficulties still lie ahead of us.

Membership of the Metrication Board of Zambia: The Metrication Board is a statutory body and is advisory to the Minister of Trade and Industry. The membership reflects both Government bodies and the private sector.

The Chairman is Mr. J. [illegible], a Chartered Accountant, and other members are Mr. B.V. [illegible], the Group [illegible] Manager of [illegible] Corporation, representing the Zambian mining industry; Mr. [illegible], representing the Ministry of Rural Development; Mr. [illegible], representing the Ministry of Education; Mr. [illegible], representing the Zambia [illegible] Association; Mr. [illegible], the Commissioner of [illegible], who may be regarded as representing technical and professional [illegible]; Mr. [illegible] representing the Zambia Industrial and Commercial Association, and Mr. [illegible], of the Ministry of Trade and Industry, who is Secretary to the Board. Mr. [illegible] is the Metrication Publicity Officer.

B. Strategy of Implementation for East African Community

The provision of metric standards is an attribute that differentiates the E.A. Standing Committee on the Metric System and the Bureau of Standards from other Metrication Boards whose functions are concerned solely with the adoption of metric weights and measures. Whereas the U.K. Metrication Board relies on the B.S.I. to issue metric standards, while the Australian Metric Conversion Board will rely on the Standards Association for the same, the E.A. Standing Committee has to start from scratch to obtain national and regional standards commensurate with its metrication programme.

This is true for existing standardization bodies at national and regional levels with attached technical personnel.

At the moment a number of official organizations in the three Partner States of the Community are already engaged in the preparation of standards and in inspection and testing work. But, these activities are in the main specific to sectional needs.

Most of the standards used are of foreign standards institutes. Some of these have been modified to suit local conditions, and some local standards have been developed to cover local products and conditions. In the absence of a nationally designated single authority for standardization in any of the three countries, no standard can be termed a Kenya, Uganda or Tanganyika standard.

In effect, policy direction on standards and testing at national level has been determined by function. The Government Chemists come under the Ministries of Home Affairs and conduct the forensic work and the testing of foodstuffs, drugs and other items as required by various Acts of Parliament; the Weights and Measures Departments come under the Ministries of Commerce and Industry; the Ministries of Works control their Materials Branches which are primarily concerned with standards, and testing relating to materials in building and construction industries.

The Problem Stated: From the resume given of the existing position in standardization and testing in the three countries, the desirability of common metric effort and the need for the preparation of standards at national and regional levels, has been recognized.

The idea of co-ordinating standards on a regional basis is not new to the Standing Committee. As far back as 1965, before the Committee was created, the Economic Commission for Africa organised a conference in Lusaka which dealt with the rationalization and harmonization of trade in Eastern Africa. A resolution adopted on the 2nd November 1965 recommended that the countries concerned in consultation with the Secretariat of the E.C.A., "should take such steps as are necessary for the establishment of the East African Standards Institute and appropriate National Associations for Standards, under the proposed East African Industrial Research Council."

Dr. A. Sundralingam of the United Nations was subsequently appointed to investigate the possibility of setting up a Standards Bureau for the sub-region covering not only the present members of the Community, but also Zambia, Ethiopia and Somali. Dr. Sundralingam's report made positive recommendations in connection with the setting up of an East African Standards Bureau and suggested long-term planning on a comprehensive basis.

At a meeting of government and E.A. Community officials, held in Nairobi in January 1966, it was agreed a Bureau of Standards should be formed within the Community machinery, and the Community was requested to seek I.S.O. assistance for the appointment of an expert to study the subject with the appropriate Ministries. These recommendations were approved by the Ministerial Committee for Commercial and Industrial Co-ordination. An inquiry on facilities in being was subsequently addressed to the appropriate government officials of the three countries at the same time, a preliminary approach to the I.S.O. for an expert was made but the I.S.O. were not in a position to help. The Ministerial Commercial and Industrial Co-ordinating Committee consequently decided to set up the present authority on metrication and standardization - the E.A. Standing Committee on the Metric System and the Bureau of Standards.

The Setting up of the E.A. Standards Bureau:

a) Present Situation: In order to examine metrication and standardization in detail, a Technical Sub-Committee was formed by the Standing Committee, its membership comprising the Superintendents of Weights and Measures in the three countries concerned, a representative of the East African Industrial Research Organization and officials of the Common Market Secretariat of the Community.

At a meeting held in January 1967, the Sub-Committee formulated proposals on the staffing, library facilities, relationships within industry and finance requirements of an East African Bureau of Standards. These proposals were submitted to the Common Market Council (9th Meeting) of the Community and in accordance with the approval of the Council the post of Standards Officer was filled and steps were taken towards the establishment of the East African Standards Organization.

In response to the Community request, a one-man UNIDO/UNESCO sponsored mission under Mr. F.J. Lehany of the Australian Commonwealth Scientific and Industrial Research Organization visited East Africa in December 1968, and submitted a report.

The report makes, inter alia, the following recommendations:-

(i) That the E.A. Community establish a Standards Specification and that a request for United Nations assistance be made along the lines discussed in the body of the report.

(ii) That existing testing facilities be used where possible to provide testing to East African Standards Specifications. To this end, a register of such facilities should be established by the Standards Specification Centre.

(iii) That consideration be given to the use of an East African Standard mark in order to obtain maximum benefit from the availability of standards specifications and testing facilities.

(iv) That a representative Council be formed to give final approval to the issue of the East African Standards Specification and to give advice to the E.A. Community on the further development of the Standards Specification Centre and other policy matters.

(v) That the E.A. Community establish a metrology centre along the lines discussed in the body of the report - and that an appropriate request for United Nations assistance be prepared.

After discussing the report, the Standing Committee endorsed the first 4 recommendations and requested for a UNIDO/UNESCO expert to assist with legal metrology contained in the fifth recommendation. The necessary Technical Assistance Request along these lines was approved by the Common Market Council last July, (12th Meeting) and has been sent to the UNDP.

b) Envisaged Organizational Structure: One could easily visualise the first question to be answered when the Technical Assistance request is approved - should standards be prepared on a national or regional basis? In other words, what legal or statutory relationship will the regional body have with the national bodies?

The 1965 Lusaka Conference recognised the desirability of National Standards Institutes being created, in advance of the E.A. Standards Institution.

This was a guiding principle of the Standing Committee when it considered the organisational structure of the E.A. Standards Institution. A ten point recommendation has been drawn to provide guidance to a legislation group due to be established to formulate the statutes of the organisation:-

(i) East African Community should set up the E.A. Standards Institution on the lines of UNDP(SF) technical assistance request.

(ii) Partner States should set up National Standards Organisations on the lines of Dr. Glass' recommendations as modified and adopted by the Committee.

(iii) Activities of National Standards Organisations to be co-ordinated by the E.A. Standards Institution.

(iv) National Standards Organisations should be sponsored by the Ministry of Commerce and Industry.

(v) National Standards Organisations should be largely financed by Government, but reasonable support, (initially of the order of 15% of the total cost) should be sought from industry, commerce and municipal authorities.

(vi) In order to launch the national standards organisation, each Minister of Commerce and Industry/ies should establish a Standards Council.

(vii) The Chairman of the Standards Council should be appointed by the Minister of Commerce and Industry/ies, and all its members should be drawn from appropriate Government Departments, the East African Community, Local Authorities, Industry, Educational Establishments, Professional Institutions and other interested bodies.

(viii) The Standards Council should, in consultation with the E.A. Standards Institution, draw up a constitution of the national standards organisation, of which it would then form the controlling board, and should recruit an executive staff of the organisation.

(ix) Standards shall be prepared by the National Standards Organisations for adoption by the East African Standards Institution. After their adoption, they shall be applied as East African Standards. The costs of inspection and testing work shall be recoverable from manufacturers applying for the right to use the certification mark, and from manufacturers licensed to use the mark.

(x) The East African standards should be applied through legislation to the maximum extent possible. In the case of standards designed for consumers protection, East African standards will in all cases be applied through legislation.

e) <u>Nature and Size of the E.A. Specification Centre</u>: The Standing Committee considered two possible legal bases:

either private and autonomous institution having the form of a foundation or association;

or a joint institution, semi-public, autonomous but under Community Supervision

and opted for the second formula.

To provide the basis for growth, a nucleus unit with a skeleton staff on a full time basis as well as a technical staff of two experts on standard specifications and one expert on office system and library organization is to be set up.

To give final approval to the issue of any East African standard specifications and to advise the Community on the further development of the Centre and other matters of policy, a Standards Council will equally be established with 11 seats:

4 people from Government Departments

4 people from Industry

3 people from professional institutions including education establishments.

<u>Problems [illegible]</u>:

a) <u>Treaty Amendments</u>. As an institution to which Acts of the Community may be directed, Annex [illegible] of the Treaty for E.A. Cooperation had to be modified. The amendment has been agreed upon by the Authority.

b) <u>Correspondent Membership in ISO</u>: An enquiry has been made that because one of the member States of the Community, Kenya, is already a Correspondent Member of ISO, the Standing Committee has as yet to reach agreement on a possible transfer of the latter's Correspondent Membership to the Community.

c) <u>Location of the Centre</u>: The Standing Committee is not competent to recommend the location for the Centre, [illegible] the Secretariat and Central Council of the Community will have to decide on the recommendation of the Technical Working Party.

d) Administrative Delays: As official requests for the SF assistance have to go through various steps of the UN system, the Community request for UNDP/SF assistance should have been submitted before the end of June if the project is to be undertaken by the beginning of 1971. The request was only submitted in September and as a result the body may not be established until late next year.

e) Financial Resources: As outlined in preceding sections, the Standing Committee is looking into the feasibility of establishing appropriate National Bureaux for Standards as well as an East African Standards Institution. Adequate financial resources on a continuous basis will have to be available not only for these projects but also for the Legal Metrology Centre. The cost of the programme is bound to weigh on the resources of the Partner States.

Conclusion: Within the limits of physical and financial resources made available, the Standing Committee is fully committed to the initiation and promotion of standardization in East Africa as it believes that progress in standardization must go hand-in-hand with economic and industrial development.

9. Statement by the [illegible] of the IEC (International Electrotechnical Commission)

On behalf of the General Secretary of the IEC, I should like to express our thanks to the organizers of this training workshop for inviting the IEC to give of its views on international standardization. My purpose is to state briefly what the IEC is doing in this field and, I hope, to hear something of your own views on the subject.

As you know, the letters IEC stand for International Electrotechnical Commission, which was founded in 1906 by such giants of the electrotechnical world as Lord Kelvin, Colonel Crompton and Dr. Siemens, "... to standardize the nomenclature and ratings of electrical apparatus and machinery".

For more than 60 years now, the IEC has been regarded as the source of objective, authoritative and recognized [illegible] for the electrotechnical field. I used the word "objective", because these recommendations are being drawn up by common agreement between leading electrical engineers representing the views of manufacturers as well as users, government departments, testing laboratories, and all other interests concerned.

As a result of these sixty years of activity, the IEC is now in a position to make available to all countries a set of valid world-wide recommendations which are described in the Catalogue handed round to you a few moments ago. These recommendations are prepared at a rate of over 3,000 pages a year, covering all aspects of electrical and electronic engineering such as equipment for the generation, transmission and distribution of electrical energy, electronic and communications equipment (both for professional use and for the general public, e.g. radio and television receivers, disc and tape recording), electromedical equipment, electrical household appliances, both from the viewpoint of measuring performance and testing for safety, and many other items which are all of direct importance for countries that are engaged in electrification efforts in the broadest sense of this term, which cannot be dissociated from standardization.

What is the meaning of standardization? This subject is covered in detail in several papers presented at this meeting or in technical literature, in particular a paper entitled "The Work of the International Electrotechnical Commission in International Standardization" which was handed round to you (a report presented earlier this year to a meeting of the Economic Commission for Europe). I should like to stress only that, as mentioned in that report, one of the main difficulties encountered in defining "standardization" is the fact that, at least in the electrotechnical field, standardization activities are so intimately linked with the development of technology that it is difficult to draw a line between standardization and the other facets of design, production and testing.

You will find, however, more or less interlinked in the wide range of IEC Recommendations, all the various categories of standards which are usually mentioned in technical literature, i.e. common means of expression, methods of test or performance measurements, safety specifications, inter-changeability etc.

Sometimes, these various aspects of standardization may seem quite simple at first sight. However when it comes to dealing in more detail with specific items, the problem often turns out to be much more complicated than it looked on paper. For example, the standardization of plugs and socket outlets may seem to be merely a question of mechanical standardization and yet the most

important aspect of it is that of electrical compatibility, which depends not only on local wiring rules, but also the network is earthed, at the generating station or elsewhere, and many other factors which go beyond the simple question of the mechanical design of the plug and socket. For this reason, in addition to a Sub-Committee (SC 23C) which is working on a single plug-and-socket system that would be applicable in all countries throughout the world, the IEC has also set up a Technical Committee (TC 64) to deal with the electrical installations of buildings, a Committee which, amongst other tasks will have to indicate to the plug and-socket Committee what should be the electrical characteristics of the proposed world-wide plug-and-socket system.

It should be noted, incidentally, that one of the main factors which led to the setting up of IEC/TC 64 was the desire to meet the needs of developing countries, which were brought to the attention of the IEC Council by UNIDO and UNESCO. In taking this action, the IEC realised that electrification would be one of the main preoccupations of developing countries and that every effort had to be made to ensure that they would not have to face the same obstacles which are being confronted in industrialised countries due to divergencies in voltages, distribution systems and wiring rules.

I have only been able to outline briefly the work of the IEC and to touch on a few of the subjects it covers, but a glance at the Catalogue of IEC Publications will give you a much better idea of what the IEC has accomplished. I should like to add that all over the world there is an ever growing trend to use IEC Recommendations not only as the basis for national standards but also to adopt them without change. This is not surprising at all when it is remembered that a large number of the leading figures in the electrical industry are devoting their time to the discussion and preparation of these Recommendations. The fact that an ever-increasing proportion of the world's electrotechnical standardisation will follow very closely the relevant IEC Recommendations, should result in appreciable advantages for developing countries which will be able to follow these Recommendations with every confidence.

I have already mentioned the IEC Catalogue of Publications which contains details on the contents of each IEC Recommendation. I should like to indicate

as well two other useful sources of information, which will enable you to follow the work in the electrotechnical field.

Firstly the IEC Bulletin, which appears quarterly and contains general articles on IEC work, publications recently issued or being printed, basic drafts submitted for final approval, meetings, etc., and, secondly, the Annual Report on IEC Activities, which gives detailed information on the technical work of all the IEC Technical Committees and Sub-Committees.

Finally, (last but not least) the IEC Central Office receives each year numerous requests for information, particularly from developing countries, either on the interpretation of existing IEC Recommendations, or on specific questions related to subjects not yet covered by such Recommendations.

I shall be glad to give you further details on this IEC information service or on any other aspects of IEC work. I sincerely hope that the informal discussions which we are having today will lay the foundations of a continuous contact for the years to come.

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12. [redacted]
13. [redacted]
14. [redacted]

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Morning

9.30 - 10.30 - Registration, Admission and Financial Matters
10.30 - 11.00 - Opening addresses
11.00 - 13.00 - Election of Officers
- Adoption of the Agenda and the Work Programme
- Organization of the Work

Afternoon

15.00 - 18.00 - "Organization and Operation of a National Standardization Body (NSB)", by Mr. [illegible] ([illegible])
- Statements by participants
- Discussion

[illegible]

Morning

10.00 - 13.00 - "Regional Standardization" by Mr. [illegible] ([illegible])
Discussion
- "International Standardization" by the International Organization for Standardization (ISO)
- "International Standardization in the Electrotechnical Field" by the International Electrotechnical Commission (IEC)
- Discussion

Afternoon

15.00 - 18.00 - Statements by participants
Discussion

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Thursday [illegible] December 197[illegible]

Morning

10.00 - 13.00 • "Standardization and [Simple Procedures?]"
by Mr. L. [illegible] (Sweden)
Discussion
• "Trade Mark, Quality Control and the [Internal Product?]" by Mr. J.P.L. [illegible] (UK)
Discussion

Afternoon

15.00 - 18.00 • "Priorities for Standardization in Specific Sectors" by Mr. L. [illegible] (Sweden)
Discussion

Friday [illegible] December 197[illegible]

Morning

10.00 - 13.00 • "Training for Standardization" by
Mr. [illegible] ([illegible])
Discussion
• Statements by participants

Afternoon

15.00 - 18.00 • "Trade Promotion and Adoption of the Metric System (SI)" by Mr. [illegible] ([illegible])
Discussion
• Statements by participants

[illegible] [illegible] December 197[illegible]

Morning

10.00 - 13.00 • Formulation of Recommendations
Discussion

Afternoon

15.00 - 18.00 • Recommendations

[illegible] [illegible] December 197[illegible]

Morning

10.00 - 13.00 • Adoption of Report and Recommendations

Afternoon

• Closing session

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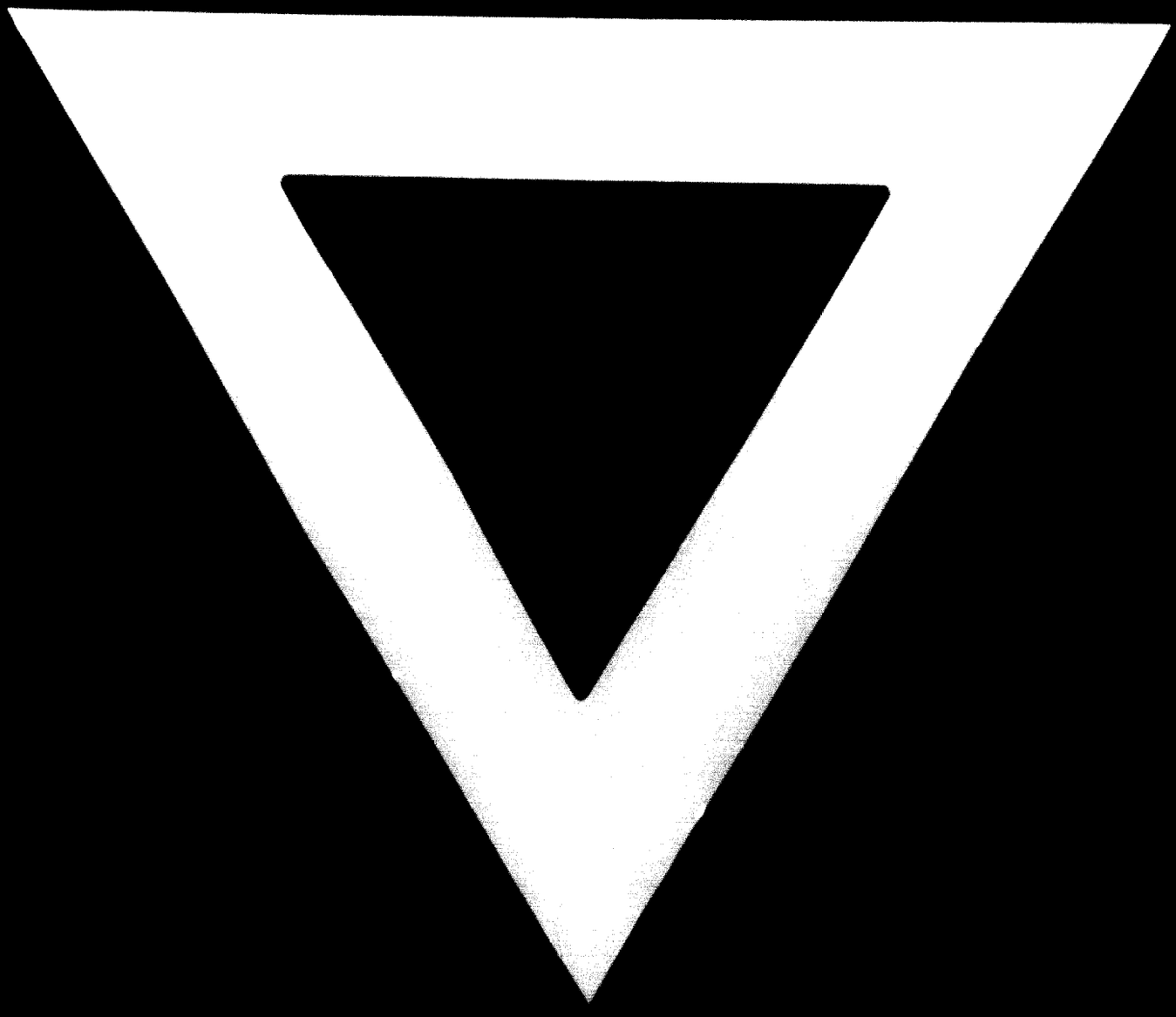

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