THE ROLE OF THE UNITED NATIONS IN TRAINING NATIONAL TECHNICAL PERSONNEL FOR THE ACCELERATED INDUSTRIALIZATION OF THE DEVELOPING COUNTRIES

Report of the Secretary-General

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Annex page

COMMENTS BY GOVERNMENTS CONCERNING THE SECRETARY-GENERAL'S REPORT ON THE TRAINING OF NATIONAL TECHNICAL PERSONNEL FOR ACCELERATED INDUSTRIALIZATION OF DEVELOPING COUNTRIES

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* Item 43 of the provisional agenda.

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I. INTRODUCTION

1. In compliance with General Assembly resolution 1824 (XVII) of 13 December 1962, a report on the training of national technical personnel for the accelerated industrialization of developing countries was prepared by the Secretary-General.¹ At its twentieth session, the General Assembly also adopted resolution 2090 (XX) on this subject, the operative paragraphs of which read as follows:

"The General Assembly,

"....

"1. Notes with appreciation the valuable report prepared by the Secretary-General in co-operation with the specialized agencies;

"2. Commends the Centre for Industrial Development, the specialized agencies and the International Atomic Energy Agency for their activities in training national technical personnel for the industrialization of developing countries, such as symposia, seminars and advanced training courses, undertaken within the framework of the United Nations technical assistance programmes;

"3. Requests the Centre for Industrial Development to continue and to expand such activities, financed from the funds of the United Nations Development Programme, and to co-ordinate them with the related activities of the specialized agencies concerned, the International Atomic Energy Agency and the regional economic commissions;

"4. Requests Governments, the specialized agencies, the International Atomic Energy Agency, the United Nations Development Programme and the regional economic commissions to consider the recommendations contained in the above-mentioned report and to transmit to the Secretary-General their comments and suggestions;

"5. Requests the Secretary-General to report on the action taken in accordance with paragraphs 3 and 4 above and on proposals for further measures in this field to the seventh session of the Committee for Industrial Development, which would present its recommendations on the question to the Economic and Social Council at its forty-third session for consideration and submission to the General Assembly at its twenty-second session."

2. Since only four Governments had submitted their observations as of 1 February 1967, the General Assembly, at its twenty-second session, adopted resolution 2259 (XXII), the operative paragraphs of which read as follows:

"The General Assembly,

....

1. Requests Governments which have not done so, the specialized agencies, the International Atomic Energy Agency, the United Nations Development Programme and the regional economic commissions to communicate to the Secretary-General their observations and comments on his report, in the light of the results of the first half of the United Nations Development Decade;

2. Requests the Secretary-General to prepare the report called for in General Assembly resolution 2090 (XX), including in it - in the light of the studies carried out by the appropriate organs in the United Nations system - the question of the drain of national technical personnel at all levels from the developing countries, and to submit that report to the General Assembly at its twenty-third session;

3. Invites the United Nations Industrial Development Organization to make a substantial contribution to the preparation of the above-mentioned report."

3. A separate report on the question of the drain of national technical personnel referred to above which had also been requested by the General Assembly in its resolution 2320 (XXII), was prepared and submitted for discussion under item 47 of the agenda of the twenty-third session of the General Assembly.2/

4. In spite of the recommendations made in General Assembly resolution 2259 (XXII), a total of only eleven replies had been received from Governments as of 1 August 1968. Under the circumstances, it was felt that it would be impossible to prepare the report for submission to the General Assembly at its twenty-third session. The Secretary-General suggested, therefore, that the discussion in the General Assembly on this subject be postponed to its twenty-fourth session.3/

The General Assembly endorsed that recommendation at its 1676th plenary meeting on 27 September 1968.


3/ See A/7172.
5. As of 1 August 1969 fifteen observations had been received from Governments.\footnote{These Governments are: Australia, Belgium, Ceylon, Denmark, Gabon, Iran, Japan, Lebanon, New Zealand, Norway, Romania, the Ukrainian Soviet Socialist Republic, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland and the United States of America.}

These Governments represent developed and developing countries, centrally-planned and free market economy countries. In order not to postpone again the discussions on this item, a summary of the main observations and comments received on the Secretary-General's report is given in chapter II of the present report. The full texts of the replies received are given in the annex to this document.

6. In accordance with operative paragraph 3 of General Assembly resolution 2090 (XX), the Centre for Industrial Development and its successor, the United Nations Industrial Development Organization (UNIDO) have paid continuous attention in expanding its activities in industrial training and in related fields. It has initiated new activities, taking into account the recommendations made in the Secretary-General's first report. In chapter III of the present report, an account is given of UNIDO's main activities in the field of industrial training. The Industrial Development Board at its second session endorsed UNIDO's current programmes for in-plant training of various levels of engineers, technical personnel and specialized managers, and for an exchange of experience in promoting the development of different branches of industry in developing countries.\footnote{Official Records of the General Assembly, Twenty-third Session, Supplement No. 15 (A/7215), resolution 8 (II).}

The same resolution requested the Executive Director of UNIDO to prepare an outline for a detailed long-term programme for the various kinds of technical training in industrial development for submission to the Board for consideration. This outline is at present under preparation, and, after its approval by the Industrial Development Board, it will serve as the guideline for UNIDO's further activities in the training of national technical personnel for the accelerated industrialization of the developing countries.
II. SUMMARY OF MAIN OBSERVATIONS SUBMITTED BY GOVERNMENTS
CONCERNING THE SECRETARY-GENERAL'S REPORT OF 3 JUNE 1964
ON TRAINING OF NATIONAL TECHNICAL PERSONNEL FOR THE
ACCELERATED INDUSTRIALIZATION OF DEVELOPING COUNTRIES

7. The report submitted by the Secretary-General is generally endorsed by the
Governments which have submitted their observations and comments. It is felt,
however, that the full implementation of the recommendations for action by the
developing countries\(^6\) may be beyond the present capacity of some of these
countries. Specifically, some doubts are expressed as to the ability of the
developing countries to set up, in planning organizations, units specializing
in the forecasting of training and education requirements because of lack of
qualified personnel. The international organizations will have to assist the
developing countries in carrying out these functions and at the same time assist
in training personnel from the developing countries so that they themselves will
be in a position to take over these tasks.

8. The recommendations for action by the international organizations\(^7\) are
considered to be greatly beneficial for the developing countries. International
assistance, however, cannot provide the major structural solution within the
national framework. It is therefore necessary that detailed studies be made in
order to select carefully where assistance by international organizations may be
rendered. The need for greater research on the requirements of training for
industrialization is recognized. The main points covered in the observations
submitted by the Governments are given below under separate headings.

General education

9. Particularly in respect of the fact that general education is in principle
an essential basis for all training for industrialization,\(^8\) it is observed that
the development of literacy and general and compulsory elementary education is
the indispensable premise and prerequisite to training technical personnel for
the process of industrialization. The level of general education is rising steadily
in many of the developing countries. In spite of their determined efforts, however,

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\(^6\) See E/3901/Rev.1, para. 101.
\(^7\) Ibid., para. 102.
\(^8\) Ibid., para. 99.
a considerable number of workers are still semi- or completely illiterate. Consequently, there still remains the fact that these workers lack the necessary basis for learning a technical occupation. The elementary education is of paramount importance in the training of all categories of manpower, as its function is to turn out people who are "teachable". The elementary school is the initial link in the chain, the first and most important step towards acquiring any skill either for industry or for other sectors of the economy. It will be necessary, therefore, for more attention to be given to basic education and for studies to be made as to its influence on subsequent technical and vocational training.

10. It is believed that in the national programmes, priority must be given to establishing compulsory general education and to the training of teaching staff.

Number of engineers and technicians to be trained

11. In the report, an attempt is made to estimate requirements of technical personnel necessary for accelerating the process of industrialization in the developing countries. The report brings out clearly the need for greater research in the requirements of training for industrialization in developing countries and reveals the inadequacy of present statistics, dealing both with the manpower needs and educational facilities in the developing countries and those describing training facilities within the developed countries. If the international organizations were to assist with research and study in various countries, industry-by-industry, at all levels of training, and to publicize the results of such studies, this could serve as a useful guide both to multilateral and bilateral technical assistance agencies with respect to the types and levels of training they should seek to provide in varying degrees of priority.

12. A calculation for the main regions has been made, which seems to indicate that approximately 400,000 engineers and scientists and 1 million technicians need to be trained by 1975 in order to meet the requirements of industrialization (and "Africanization" in Africa). In respect to this ratio, it was mentioned that this needs to be restudied, as figures given above are a result of global generalizations which can lead to totally untrue ratios for particular countries and therefore an over-generalized view of the situation. The figures could only...

\footnote{\textit{ibid.}, para. 16.}
be considered as indicative of a rough order of magnitude rather than definitive. The ratio, for example, adopted by the Technical Education Commission of the Government of Ceylon is 1:5.

Combined training in an institution and industry

13. In the report, three main types of training systems are mentioned: (a) systems of an institutional character; (b) systems of in-plant but not necessarily on-the-job training; and (c) combined systems which blend training in an institution with training in an enterprise.\textsuperscript{10/}

14. In the observations received, special attention is drawn to one of the most distinctive features of the development of a technical training approach during the last decade, particularly in the industrialized countries, namely, the extension and successful use of the "sandwich and block release system". During these periods, study in college is alternated with practical training in an industrial plant. This system is kept well in view by a number of developing countries in designing curricula of technical colleges. The implementation of these training schemes in the developing countries calls for careful supervision and guidance of the practical work by instructors, who not only must have a sufficient theoretical background, but will also need thorough experience in actual industrial operations.

15. The successful integration of the theoretical and the practical components of the training programmes calls for a very close relation between an educational institute and industry. When the student is "work based", that is, employed by the industrial organization, this system has the great advantage that the education and training are in accordance with known industrial needs, and so there is less danger of the student being unemployed when graduated.

16. It is observed that in the report the emphasis is almost wholly on national systems and arrangements to the exclusion of the part played by individual institutions. This implies to a certain extent an over-centralized approach with little room for manoeuvring in a specific locality or institution. Industry can play a part in helping a training institution or college of technology, apart from

\textsuperscript{10/} Ibid., paras. 31 to 33.
participation in sandwich courses referred to above. Industrial training can indeed become more effective through the medium of local advisory arrangements, to which no reference is made in the report.

Inclusion of non-technical aspects in training curricula

17. It is evident that the main objectives in industrial training, particularly vocational training, are the acquiring of specific technical skill, know-how and aptitude. One Government, however, made the observation that there is also the need to include liberal arts subjects in the training curriculum. The industrial worker who will become a part of the industrial society also has to be socially and culturally integrated in a society other than the traditional one. Therefore instruction in civics, the national language and social studies should undoubtedly form part of the training curricula of technical training.

18. "Social training" is also recognized as a need for the future higher echelons in industry. In one of the developed countries, the system of "social training periods" is gaining favour and high percentages of university students participate in such a system. During these periods, students from universities and equivalent establishments are placed in enterprises on the same terms and with the same standing as the workers. This system is designed to improve the mutual understanding between administrative staff and management on the one hand, and the workers and foremen on the other, thus sowing the seed for subsequent harmonious relationships in the enterprises.

Occupational preference for employment outside industry

19. In many developing countries there is a general tendency for those who have received a technical training to seek employment outside industry. This is partly due to the prestige attached to liberal and non-manual occupations, as well as to the lack of facilities for providing young persons with the required occupational information. In order to overcome this, one of the developing countries which submitted observations has paid special attention to this aspect and has extended technical training to primary, secondary and higher schools, which has proved of considerable importance in attracting personnel to technical occupations.

20. The same basic principle is behind the approach which is given in the reply of one of the industrialized countries. This country has introduced a cycle of observation and orientation in the secondary education, which offers selection of the course of study for two or three years and hence the choice of specialization by the same amount of time. This means that the students are able to make a wiser choice and are better prepared for their option.
III. ACTIVITIES OF THE UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION IN THE FIELD OF INDUSTRIAL TRAINING

21. The aim of UNIDO's activities in industrial training is to assist the developing countries in increasing the number and improving the quality of managerial, technical and economic personnel in order to sustain and accelerate industrial development. In this connexion, the present role of UNIDO is threefold: to co-ordinate the work of international and regional organizations of the United Nations system in industrial training; to assist the developing countries, in co-operation with the ILO, UNESCO and other international organizations, in analysing the training requirements of industry with a view to organizing suitable training programmes and organizations based on such estimates; and to implement a limited but integrated programme of national and international training for certain types and levels of industrial personnel.

22. The following co-ordinating activities of UNIDO are related to this subject:

(a) UNIDO presents annually to the Industrial Development Board a consolidated report and an analytical report on all the industrial development activities, including industrial training, of the United Nations system of organizations. This information, particularly the analytical report, is designed to ensure the effective co-ordination of these various activities, including training of industrial manpower.

(b) UNIDO is at present preparing, after consultations with the ILO, other specialized agencies, the regional economic commissions and the United Nations Economic and Social Office in Beirut, an outline for a detailed long-term programme for the various kinds of technical training in industrial development.

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12/ At the third session of the Industrial Development Board, it was decided that the consolidated report might be published every second or third year only (see ID/B/62, chapter X, para. 448 (c)).

13/ The most recent reports are: "The industrial development activities of the United Nations system of organizations for the year 1968" (ID/B/56), and "Analytical report of the activities in the field of industrial development of the United Nations system of organizations" (ID/B/57).

23. Agreements on areas of responsibilities have been concluded between UNIDO and the ILO and between UNIDO and UNESCO.

24. The ILO is primarily responsible for activities in the area of vocational training, while industrial training activities for personnel above the level of technicians are undertaken both by UNIDO and the ILO.

25. UNESCO is responsible for the activities related to the establishment and management of all educational facilities including industrial vocational education, university and other institutions of higher education. UNIDO will, at the request of UNESCO, advise about certain aspects on the planning of such institutions and curriculae inasmuch as this would be related to industrial development. UNIDO would also help in creating links between such institutions and industrialists and business communities for mutual benefit. In many developing countries, the staff and laboratory facilities may be profitably used for specific industrial consultations and, in such cases, UNIDO and UNESCO will co-operate in developing such projects.

26. In post-graduate work in engineering, the problems studied may in certain cases relate to the development or improvement of specific industries. In such cases, UNIDO, in consultation with UNESCO, establishes such arrangements as may increase the usefulness and applicability of the post-graduate studies and secure support for them from industry. Educational facilities which are outside the school and university system also fall under the competence of UNESCO. Training facilities which are designed to develop skills in industry outside the school system are, however, examined by UNESCO and UNIDO to make arrangements for co-operation between the two organizations in the development of such institutions. It is to be noted that such institutions may also perform work in the field of vocational training and industrial training in general in which co-operative arrangements with the ILO are taken fully into consideration.15/

27. These agreements are providing the basis for the establishment of joint programmes of common interest, including industrial training, and for harmonizing activities where there appeared to be a conflict of competence.

15/ For the complete texts, see ID/B/55, annexes I and II.
28. While earlier programmes implemented by UNIDO were directed primarily to training programmes of a technological nature, present and future efforts are being extended to involve other areas, such as development of industrial exports, investment promotion, project formulation and implementation, industrial administration and standardization. These programmes were initiated after the need for this type of training had been assessed and/or on the recommendation of expert group meetings.

29. In the following paragraphs, the main features of UNIDO's past and current programme of work in industrial training are given and are grouped under a number of individual headings. In all these programmes, UNIDO has attempted to be selective in its approach, to avoid fragmentation and duplication and to introduce programmes which are of a pragmatic nature.

International Symposium on Industrial Development

30. The General Assembly, in resolution 2173 (XXI), endorsed the decisions of the Economic and Social Council (resolutions 1180 (XLI) and 1185 C (XLI)) to convene the International Symposium on Industrial Development. The Symposium, held in Athens, Greece from 25 November to 20 December 1967, discussed the subject of industrial training within the broad context of "industrial manpower".16/

31. The view was expressed by the Symposium that the level of industrial development which had thus far been achieved in the developing countries was far from satisfactory. There was general agreement that industrial manpower had an important role to play in facilitating a more rapid industrialization of the developing countries. Therefore, it was considered essential that all ways and means be exploited to raise rapidly the level and efficiency of industrial manpower.

32. The Symposium discussed the following issues and problems:
   (a) Determination of goals, qualitative and quantitative. The need for systematic advance assessment of skill requirements as a basis for planning of industrial training and education was recognized. It was, however, felt that

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16/ For the report of the Symposium, see United Nations publication, Sales No.: E.69.II.B.7.
goals and priorities for training should be flexible, since many industrial skill requirements change often and quickly and therefore can be forecast and planned only in rather general terms.

(b) The development of coherent and efficient systems, including provisions of adequate legislative support and the establishment of national industrial training organizations for attaining these goals. Training systems in most developing countries suffer from fragmentation and lack of co-ordination. This makes it difficult to formulate comprehensive plans for skill formation and nearly impossible to carry them out. It was therefore suggested to establish national industrial training organizations, the functions of which would be to formulate targets for industrial training, to stimulate training by industrial enterprises themselves, to co-ordinate training by industry and the vocational factor of the education system, to set training standards, etc. 17/

(c) The special role of industry in development of industrial skills. It was recognized that for a wide range of skills, training by industry itself has great advantages over training by the institutional system and that full potentials of training in employment are not exploited in the developing countries.

(d) Measures to ensure the best possible use of available skilled manpower. It was recognized that in many developing countries the proper utilization of industrial skills is at least as important as the creation of new skills. Investment in training and in training facilities may be wasted if trained manpower is either misdirected or used inefficiently.

33. A summary of the recommendations of the Symposium regarding industrial manpower is given below.

(a) Special importance should be attached in the developing countries to the training and upgrading of middle- and top-level personnel, including managers of industrial enterprises.

(b) Comprehensive national plans for basic and advanced education as well as subsequent industrial training and upgrading should be drawn up by developing countries whenever such plans do not exist, and, where they do exist, these countries should be eligible for increased international assistance.

17/ See also paras. 55 to 62 of the present report.
(c) The possibility of establishing national industrial training organizations, which would formulate and help implement comprehensive plans for industrial education and training at all levels, should be seriously examined by developing countries.

(d) When requested, UNIDO, the ILO and UNESCO should help developing countries to draw up plans for industrial education and training as well as to set up industrial training organizations in individual countries, taking account of existing training institutions and programmes.

(e) Industry itself should be encouraged to take greater responsibility for the training and upgrading of the national manpower of developing countries than it has in the past.

(f) Governments and industry should be encouraged to create incentives by means of remuneration, job satisfaction and status, with the aim of utilizing industrial manpower in developing countries more effectively.

(g) International assistance in the field of industrial manpower should be carefully planned and co-ordinated on both the international and the national levels.

(h) UNIDO and the ILO should increase their activities in the field of management development.

**In-plant training programmes**

34. One of the major programmes in the field of industrial training organized by UNIDO is the integrated long-term in-plant training programme for engineers from the developing countries. 18/

35. These programmes are organized on three levels, namely:

   (a) Basic-level in-plant training programmes aimed at providing pre-employment training to newly graduated engineers. These programmes are arranged in a particular developing country in a specific sector of industry.

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18/ See also Official Records of the Economic and Social Council, Thirty-seventh Session, Annexes, agenda item 12, document E/3901/Rev.1/Add.2, chapter 3, annex D.
These programmes are designed to bridge the apparent gap between fundamental knowledge gained at universities and its application in industrial practice.

(b) Middle-level in-plant training programmes for engineers with five to eight years of experience in a specific industry, designed to upgrade professional capabilities in engineering functions. These programmes, which have a duration of three to five months, are carried out in industries in industrialized countries.

(c) Top-level in-plant training programmes aimed at providing further training to engineers with substantial and comprehensive practical experience. These programmes, of a duration of six to ten weeks, are also organized in industries in industrialized countries.

36. With regard to basic-level in-plant training programmes, UNIDO is implementing the first such programme in a developing country as a five-year project, financed under the UNDP (Special Fund) component. Other developing countries have expressed interest in initiating this type of project.

37. The first middle-level in-plant training programme was organized in 1965 and has been repeated since then. The programmes are gradually being expanded, both in number as well as fields covered; the programmes conducted up to 1969 are given below in table I, including one top-level programme (Japan, mechanical industry).

<table>
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<tr>
<th>Field of study</th>
<th>Host country</th>
<th>1965</th>
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<td>Textile machinery</td>
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<tr>
<td>Metallurgical industry</td>
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<tr>
<td>Textile industry</td>
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<tr>
<td>Diesel engines</td>
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<tr>
<td>Cement industry</td>
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<tr>
<td>Mechanical industry</td>
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2/ Top-level in-plant training programme.
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<td>Manufacturing of pesticides</td>
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<td>Production engineering in metal-working</td>
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<td>-</td>
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38. A total of 282 engineers have benefited from these middle- and top-level programmes through 1968. As a follow-up of these programmes, a survey has been carried out in which both former participants and their employers have been requested to indicate to what extent the training has been beneficial to the industries in which participants are employed. It has been learned that approximately 90 per cent of the former participants have been in a position to apply their newly obtained knowledge and experience.

39. The various in-plant group training programmes have proved to be successful and beneficial to the participants of the developing countries. They were fully endorsed by the Industrial Development Board at its second session.19/ Until 1969, the programmes were organized and financed on an ad hoc basis. Difficulties have been encountered in establishing such programmes and in recruiting participants in time.

40. In order to overcome these problems, financing on a long-term basis (three years) is now under consideration. This will be in the form of a small Special Fund project; international staff will be attached to the project in order to ensure that programmes retain their international character. Financing of these programmes under the UNDP (Special Fund) component is requested in order to give the projects more flexibility and the possibility of duplication for projects in

other sectors and in other countries. The projects would not only be concerned with purely technological training. Since personnel participating are of the managerial and sub-managerial levels of industrial enterprises, the operation is of the nature of a training and development programme. These projects do not entail the establishment of new facilities, but make use of existing institutions and above all industry, which make this type of programme more economical.

42. UNIDO is organizing group training programmes along identical lines as the in-plant group training programmes in industries. The group training programme on industrial estates has already been carried out in India. The programme is designed for government officials who are responsible for the development of small-scale industry and engaged in the planning, establishment and/or management of industrial estates.

43. Group training programmes are also scheduled in other fields, such as industrial information services and standardization.

Management clinics

44. UNIDO is not engaged in management training proper. Within the framework of technical assistance projects in which UNIDO experts assist industrial enterprises in introducing industrial management techniques, training of counterpart staff in these enterprises is an important element.

45. UNIDO has introduced a new type of management training activity, the so-called management clinic (advisory and problem-solving missions). A management clinic is carried out by a team of three to four internationally recruited experts and has a duration of three to four weeks. It will bring together top management personnel of a group of industries and representatives of the Government with these experts to discuss in an informal atmosphere the problems of mutual understanding and the influence of external factors, such as public regulations and import restrictions in the working of industries. The experts also visit the enterprises in order to offer solutions to the most urgent operational problems of the industries concerned. The problems thus studied are used as case studies of the internal factors influencing the performance of industry. In this way, the requirements of the real environment are taken into /...
consideration when discussing with industrialists the application of industrial management techniques and practices. It is envisaged that this activity will be continued in years to come on an expanded scale.

Training in industrial administration

46. Industry, perhaps more than any other section in the economy of developing countries, needs adequately trained personnel to plan, implement and operate its many complex programmes and projects. The tasks that have to be carried out by economic administrators in the industrial sector range from the selection of prospective lines of industrial development and the balancing of inter-sectoral and inter-temporal dependencies of various branches to the designing of particular investment programmes and the evaluation of the results achieved by such programmes. The complex tasks involved in the industrial development process require a combination of skills in fields such as economics, accountancy statistics, law, public administration and engineering. Thus, while an economic or industrial administrator may have had training in one such field, he is also required to handle questions that demand a better appreciation of other descriptions.

47. Recognizing this, the Centre for Industrial Development (predecessor of UNIDO) gave serious attention to the problem of training economic and industrial administrators in order to accelerate the industrialization of the developing countries.

48. Three main areas were found to be of particular importance in this connexion: (a) an understanding of the process of industrialization and of the institutional framework in which it takes place; (b) the definition of the roles and functions of economic (industrial) administrators dealing with various aspects of industrial development policies; and (c) the planning of organizational forms and methods of operation of training programmes for such administrators bearing in mind the conclusions reached in considering the issues under (a) and (b) above.

49. In order to examine these three main aspects, the Centre for Industrial Development and the Bureau of Technical Assistance Operations of the United Nations Secretariat, in co-operation with the Development Centre of the Organization for Economic Co-operation and Development (OECD), organized an Interregional Working Party on the Training of Economic Administrators of Developing Countries in Industrial Development, which met in Paris from 2 to 10 September 1965.

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50. The Working Party, recognizing the need to promote training programmes for general administrators as well as for technical administrators dealing with industrialization in the developing countries, recommended that the United Nations, the Development Centre of the Organization for Economic Co-operation and Development and other international organizations, should:

(a) Sponsor, at the most appropriate levels, short seminars or meetings for senior administrators in the developing countries in development strategy and administration, with due emphasis on problems of industrial development;

(b) Promote and undertake training programmes for the middle-level general administrator on a national and regional basis;

(c) Initiate and organize training programmes for technical administrators in specific or specialized subjects of industrialization, e.g. market analysis, project preparation and evaluation, industrial financing;

(d) Provide adequate financial support through their technical assistance and aid programmes, and make available to countries and institutes, for training purposes, expert assistance and documentation and teaching materials on industrialization; in particular, the establishment of industry studies and a manual for the elaboration and evaluation of projects is considered an urgent matter;

(e) Increase their efforts towards development training institutes in the less advanced countries;

(f) Give special assistance to those development training institutes in the less advanced countries which can serve as intensive pilot projects for testing and developing training material and approaches.\(^{20}\)

51. Prior to this Working Party, the Centre for Industrial Development had already organized a training programme in industrial planning for African government officials in Cairo, the United Arab Republic, in February and March 1965.

52. Subsequently, several training programmes were included in UNIDO's current and future work programme, such as a workshop on the financial planning of industrial projects, held in Karachi in August 1968, and in Dar-es-Salaam in January 1969, and a training course in industrial development, planning and programming, held in Nairobi, Kenya, in February and March 1969.

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53. In addition, UNIDO plans a comprehensive training programme for industrial administrators in 1969 and 1970. Participants will be drawn from ministries of industry, industrial development corporations and from public and private industrial service organizations.

54. Recently UNIDO started training programmes in investment promotion, which are organized with the purpose of providing participants from developing countries with specific training in organizing and operating investment promotion agencies in the developing countries as well as abroad. The participants also get acquainted with different approaches and techniques involved in promoting domestic and foreign investments. These programmes have a duration of two months and are organized on a regional basis; workshops are arranged in which participants discuss specific investment opportunities in their countries. Arrangements are also made for on-the-job observations at international banks and investment promotion agencies of developing countries in the United States and Europe.

**Industrial training organizations**

55. Any institutional framework for effectively co-ordinating industrial education and training systems in a developing country should be integrated by representatives of ministries of education, labour, industry and possibly finance, as well as representatives of employees' and employers' organizations. This might be the governing body of a national institution called an industrial training organization possessing the requisite technical, administrative and financial facilities. Such a body should be even more empowered at the national level to decide on education and training objectives in the light of needs of industrial development skills and how such objectives should be achieved. Many countries have set up bodies, such as vocational training commissions, national industrial manpower councils and planning commissions, which undertake some of those activities. But there is seldom an over-all national institutional framework for tackling the many complex problems of manpower development for industrialization. Often basic questions fail to be settled, such as co-ordination between manpower planning, planning for education and planning of industrial development, and, within the training system, co-ordination between various types of programmes.
56. In general, the industrial training organization should follow the policy of persuading existing organizations, such as employers' organizations, schools and training centres, to undertake the major share of the actual training work. It should work closely with productivity centres, small-industry service institutes, management associations, labour unions and other organizations that are able to run suitable training programmes. Where necessary and feasible, it may subsidize their training programmes, besides assisting in the training of instructors, preparation of training material and in other concrete ways. Only where others cannot do the jobs that need to be done, even with the assistance of the industrial training organization, the organization should undertake a training task itself.

57. In practice, it may have to do a substantial amount of such work in a country which is just becoming industrialized because facilities and staff are otherwise not available. For this reason, and also to discharge some of its other functions, the industrial training organization may need to establish training institutions of its own. Nevertheless, the general policy should be to hold this within reasonable limits in order to encourage a more decentralized approach and especially to make maximum use of existing training facilities.

58. Specific functions of the industrial training organization might be the following:

(a) To formulate short-, medium- and long-term industrial training targets at the national and sectoral levels, including targets for industrial enterprise training schemes;

(b) To give organizational form to the training responsibilities of the industrial enterprises;

(c) To provide a mechanism for linkage and co-operation between the industrial enterprises and the educational and training institutions in all phases of industrial education and training.

59. In this connexion, the industrial training organization should give a very high priority to the following activities:

(a) Analysis of current and future needs for industrial education and training;

(b) Education and training of instructors;
(c) Preparation of training materials and experimentation with new materials and methods;

(d) Setting of standards for, and inspection of, aided training programmes;

(e) Preparation and administration of examinations for testing attainment of a certain level of proficiency in specified types of industrial education and training.

60. The financing for the industrial training organization could come from the following sources:

(a) The product of a training levy imposed on all industrial enterprises above a certain size;

(b) Public funds intended to supplement the above with a view to enabling the organization to fulfil its functions properly. In countries in the very early stages of industrialization, such public funds might be the main source of finance;

(c) Funds made available through international assistance.

61. The outline above sets forth the guiding principles of UNIDO's action in this field in providing assistance to a number of developing countries. The establishment of industrial training organizations in these countries will contribute to a better utilization of available resources. UNIDO has indicated the need for such an approach on several occasions and it is expected that a number of requests from developing countries will be received shortly and projects will become operational.

62. In order to co-ordinate its efforts with the ILO and other specialized agencies and to avoid a fragmentation in technical assistance, UNIDO will convene, in 1970, a meeting of experts to examine further the best organization and working methods for national agencies to perform the function of an industrial training organization, taking into account the different needs and conditions of the developing countries.

**Future long-term programme in industrial training**

63. During the second session of the Industrial Development Board, the current training activities of UNIDO as well as future action were discussed in detail. During this session, the Board passed resolution 8 (11) on the training of national
personnel for industrial development, the operative paragraphs of which read as follows:

"1. Notes with appreciation that in the United Nations Industrial Development Organization's work programme of 1969 numerous in-plant training programmes are being planned by various countries in co-operation with the Organization, and expresses the hope that more programmes of a similar nature will be undertaken in the industrial fields on the basis of the assessment of the actual needs of the developing countries, and that the difficulties encountered in establishing such programmes on an ad hoc basis will be overcome through consultation with the United Nations Development Programme and the host countries;

"2. Endorses the United Nations Industrial Development Organization's current programmes for in-plant training of various levels of engineers, technical personnel and specialized managers, and for an exchange of experience in promoting the development of different branches of industry in developing countries;

"3. Requests the Executive Director to consult with interested developing and developed countries, the United Nations Development Programme and other United Nations organizations on the further development of such programmes, as well as new programmes, that might be established, including any experimental pilot project that the Programme might be prepared to consider, and to submit a report to the third session of the Board;

"4. Recommends to the Executive Director that proper steps be taken in order to ensure an effective co-ordination with existing relevant international programmes and institutes;

"5. Advises the Executive Director to give high priority to the demands of developing countries for the training of their national personnel in various fields of industry;

"6. Requests the Executive Director to prepare, after consulting with the International Labour Organisation and other specialized agencies, the regional economic commissions and the United Nations Economic and Social Office in Beirut, an outline for a detailed long-term programme for the various kinds of technical training in industrial development and circulate it to the respective Governments for comments prior to its submission, as soon as possible, to the Board for consideration."

64. At present, UNIDO, in consultation with UNDP, is actively engaged in a further development of its programmes, as called for in operative paragraph 3 of the above resolution. It will submit to the forthcoming session of the Governing Council of UNDP the requests for financing of two programmes under the UNDP (Special Fund) component.

22/ See also paras. 40-41 of the present report.
65. UNIDO is also preparing the outline for a detailed long-term programme for the various kinds of technical training in the field of industrial development. After the outline has been discussed with the ILO, other specialized agencies, the regional economic commissions and the United Nations Economic and Social Office in Beirut, it will be circulated to the Governments of States Members of the United Nations for comment and will be submitted to the Industrial Development Board for its consideration at its fourth session in April and May 1970.

66. This outline, after having been approved, will serve as the guideline for future activities in the field of training of technical personnel for the accelerated industrialization of developing countries.
ANNEX

COMMENTS BY GOVERNMENTS CONCERNING THE SECRETARY-GENERAL'S REPORT ON THE TRAINING OF NATIONAL TECHNICAL PERSONNEL FOR ACCELERATED INDUSTRIALIZATION OF DEVELOPING COUNTRIES*


/.../
AUSTRALIA

1. The Permanent Representative of Australia has the honour to forward certain comments which are rather brief, since the relevant research programme in Australia is such that a more detailed appreciation could not be undertaken.

2. The report appears to be a valuable document, although the Australian authorities feel that the blueprint it contains for training of national technical personnel in the developing countries is rather ambitious in relation to available resources. The recommendations contained in the report reflect the current interest in the developed countries in the organizational structure of vocational training and the kind of research being conducted in those countries to ensure a practical basis for long-term development plans for the training of technical personnel. The pattern suggested is far-reaching and in many ways parallels what is being undertaken in Australia. In particular, the recommendations concerning the relationship between labour market information and educational planning, developed at some length in part two of the report, are very interesting.

3. The Australian authorities are in general agreement with the individual recommendations. The recommendation for action by the developing countries, which stresses the need to keep under review the financial implications of training programmes, particularly with a view to obtaining maximum returns from the investment of scarce resources, draws attention to a matter which has been in the forefront of Australian thinking. However, the recommendations would appear to be most intelligible in the context of a developed economy, like that of Australia, where the basic structure of vocational training and technical education is established. Perhaps the most valuable feature of the report is that it demonstrates the usefulness of research into the various aspects of the question. At the same time, it is important to note the caution concerning the availability of personnel to undertake this kind of research in less developed countries. The availability of such personnel is not all it might be even in the developed

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countries, and certainly facilities for training specialist personnel in vocational training research are not adequate. Action by the international agencies may be required to set up the training facilities to produce such research specialists.

4. An impressive feature of the research material presented in part two of the report and documented in part three is the section devoted to small-scale industry.

5. The estimates given for the numbers of personnel for whom training is required and the cost providing such training illustrate sharply the magnitude of the problem. While these are only very rough estimates, of course, they do substantiate the Australian view that technical training is one of the greatest, if not the greatest, need of the developing countries, and one of the most worthwhile avenues for international aid.

6. The basic recommendations contained in the report seem, therefore, essentially sound, although their full implementation may be beyond the present capacity of some of the developing countries.

BELGIUM

[Original: French]

1. The Belgian Government has noted with the greatest interest the report of the Secretary-General on the training of national technical personnel for the accelerated industrialization of developing countries.

2. It considers that the report contains valuable information and useful guidelines for all entities which, throughout the world, assist in any way in the industrialization of the Third World, and will contribute to the success of their undertakings and efforts.

Recommendations

3. In regard to the recommendations, it is noteworthy that considerable importance is attached - and rightly so - to setting up systems and establishing means of collecting and utilizing the basic information which is essential for the implementation of industrialization programmes as well as the training programmes which must be linked with them.
4. The greatest interest lies in paragraph 103, which deals with the question of suitable training for key personnel in the developing countries in the evaluation and institutional fields, etc.

5. The compilation and analysis of basic data should be a more or less constant undertaking which will have a considerable bearing on the outcome of industrialization programmes and which in turn calls for expert personnel able to take into account both the technical and economic aspects of sociological problems and situations.

6. The Belgian Government therefore regards as highly realistic the recommendations made in that regard both for the developing countries and international organizations.

7. It shares the Secretary-General’s view that the success of the basic technical recommendations will depend on certain more general factors which should be regarded as prerequisites, and feels sure that the developing countries will not fail to grasp the importance of the observations made in paragraphs 94 to 99 of the report.

8. The success of industrialization programmes and industrial training programmes depends to a large extent on present or future measures at the domestic level; outside assistance by means of multilateral or bilateral co-operation, however important it may be during the take-off period, should never be other than temporary and complementary to national efforts.

9. Finally, in view of the magnitude and urgent nature of the problems to be solved, as well as of the limited amount of resources available, any actions taken at the multilateral level should be collated and co-ordinated as much as possible.

10. Joint action at the international level is, of course, no panacea, and, although it may help to avoid duplication and waste, it may at times impede certain action or increase its cost.

11. There is no doubt, however, that joint action at the international level, which implies common objectives, a single framework of activity and the same machinery, is certainly likely to facilitate, in many cases, the solution of problems which are naturally complex and therefore exceed the competence of any one international institution; UNIDO has undoubtedly an essential role to play in this regard.
Activities envisaged by the Belgian Government

12. With regard to the Belgian Government's current or proposed activities, it is noteworthy that, at the national level - and this confirms the foregoing observations - the Belgian authorities are continually reviewing and improving the procedures for evaluating technical manpower needs and the systems and methods needed in order to meet those needs.

13. In this way, for example, the choice of studies in secondary education has been deferred by two or three years, by the introduction of an observation and guidance period, with a commensurate deferment of choice of specialization, thus making it better for students to take the subjects which suit them most.

14. The scheme for in-plant training is also being developed, and has an annual enrolment of approximately 3,000. The purpose of such training courses is to place students from universities and teaching centres in enterprises on the same footing as the workers. This scheme will lead to better mutual understanding between future management and administrative personnel, on the one hand, and staff, on the other, thus leading eventually to better working relations in enterprises.

15. It has also been noted that the balance between theoretical knowledge and practical application must be maintained for as long as possible throughout the period of study. The Belgian authorities, therefore, take steps constantly to promote and facilitate the student's familiarization with the specific and practical aspects of the studies in question.

16. Belgium is a highly industrialized country with a rich store of accumulated experience, and endeavours to respond in the most positive way possible to all the requests for co-operation which it receives both through international organizations and bilaterally. At the multilateral level, for example, the importance of the ILO's operational activities in vocational training is well known; of the 1,956 experts recruited by that organization during the period 1950-1965, 104 are of Belgian nationality, a fact which places Belgium fourth among the countries which provide experts. This figure reveals the interest shown by Belgian authorities in the ILO's operational activities and the developing countries' confidence in our experts.
17. Among other forms of Belgian participation in multilateral activities, mention may be made of the organization of industrial training schemes, the contribution to the International Centre for Advanced Technical and Vocational Training at Turin, etc.

18. At the level of bilateral co-operation, the following figures testify to Belgium's efforts in 1967 in regard to the developing countries:

(a) Over 300 Belgian teachers have worked in vocational and technical training;

(b) Over 350 nationals of developing countries were enabled, by means of a Belgian Government fellowship, to attend the university or advanced courses in the exact sciences, the natural sciences and engineering, while over 200 students attended technical courses at the secondary level;

(c) Over 200 nationals of the developing countries were awarded fellowships for training in particular sectors of industry, artisan activities and mining.

19. The training programmes are very wide in scope, ranging from the organization of seminars and top-level business management courses to the organization of practical work between courses or at the end of courses for young engineers or engineering trainees.

20. This brief account does not cover the work of Belgian experts in the training of counterpart personnel, Belgian participation in local training centres or any of the co-operation which has developed outside the scope of government programmes. Nevertheless, it does indicate the extent to which the Belgian authorities are responding to the requests made to them.

21. The Belgian Government confirms the high priority which it attaches to the training aspect of the industrialization process, and reiterates its readiness to contribute, within the limits of its resources, to the solution of the problems encountered by the developing countries in this field.

Comments on the report

22. The Belgian Government can add little by way of comment to the highly relevant points made in the Secretary-General's report.

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23. It will therefore confine itself to the following brief observations:

(a) Training programmes should be drawn up - at least for a transitional period - to meet the immediate specific requirements of the developing countries, and should in any event conform to local conditions;

(b) Technical training should, wherever possible, be given on the spot or else in the region concerned, while fellowships for studies outside the region should be restricted to refresher courses;

(c) With regard to on-the-spot training:

(i) The developing countries should strive to co-ordinate their efforts in the field of teaching and technical training, by exchanging views and experience and pooling new skills and methods to mutual advantage. Such collaboration would give excellent results in a shorter time, and at less expense, than if each country undertook isolated action. International organizations could play a helpful role in that respect by encouraging a spirit of co-operation and by communicating to the developing countries the tried and tested methods of the international community and the results it had achieved;

(ii) The public and private sectors should collaborate closely, since the harmonization of theoretical knowledge and practical training is of great importance at all levels;

(d) On the question of providing training in the industrialized countries for nationals of developing countries, individual courses, as opposed to group courses, should - as stressed in the report - be planned essentially for persons of a fairly high calibre.

24. There is nevertheless something to be said for the organization, in certain cases, of group courses for such persons - in business administration and management, for example. They will thus be able not only to acquire fresh knowledge but also to participate in exchanges of views and experience which may prove to be of mutual benefit.
BYELORUSSIAN SOVIET SOCIALIST REPUBLIC

1. The competent organs of the Byelorussian Soviet Socialist Republic consider that the report of the Secretary-General of the United Nations on the training of national technical personnel for the accelerated industrialization of the developing countries rightly highlights the role of qualified personnel in industrialization and the problem of the training of such personnel in the developing countries. The implementation of the recommendations set forth in the report would make it easier to estimate more accurately the developing countries' needs in the matter of specialists and to formulate measures for their training.

2. The United Nations and its specialized agencies, when assisting the developing countries in the training of national technical personnel, should take full advantage of the experience already gained in this field by many developed countries. The Byelorussian SSR in particular has had valuable experience in the matter.

3. The Byelorussian SSR trains specialists for the developing countries by admitting students and post-graduate students from those countries to its educational institutions, by conducting seminars in its territory for specialists from developing countries and by sending Byelorussian specialists to the developing countries to provide direct in-plant training.

4. In the current academic year, 543 students, post-graduate students and interns from forty countries are receiving training in seven higher and five secondary specialized technical educational institutions in the Republic. These students are being trained in more than thirty specialities. The majority are studying technical and agricultural subjects, mathematics, physics, chemistry and medicine.

5. In 1961, a department for the training of foreigners was established at the V.I. Lenin Byelorussian State University. After successfully completing the course of training offered by that department, students continue their training at various higher and secondary specialized educational institutions of the Byelorussian Soviet Socialist Republic and the Soviet Union.

...
6. In the industrialization of the developing countries, an important role must be played by their own scientific research institutions. In the past few years, more than thirty foreign specialists holding research fellowships have successfully completed their studies at the Byelorussian State University and the Byelorussian Polytechnic Institute under the guidance of academicians, professors and doctors of science.

7. Byelorussian specialists have provided direct assistance in the training of personnel in Burma (through the ILO), India (through UNESCO), Uganda, the United Arab Republic and other countries.

8. In August 1968, an Interregional Seminar on Industrial Location and Regional Development was held at Minsk, in which fellowship holders from twenty-one developing countries took part. In September 1968, the Republic was host to an ILO seminar on labour inspection for representatives of the developing countries of Asia and Africa in which twenty-three specialists from fourteen developing countries took part.

9. The Byelorussian SSR will continue to assist the developing countries in training national technical personnel. In that connexion, the Government of the Byelorussian SSR emphasizes the need for observance by United Nations bodies and specialized agencies of the principle of equitable geographical distribution of posts in the recruitment of experts and their assignment to all areas where the services of such specialists are required.

10. The Byelorussian SSR's experience in successfully achieving industrialization shows that if success in this endeavour is to be assured, the training of specialists for industry, transport, scientific research institutions and other branches of the economy must be an integral part of the economic development plans of the country concerned.

11. Observance of the principle of democracy with respect to access to education is of great importance for the training of national technical personnel. If every potentially talented or even merely capable citizen is to be able to contribute with his powers and ability to the industrialization of his country, it is essential to eliminate from the training of specialists any discrimination based on such considerations as sex, colour, social origin, religion or nationality. The rights of immigrants in this field should be respected, and diplomas and certificates issued in other countries should be recognized.
12. An important role should be played by the State in the placement of persons who have completed their training, particularly in the State sector of the economy.

13. In the opinion of the Byelorussian SSR, the report on the training of national technical personnel should analyse the phenomenon of the "brain drain". If the flight of specialists from the developing to the developed countries is not stopped, it may retard the industrialization of the developing countries.

CEYLON

1. The report covers the training of skilled workers, foremen and engineers, including top management, and, considering the magnitude of the task, appears to provide a satisfactory coverage of the main issues involved. It emphasizes the urgent need to provide vastly increased facilities for training. This urgent need for the provision of a supporting infrastructure of trained skills was the underlying theme at the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas, held in Geneva in February 1963.

2. Comments on each of the issues and main findings are hardly necessary. However, the treatment of education and training of manpower for industry as an integral part of the general plan for development is worthy of note. An attempt has been made to estimate requirements of technical personnel necessary for accelerating industrialization in the developing countries. It has been computed that approximately 400,000 engineers and scientists (that is, technologists) and 1 million technicians need to be trained by 1975. These figures are obviously indicative of a rough order of magnitude and should not be considered definitive. The ratio works out at one technologist to every 2.5 technicians (the ratio adopted by the Technical Education Commission is 1:5).

3. It is indicated that the necessary close links between authorities responsible for technical education and vocational training and those responsible for economic planning and manpower policy do not always exist and that there is inadequate provision for the necessary collaboration with industry. This is true...
of our country too, although recently our Permanent Secretary was appointed Chairman of the Committee on Manpower and Education of the Planning Secretariat. The establishment of a manpower unit as an integral part of the Planning Secretariat (as recommended by the Technical Education Commissions) is strongly recommended. The establishment of the National Council on Technical Education and Training will overcome to some extent the lack of sufficient contact with industry.

4. Attention is drawn to the inadequacy of systems of inspection for all forms of training. In our case there isn't even the rudiments of an inspectorate (for which provision should be made). Whether there is such a system within the Labour Department to look after the training of apprentices is not known.

5. The acute shortage of well trained, competent teachers is mentioned. This situation exists in Ceylon. The lack of facilities for training is also mentioned. The establishment of a Technical Teacher Training College is part of the development proposals for this Department. The difficulties of attracting and training suitable candidates to the profession is attributed largely to the inadequacy of the salaries and conditions of service offered.

6. The inadequacy of facilities for training supervisors and managers is mentioned. Our plans for development are intended to meet these deficiencies. The speed of implementation will depend on our resources of funds and higher administration personnel. Attention is drawn to the inadequacy of the training and education of those already in employment. The latter is considered an essential basis for technical education. The general education of those already in employment - particularly the young - is a matter to which we must devote greater attention. This could certainly be undertaken within the teaching units of this Department on the basis either of a part-time release during the day or evening classes.

7. The serious lack of facilities for occupational information and vocational guidance is touched upon. The fundamental objectives of training, on which the contents of courses and programmes depend, are enunciated.

8. The aim of national training policy is stated to be to provide all members of the population with the means of acquiring knowledge and skills for practising an occupation. This means that a system should cover not only the training of
young persons and adults, but also further training for promotion, upgrading and retraining. The provision of all these facilities naturally depends on the resources available.

9. Training systems are discussed. The combined training schemes established in Latin America are stated to be of particular interest to developing countries.

10. Training standards and methods are discussed. The need to balance the level and contents of training with the requirements in employment is emphasized. It is stressed that standards need to be established to evaluate training. The serious problem encountered by developing countries in connexion with the recruitment and training of teaching staff is mentioned. The need to combine effectively theoretical instruction with practical training is emphasized. In our plans for the "sandwich" pattern of training for engineers (as in the proposed College of Technology), this is kept well in view and the need for the most careful supervision and guidance in their practical work on the job has been very clearly indicated.

11. The need to provide a technical background for economists and an economic background for engineers and technical personnel working in governmental and semi-governmental institutions is discussed, as well as the desirability of providing training in the formulation, evaluation and implementation of industrial development projects, in addition to training programmes in industrial development for the economic administrators.

12. The training of managers is discussed and it is considered that special facilities, such as management development centres are the best means towards this end. The proposed College of Commerce can be developed into such a centre. The problem of the availability of local teachers for such centres is discussed and it is suggested that individuals be sent abroad for post-graduate studies. This is being provided for in the plans for the College of Commerce.

13. Intra-regional arrangements for training national technical personnel are discussed. It is indicated that training should be provided in the trainees' home countries as far as possible. The convening of seminars and workshops in which representatives of Governments, industry and other organizations participate is indicated as another method of intra-regional co-operation. The recent colloquium held in New Delhi was very successful and was organized by the Colombo Plan Bureau along these lines.
14. The work of the United Nations family in the field of industrial training consists of (a) studies and research, (b) establishment of standards and models and (c) operations, all of which are interdependent. It is indicated that appropriate machinery has been established in fields such as manpower assessment and educational planning, technical education and vocational training and agricultural education. More information on all these organizations will be most useful to us, particularly concerning manpower assessment and educational planning. One of the recommendations of the Technical Education Commission is that a Manpower Survey Unit be established under the Planning Secretariat to keep under constant review our requirements of trained skills.

15. Training policy in relation to industrial development is discussed and a general strategy is suggested in regard to training systems and methods consisting of detailed analysis in the light of which immediate steps could be evolved according to circumstances. It is suggested that for countries in the early stages of industrialization, priority should be given to training programmes which have a multiplier effect, which consist of the training of persons in key functions, development of systems of training persons who are already employed and development of programmes of further training.

16. An attempt has been made at estimating costs involved in training programmes for industrial high-level technical personnel. For all developing countries, it is considered that $2,600 million are required over fifteen years for the training of 400,000 engineers and 1 million technicians mentioned earlier, which means an expenditure of $177 million per year. (These are obviously indicative of a rough order of magnitude rather than definitive.) It is considered that for all the regions taken as a whole, the aid implications may be about 20 per cent (the UNDP (Special Fund) contribution towards the proposed College of Technology is approximately 40 per cent of the total expenditure). The total aid provided by the United Nations family for the development of technical education and training in the developing countries is said to have amounted to roughly $40 million in 1961 compared with our national annual expenditure of nearly 300 million rupees on education as a whole - this amount spread out over the under-developed areas of the world does not seem to be much.
17. It is mentioned that 6,031 fellowships were awarded by the United Nations family in 1963. Of these, 645 were in the field of industrial development. This number is considered low.

18. Various means of training are discussed. Placement of trainees in industrial establishments for long periods has been difficult. Group training is being encouraged. The Turin Centre established by the ILO has provided training since 1965 for highly skilled workers, technicians, foremen, instructors and senior management personnel from developing countries. More use should be made of this centre by us. The United Nations has organized seminars in industrially developed countries dealing with specific industries.

19. A recent survey by the United Nations indicated that 91 per cent of the fellows were engaged in their home countries on their return in work related to their studies and a survey by the Agency for International Development of the United States showed that a large majority of the trainees were utilizing their training effectively and contributing to the economic development of their countries.

20. Programmes of international organization are discussed and reference is made to the ILO Vocational Training Recommendation, 1962, the UNESCO Recommendation on Technical and Vocational Education and to the Programme of Human Resources adopted by the ILO in 1963. These will be of the greatest use to us in the formulation of plans for the development of technical education and training. The assistance to industrial training provided by the United Nations family and associated organizations is discussed.

21. With respect to prerequisites for action, it is strongly emphasized that all efforts in the field of training need to be undertaken within the framework of plans or programmes for economic, social and educational development. The success of training policies and programmes is essentially dependent on the readiness of the public authorities to carry out the decisions taken in connexion with these policies and programmes, as well as on the existence of adequate administrative machinery for the purpose. It is also necessary to decide on priorities considering that funds available are limited. It is stated that it is essential for developing countries to establish institutions capable of identifying training problems and working out solutions on the basis of the experience of others and
utilizing foreign resources. This is basic as each country needs to evolve its own system - with assistance from foreign sources, where available - fundamentally suited to its requirements. The success of such schemes requires the active participation of persons at all levels. In order to encourage such collaboration, various incentives have to be offered, such as providing improved conditions of work, more favourable revenue and wage policies. General education is considered an essential basis for any training for industrialization. In this respect, Ceylon is perhaps better off than most countries, although perhaps a difference in emphasis at the initial stages of education seems desirable. This is a more complex problem, of course, considering the demands on our resources of manpower from the various sectors of the economy.

22. With regard to the recommendations contained in paragraph 101 (a) to (d) relating to the setting up of a system for keeping under regular review the requirements of personnel for industrialization and integrating the results of these reviews with the over-all plan for education and development of human resources, (e) recommends, in the light of the assessments mentioned and manpower requirements, the establishment and implementation, in order of priority, of a plan of action in the field of training, including technical education and vocational and management training. According to the resources available (both national and from other sources), (f) suggests the financial implications of the programmes of training be kept under review in order to obtain maximum returns from such investments.

23. Recommendations are made as to how international organizations can help, and of particular interest in this connexion is the training of local people to undertake national surveys and to analyse the results. Also recommended are research studies on employment objectives in economic development and studies on methodologies appropriate for forecasting requirements of trained personnel.

24. Attention has already been drawn to the recommendations of the report of the Technical Education Commission, as regards the establishment of a Directorate of Manpower as an integral part of the National Planning Programme, to keep under constant review the availability, utilization and shortages of technical and scientific manpower. This recommendation, if accepted and implemented, will meet the requirements indicated above.
25. It also suggests that attention be given to basic problems of planning for an implementation of industrialization programmes and also to training personnel for these tasks. This is basic and it is fortunate that Ceylon has the nucleus for such an organization in the Planning Secretariat, which would need to be expanded on the lines indicated.

26. It is to be hoped that the United Nations will afford assistance in a larger measure towards the training of at least the key personnel needed for the planning and implementation of national programmes for training of technical personnel to speed the process of industrialization of the developing countries.

DENMARK

1. Danish activities at the bilateral level to promote the training of technical personnel in developing countries consist in the holding of courses and seminars, the award of scholarships for studies in Denmark and technical assistance projects. These activities are expected to be increased in connexion with the intensification of Danish development aid, which is envisaged for the period up to 1972, the target set for achievement of the 1 per cent goal.

2. The Government of Denmark has organized the following courses in Denmark for the training of technical personnel from developing countries:
   
   (a) Seminar on the development and organization of vocational training and technical education (1965);
   
   (b) Training of instructors in motor and building trade (1966-1967).

In the period from 1962 to 1967, scholarships were awarded to 323 trainees from developing countries for various forms of technical training.

3. With regard to technical assistance projects, special mention should be made of the training centre at Maipu, Chile, providing apprenticeship training in light engineering industries. The Centre, which accommodated 700 students in 1967, will serve as a model for similar projects in other developing countries. A school for carpenters has been established as a technical assistance project at Monastir, Tunisia. Training of technical personnel is further provided, on a moderate scale, within the framework of several other assistance projects.

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4. The Government of Denmark has no comments on the report of the Secretary-General on the training of national technical personnel for the accelerated industrialization of developing countries.

GABON

General trends of the vocational training programme

1. The general trends of the vocational training plan for the modern sector are related to the inadequate skills of Gabonese labour, the projected measures for adjusting theoretical training objectives to the requirements of potential trainees and the need to establish certain training structures in Gabon itself.

2. The basic datum is the need to establish Gabonese training structures designed to achieve the theoretical objectives of producing qualified and highly qualified personnel:
   (a) Potential trainees (including later wastage) match the requirements;
   (b) Potential trainees and requirements are sufficient to warrant a local infrastructure;
   (c) The environment may be considered acceptable for training establishments at this level.

3. Furthermore, it is from the "supervisory and executive" level, which coincides with the current concept of "medium-rank executives", that the ratio of Gabonese to total manpower drops sharply. The main stress must be laid on the training of highly qualified staff which will be capable, after a few years of professional experience, of meeting the demand for medium-rank executives. This policy, dictated by circumstances, is all the more judicious in that it coincides, in the private sector, with the desire of firms to africanize this level of personnel as soon as the right people are available. The second important point is therefore to organize the promotion of the genuinely qualified staff.

4. The training of technicians and intermediate and senior executives must as far as possible aim at directing the available human resources at the necessary level as the real needs of the economy require, by means of:
(a) a local infrastructure, in exceptional cases, where it is warranted by the scale of requirements, and where there are definite reasons for trying to avoid the hazard of "cut-price" training schemes;
(b) in most cases, training facilities located abroad, since Gabon cannot contemplate setting up costly and highly technical infrastructures for a limited number of persons who are, moreover, split up among numerous specialized fields.

5. The over-all vocational training plan is set out below under two main headings:
(a) specialized training;
(b) general recommendations and recapitulations.

The aims

6. It is imperative to raise the real standards of manpower in order to maintain and expand existing activities and to ensure the viability of new projects. As jobs fall vacant, the existing personnel, who are frequently not fully equipped for their jobs, must be replaced by well-trained staff who fully meet the new requirements.

7. In concrete terms, therefore, it is necessary to:
(a) train staff thoroughly up to the level of the CAP (Certificate of Professional Ability), a particular feature of which is that it attests the holder's ability to fit smoothly into the undertaking;
(b) provide adequate facilities for the training of highly qualified staff from suitable candidates. After acquiring sufficient experience on the job and displaying qualities of leadership, they will provide undertakings with medium-rank executives, a category in which africanization is to be speeded up. These are staff trained to the level of commercial or industrial teaching certificates (BEC, BEI) which, under the new terminology, rank as commercial or industrial technical certificates (BAT).

8. On the other hand, despite the concern to guide Gabonese youth towards the technical professions, the factors which combine to restrict direct action in this field should be borne in mind:
(a) the basic education is still inadequate with regard to those disciplines which are most useful in preparing for the technical professions (mechanical education, mathematics);

(b) there is a need, which is even more pronounced in the industrial than in the commercial sector, to develop and try out new methods in establishments belonging to the national educational system;

(c) it is impossible for Gabonese experts to occupy at the outset, when projects are initiated under the industrial plan, all the posts created at "qualified" levels. At the beginning we shall need a number of expatriate experts, whose jobs will not be filled by Africans until later.

**Rapid vocational training**

9. Accelerated vocational training (AVT) started in Africa, and in Gabon in particular, soon after the end of the Second World War. Its main purposes were:

(a) to prepare large numbers of men who had been condemned to long periods of inactivity for the resumption of work and to train them in new techniques;

(b) to enable invalids and handicapped persons to engage in a new profession and to support themselves rapidly despite their physical handicaps;

(c) to absorb the increasing numbers of unemployed in certain professions by retraining them for other specialities in which jobs are immediately available;

(d) finally, to meet, within a short space of time, the urgent demand for specialized manpower in certain sectors.

10. The AVT centres proliferated, and soon became "adult vocational training centres"; the title has remained unchanged, but the number of specialized fields is now very high (more than 300) ranging from the skilled workman to the high-level technician.

**Training**

11. In Gabon, adult vocational training is provided in two centres which are controlled by the Ministry of Labour, one at Libreville and the other at Port-Gentil, and which opened in November 1964.
12. This short-term, or "rapid" training is part of a system which has convincingly proved its worth in Europe, Africa and Latin America. Generally speaking, all training ultimately depends on the aim to be achieved, the standard reached by pupils on admission and the time available.

13. In the widest sense, it aims at the education of the individual through the acquisition of new knowledge, the adoption of rational attitudes or the learning of rational movements, through the teaching of new modes of action, new thought contents or new criteria of assessment.

14. The aim is to train within nine or ten months - a relatively short period - a labour force sufficiently qualified to meet the present requirements of the labour market.

15. The graduation standard is just below the CAT (Certificate of Professional Ability) and ranks with the French OPL.

Structure

16. The structure of the centres and their operative flexibility, moreover, is such that they can be readily converted for the teaching of different trades as the need arises. At present there are five different sections in operation: automotive engineering and sheet-metal work/welding, at Port-Gentil; and automotive engineering, structural reinforced concrete, and masonry/joinery, at Libreville.

17. The enrolment for each of these courses comprises fifteen adult apprentices, of primary school certificate level, selected by means of psychological and technical tests so as to ensure that the trainees have an aptitude for the trades taught and that the various sections are of uniform standard.

Training

18. The training is based essentially on practical trade skills and the technical ability and the theoretical knowledge essential to the practice of the trade concerned; it excludes any teaching of the trade and any general instruction, and thus accustoms the apprentice as much as possible - taking into account the length of the training periods - to the industrial environment in which he will shortly take his place.
Programmes

19. These are determined by the subject-matter to be taught, taking into account the aforementioned criteria: level of entry; objective; time available.

20. The centres therefore operate on a forty-hour, five-day working week, which includes thirty-three hours of practical shop-floor work, during which the apprentice receives on-the-spot instruction - as often as required and always in keeping with his current work - in the technological skills relating to the trade he is learning, the nature and use of the tools he employs, terminology, and the purpose and operation of the various components which he studies (for example, engine components).

21. In addition to such skills, the trainees learn the simple but essential trade calculations which they should know (for example, engine capacity calculations or equipment and prime costing for a particular job, etc.).

Qualification

22. The apprentices undergo a final test set by a body composed inter alia of employees and technicians of private and public enterprises and technical teachers; those who are successful receive a vocational training certificate, subject to a final three- to six-month course of skilled work in a factory or enterprise. This procedure makes good use of the human resources and therefore contributes effectively to economic development and improvement of the standard of living.

23. We would add that the Gabonese Government would be glad to receive, for the training of our technicians, information on the research conducted by international organizations into technical training and competent technical assistance.
IRAN

1. Considering the rapid industrialization according to the Iranian Fourth Development Plan, we confirm the recommendations regarding planning and studies in the field of industries in order to get the best results from financial and personal possibilities.

2. In our Fourth Development Plan, we are interested in studies concerning problems of having enough skilled personnel in the field of industry and research in order to find the best solutions for the period of the Plan.

3. Recommendations in UNIDO's report have been carefully considered in our Fourth Development Plan. Therefore we pay special attention to the training of technical personnel and professionals. To fulfil this need, we extend technical training in secondary and higher schools and courses.

JAPAN

1. The Government of Japan high appreciates the efforts made in preparing this report, which gives a clear picture of the present situation concerning the training of technical personnel in the developing countries and analyses in detail its various existing problems. In the light of the experience of Japan in training, upon request of the developing countries, their nationals in Japan, as well as at the training centres established abroad, the Government of Japan considers that the following points may merit more emphasis.

2. There are cases in which those who completed their training courses are not necessarily effectively employed for accelerated industrialization. In this connexion, the Governments of developing countries should be urged to make every effort towards making the fullest use of personnel with adequate opportunities for employment for the purpose of promoting industrialization.

3. It is often noted that in certain developing countries, caste systems or other social customs reduce the effectiveness of training. The Governments of these countries should make every effort to break down such inhibitory factors and...
to provide the opportunity to participate in training courses to those who really need skills regardless of their status in society.

4. It is desirable that the international organizations concerned should study from time to time whether the training of local technical personnel is carried out in harmony with the existing programmes of industrialization and give to the Governments necessary advice.

LEBANON

Upon instructions from his Government, the Chargé d'affaires a.i. of the Permanent Mission of Lebanon wishes to state that the competent authorities of Lebanon have studied the report of the Secretary-General and that they endorse its contents.

NEW ZEALAND

A. Evaluation of the recommendations

1. The New Zealand authorities have some doubts as to the ability of developing countries, because of their lack of qualified personnel, to set up the planning units referred to in paragraph 101 (b) of the Secretary-General's report.

2. The remaining recommendations in paragraph 101 are considered useful. The collection of more adequate data (101 (c)) is regarded as the desirable starting point, with the collection and analysis of information (101 (d)) and the setting up of systems (101 (a)) as complementary activities.

B. Current and planned activities

3. The New Zealand Government, in December 1966, established a Manpower Planning Unit, which is responsible for forecasting labour supply and demand in industries, occupations and regions, and for disseminating this information in such a way that educational authorities and other groups would be able to set up facilities necessary to balance future demand and future supply. It also has the responsibility of keeping the New Zealand Government informed of current labour market trends.

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4. Additionally, the New Zealand Government is establishing a Vocational Training Council, the principal functions of which will be:
   (a) To develop training schemes in technical institutes, in industrial and commercial establishments, and in government departments;
   (b) To make recommendations on the planning and co-ordination of training schemes which will cater for future needs;
   (c) To draw attention to the need for training in occupations where the Council considers that there is insufficient awareness of the need;
   (d) To instigate the establishment of training and retraining schemes where it is considered that such schemes are necessary.
5. New Zealand has provided training in a number of fields which are related to industrialization in the broadest sense of the term, but the major effort has been in engineering training. As a result of awards provided by New Zealand under the Colombo Plan, 339 persons had come to New Zealand by 31 March 1967 for training in various branches of engineering, including 260 at the university level. In addition, 154 awards were made in the field of trades training, 7 in industrial and scientific research, and 5 in industrial design. Eight New Zealand engineering experts had gone to the Colombo Plan area together with seven experts in industrial development.
6. In addition, an important sector of New Zealand's capital aid in the field of education has concentrated upon the promotion of trade training, which is so basic to all progress towards industrialization. At present, two New Zealand-assisted trade training schools are nearing completion in Burma, work has begun on a vocational institute in eastern Malaysia, and an engineering workshop is about to be established at the State University of Mindanao in the southern Philippines. For a number of years, schools throughout the Philippines have been assisted with grants of trade training equipment financed by New Zealand. As with all of the above projects, capital aid has been accompanied by the provision of experts and the training of counterparts within New Zealand.
7. Apart from project aid in the field of trade training, New Zealand has established and helped to staff an Industrial Research Centre in Singapore, which has provided extensive scientific measurement services for that country's rapidly expanding secondary industries.
8. A New Zealand forestry aid team has operated in Kenya for some years. One of its many activities has been the establishment of a new type of commercial saw mill, the production from which is helping to start a prefabricated building industry.

NORWAY

Current and planned activities

1. The Norwegian development assistance has been focused on the fields of agriculture, fishing, health and education and has only to a minor degree aimed at action for stimulating industrialization. However, Norway is presently undertaking some activities which fall within the general recommendations suggested in the report. These include:
   (a) Expert advice and educational activities for the iron and steelworks El Fouladh, Tunis, Tunisia, in connexion with consultative services offered by a Norwegian steelwork;
   (b) Technical assistance to the National Construction Corporation, Kenya.
   (c) Part of the Indo-Norwegian project for the modernization of the Indian fisheries comprises industrial activities, that is, a shipbuilding yard, an ice factory and a factory for the freezing and packing of shrimp;
   (d) Some of the fellows under the bilateral and especially under the multilateral programme have worked within industrial fields;
   (e) A few of the Norwegian experts in East Africa have worked in government offices connected with industrial development;
   (f) The Norwegian Agency for International Development (NORAD) has financed feasibility studies for private Norwegian investments in developing countries;
   (g) Export credit and investment guarantees.

2. In addition, the Parliament will in the near future consider a proposal for financial support to the construction of a vocational school in Brazil initiated in connexion with a private Norwegian industrial firm's factory in that country.
3. The NORAD feels that, in future, activities for the promotion of industrialization, and particular industries based on fishing and agricultural products, as well as forestry products, should be given high priority within the Norwegian development assistance. Assistance to technical vocational schools is of special interest in this connexion. In addition, NORAD should also be able to support seminars in Norway for fellows from developing countries in some fields relevant to industry and also an increasing assistance of expert advice for industrial activities in the areas where the Norwegian development assistance is concentrated.

Content of the Secretary-General's report

4. As for the research conducted by international organizations, it would be advisable if the report would be as much operationally based as possible, in order to ensure the co-ordination between bilateral and multilateral assistance programmes.

5. Norway is interested in receiving periodic information on the research conducted by international organizations in these fields and in all the major subjects discussed in the report.

POLAND

1. Pursuant to General Assembly resolution 1824 (XVII), the Secretary-General has prepared a report which is a substantial contribution to research in the problem of training of technical personnel for the accelerated industrialization of the developing countries. The merit of the report in question is its all-sided and complex approach to the problem. Recommendations contained in the report seem generally to be appropriate.

2. In the light of preparations for the Second United Nations Development Decade, it appears to be necessary to bring the report up to date both in its information parts and in the parts concerning the role of the United Nations system.
3. Should such work be undertaken, it would be advisable to change somewhat the structure of the report and to systematize better the material contained therein. The present report includes many valuable and adequate thoughts and findings which often cannot be noticed in the profusion of less important and sometimes too detailed information. The following remarks are made in this connexion.

4. First of all, a need for co-ordination of technical training plans with industrialization plans (branches development strategy) in the context of general development plans of the developing countries should be emphasized and substantiated. This has been mentioned in the report, but the idea has not received the primordial exposure it deserves; and it is beyond any doubt that, without precisely defined industrialization strategy, training plans would be in a vacuum and training itself would have an accidental character and sometimes would even be unnecessary.

5. The responsibility for training of national personnel falls in the first place on the developing countries themselves. Therefore, more attention should be paid to the organization and development of different training systems in the interested countries and regions. This would facilitate the adaptation of directions and methods of training to local conditions and needs and would link the training with the development of certain industrial branches.

6. Taking into consideration limited financial means, one should give priority to such fields of training which would produce multiple effects, that is, one should concentrate first of all on the preparation of pedagogical cadres and instructors.

7. In the initial period of industrialization in Poland, considerable results were achieved by training in professional courses for workers and medium-level technical personnel without taking them away from their work. This type of training seems to be adequate for the developing countries, since it trains personnel and raises their qualifications in an occupation and speciality which is already being performed. At the same time, it does not create employment difficulties for the enterprise.

8. The supporting of basic training of technical personnel in the developing countries does not imply the end of outside assistance in this field, be it
bilateral or multilateral, provided this assistance does not counter the
sovereignty of beneficiary countries and that it does not serve, at the final
stage, the interests of donor countries (this concerns first of all prevention
of the drain of national technical personnel to highly industrialized market
economy countries).

9. Against the background of the existing situation, the scope and methods of
activities of the United Nations system in the field of training should be defined.
The leading role in this field should be played by UNIDO and by the ILO, which
have rich experience and tradition in the sphere of training personnel.

10. The activities of the United Nations system should embrace two issues:
(a) Research, exchange of information and initiation of international
co-operation in this field;
(b) Execution of projects in the field.

In the first and second issue, one should concentrate on the assistance in the
planning and organization of training of technical personnel in the developing
countries themselves.

11. As to the training of technical personnel from developing countries in
industrialized countries, the most appropriate form seems to be that of short-term
or medium-term courses and apprenticeships closely related to the development of
a given branch in a particular developing country or with a UNDP project. This
would mean that the training could be precisely directed and it would give a
certain guarantee of immediate employment of freshly trained personnel in given
enterprises and according to acquired skills. Long-term training as well as
university studies or a long period of training abroad should be reduced to the
indispensable minimum. It is worth mentioning that fellows' prolonged studies
abroad may be one of the factors leading to the aggravation of the so-called
"brain-drain", which is so harmful to the interests of developing countries.

12. On one hand, Poland benefits from United Nations technical assistance in the
training of national cadres and, on the other, personnel from developing countries
are being trained in Poland within the framework of bilateral and multilateral
assistance.

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13. Out of a total amount of funds from the Expanded Programme of Technical Assistance ascribed to Poland for personnel training, 95 per cent are devoted to post-graduate training in various branches of industry. Training plans are closely related to development plans of different branches and, as a result, Poland receives assistance in the training of engineers and scientists in branches such as machine construction, heavy industry, chemical industry, mining, use of computers, building and transport. The training is achieved by means of short-term and medium-term courses as well as practical experience; the trainees return to their original work after completion of their training.

14. The training in Poland of nationals from developing countries takes the following forms: secondary and professional education, higher studies, courses and actual experience.

15. At present, in Poland, the following post-graduate courses are being offered:
   (a) Course in the textile industry under the auspices of UNIDO (six months);
   (b) Course in economic planning in Warsaw (eight months);
   (c) Course in regional planning in Szczecin (five months).

16. Individual experience for different specialties, as well as group courses (such as the one on industrial statistics in the Central Statistical Office in Warsaw) are organized in Polish enterprises for nationals from developing countries.

17. On a bilateral scale, the training is conducted in branches such as machine construction, electrical industry, shipbuilding industry, light industry and food-stuff producing industry.

18. On a multilateral scale, the training is performed in the following fields: industrial economics, financial planning enterprise organization, geology, salt mining, chemical industry, heavy industry and machine construction.

19. It appears from our experience that the best form of training of medium-level and high-level technical personnel are professional courses or medium-term seminars followed by practical experience in enterprises. Those courses and seminars facilitate contacts among specialists, exchange of experience mutual presentation of achievements and difficulties.

20. The limited time of training allows persons closely engaged in the work of their enterprise to participate in those courses and seminars without taking them away from their professional work for a longer period of time.

/...
Training of management for industrialization

1. The recommendations in paragraphs 101 to 103 of the report of the Secretary-General and the measures adopted in all the developing countries cover many of the aspects on which we are agreed, but it must be recognized that many of them deal mainly with research and the study of certain problems and less with the system of effective and immediate guidelines.

2. In view of the very low general level of culture in those countries, we consider literacy and development of generally compulsory elementary education to be an absolutely necessary premise and a prerequisite for the training of management for industrialization.

3. This is so because, in the contemporary world (general), elementary schooling plays a highly important part in the vocational training of management of all categories, its purpose being to educate people to be able to absorb training. Such schooling is therefore the initial link, the first and most important step towards acquiring any skill for industry and for the other branches of a national economy.

4. Hence we believe that, in the formulation of national management training programmes, priority should be given to instituting compulsory general education and the training of teaching staff - primary and secondary school teachers.

5. In management training, the emphasis must be laid on national efforts. This necessarily implies taking action:

   (a) to prepare long-term management training programmes prior to economic development programmes;

   (b) to train progressively certain managerial categories of skilled labour, foremen in the actual process of industrial development, since it is known that this practice not only creates but also accelerates skills. In this context, the direct in-service acquisition of skills and the various forms of institutional training combined with training acquired in factories and plants are extremely important;
(c) to intensify the efforts and investment of the State in order to train all categories of management and awaken the interest of enterprises in this process in different ways.

6. We realize that the measures recommended in the report of the Secretary-General (paragraph 101, sub-paragraphs (a) to (f)), which are actually steps in the formulation of a sensible national management training programme, are necessary.

7. Bilateral and multilateral international co-operation plays a useful role in the training of management for these countries.

8. While appreciating the recommendations in the report of the Secretary-General (paragraph 102) concerning methods of co-operation in areas where the various international organizations can provide assistance to the countries of the Third World, we might mention that there are certain limits to this co-operation.

9. When necessitated by certain objective conditions (lack of national training systems, the urgent need for certain managerial skills), such co-operation can offer no major solution, so far as the structure of the national institutional system is concerned. Hence the need to scrutinize and carefully select the fields and occupations in which training is so provided. At the same time, management training through international co-operation is very often inadequate for the developing countries from the point of view of adaptability to the specific conditions prevailing in the industry of those countries. This greatly reduces, at least in the early stages, the efficiency of the skills of a large part of the labour force. That is why the creation of suitable working and living conditions, which will also make it possible to limit emigration to the economically developed countries, is important for the rational employment of skilled labour.

10. We also believe that it is necessary to introduce in each country forms of skill which will ensure the organized transfer of the technical and practical knowledge acquired in other countries to the broad masses of workers in the country concerned. This would make the initial investment produce a multiplier effect. As regards international co-operation, the most suitable and easiest way to train quickly certain categories of management, such as highly skilled workers, foremen, technicians, etc., is to base such training on the specific needs of the developing countries. The efforts made so far along those lines should be actively encouraged.
Training and rational employment of management

11. In Romania the training and rational employment of all categories of management constitute one of the Government's main preoccupations.

12. At present a comprehensive programme aimed at improving the management training system, methods and techniques of studying human resources, and methods of determining skilled manpower requirements for the entire economy is being carried out by branches, occupations and degrees of skill.

13. The State Planning Committee, the Ministry of Labour, the Central Department of Statistics, the Ministries and enterprises have bodies engaged in studying manpower resources and formulating the management training programme in the light of economic development requirements in each branch.

14. Periodic management censuses are taken which show the structure of management in the economy by category, occupation, degree of skill, branch of the national economy, method of employing skilled managers in keeping with their training, and the fields in which the number and structure of managers are inadequate.

15. Similarly, the method used for drawing up the management training plan is that of selective surveys designed to determine either the management structure of new modern enterprises or the method of using skilled management.

16. As part of the measures adopted to improve the planned administration of the national economy, particular attention is given to management training in the light of the requirements of the national economy. As working methods and techniques have become more efficient and developed and the necessary material infrastructure has been built, studies have been made of the management requirements of all economic and cultural sectors. The long-term training plan for all categories of management is based on these studies. The following have been used simultaneously in carrying out these studies: extrapolations, suitably adjusted, of past trends, and surveys and data relating to the time worked for different categories of management studies (from the point of view of occupations and degrees of skill) of the management structure of modern enterprises, and international comparisons.
Establishment of an optimum and effective educational system

17. One of the main concerns of those responsible for framing national policy in the matter of training the management necessary for developing the national economy is to establish an optimum system of education and vocational training which is economically and socially effective.

18. For this purpose the measures adopted periodically to improve the situation are concerned with the methods and techniques of determining management requirements and planning their training, and with the forms and period of vocational training, the content of education and training and the material basis.

19. Special importance has thus been given to the development of general education which forms the basis of skill in all occupations. Illiteracy has been eliminated and eight years' compulsory education has become the norm. Recently action was taken to extend the period of compulsory education gradually to ten years, which is of special importance for raising the cultural level of the population and making social work more effective.

20. Vocational training and technical education to train skilled workers, foremen and technicians has been improved. Measures have also been taken to diversify training methods, to achieve better co-ordination between general compulsory education and vocational training and to relate the process of training more closely to the needs of production and technology. In Romania, the training of workers is carried out in a variety of ways through the State educational system and by the following methods organized directly in industrial enterprises:

(a) Vocational training (day and evening classes) to train workers for complex trades. The students for such courses are recruited from among those who have completed eight years of schooling and, in future, will be recruited from among those who have completed ten years of schooling. Vocational training schools are established close to large factories and plants where the students are given practical instruction;

(b) In-service apprenticeship trains young people who enter production directly after completing their general education. Practical instruction during the working day is accompanied by theoretical training carried out periodically in various forms;

/...
(c) Training in short-term (three to twelve months) courses organized in industrial enterprises for unskilled workers or for those coming from agriculture and domestic work. This training is carried out in two stages: first, through the first-level training course lasting from three to twelve months and, then, through second-level training courses also lasting from three to twelve months.

21. At the same time, measures have been taken, on the one hand, to improve the classification of trades taught by various methods and, on the other hand, to reduce the period of instruction for certain trades where the study period proved to be excessive in relation to the requirements of the trade, taking into account also the situation which will arise as a result of the extension of general compulsory education to ten years. Similarly, further measures have been taken with a view to modernizing teaching plans and curricula so that they may provide solid training in specialized branches and in general scientific and technical education. In this respect, the aim has been to eliminate the division between general technical and specialized subjects and to concentrate on the fundamental problems relating to the learning of a trade as well as on knowledge of the principles of the operation, use and maintenance of tools and of technology and modern methods for the scientific organization of work and production. To this end, "outline teaching plans" are being prepared, by related groups of trades.

22. Practical instruction plays an important role in the training of skilled workers. The time devoted to such instruction in Romania (approximately 65 per cent for those trades for which the period of training is three years and approximately 50 per cent for those trades for which the period of training is two years) places Romania, in general, on a par with the world average.

23. For this reason, measures have been taken to improve the organization and conduct of practical instruction and to increase the role and responsibility of enterprises, as well as to improve methods of working with the students.

24. The training of foremen, technicians and middle-level economists takes the following forms in Romania:

(a) Technical schools for foremen (day and evening classes). The students are recruited from among the best workers who have completed a course at a vocational school (preference is given to those who have also completed secondary
school) and who have worked in production for three to five years. Candidates must also belong to a highly skilled category and, in their work in the plants, furnish proof of qualities which would fit them to be foremen;

(b) Five-year specialized secondary schools. The students are recruited from among those who have completed a course at a general school of industry, agriculture, economics or public health. These schools constitute the principal means of training middle-level specialists. They provide a general academic education similar to that provided by the grammar schools as well as specialized theoretical and practical training which meets the needs of the national economy. Of the total number of hours of study, 42-50 per cent are devoted to general academic education, 24-38 per cent to specialized training and approximately 27 per cent (in industrial and agricultural secondary schools) to practical instruction, mainly in the fifth year;

(c) The post-intermediate technical schools, which train technicians for certain occupations characterized either by a high level of technology (such as technicians in the fields of atomic physics or electronic calculating machines) or by a high degree of general knowledge and specialization, or for occupations for which entrants must be a certain age.

25. Activities with a view to the modernization of higher education have been pursued; these were concerned with the broad outlines and duration of the course, the content of training plans and programmes, and the expansion and improvement of their material base.

26. The teachers themselves play a crucial role in all activities designed to train technical personnel in all categories needed for the development of the national economy. They must be versatile, being able to provide both training and instruction to pupils and students and general education and training in citizenship for young people.

27. In the circumstances, steps have been taken to improve their training both as teachers and specialists at all levels and to provide them with material encouragement.
Further training

28. In view of the current technical and scientific revolution, the continuation of further training of specialized personnel in all categories, including workers, is essential.

29. In this connexion, Romania - always, of course, adapting the means employed to the end in view - is using a variety of methods of instruction, specialization and vocational re-orientation and re-training. These methods are being continually improved. They include: post-graduate education for engineers and a possible doctorate for economists; special training abroad for all categories of technical personnel, particularly for management and scientific personnel; periodic specialization and advanced training courses; further training for management personnel; and a large variety of such other methods as technical conferences, films, special instruction, etc.

Report of the Secretary-General

30. The report submitted by the Secretary-General covers extensively the question of training of national technical personnel for the industrialization of the developing countries.

31. Although the report deals in depth and in detail with the problems of the education and training of technical personnel in those countries, we consider that, in the light of current economic, social, political and cultural conditions, it is necessary to emphasize and expand the following parts, dealing with:

(a) The integration of personnel training programmes in economic development programmes with a view to the intensification of national efforts in that field, the creation of the necessary organizational and structural conditions, and the promotion of particular forms of vocational training likely to be effective in those countries and to ensure from the outset "accelerated" and "on-the-job" training of personnel, as this could also constitute the basis for a lasting solution of this problem.

(b) The financial implications of a national policy for training personnel, with emphasis on the different ways of increasing their own financial resources and the supporting financial efforts of the State;

/...
(c) Ways and means of ensuring that qualified personnel are employed in accordance with the needs of the rapid economic development of these countries and are discouraged from migrating to the developed countries.

UKRAINIAN SOVIET SOCIALIST REPUBLIC

Original: Russian

1. In accordance with the request set forth in General Assembly resolution 2090 (XX), the competent authorities of the Ukrainian SSR have studied the Report of the Secretary-General of the United Nations (E/3901/Add.1 and 2), and on the whole their opinion of the document is favourable. The report rightly draws attention to the fact that it is particularly important, when industrialization plans or programmes are being established, to prepare, at the same time, plans for the training of engineers and technicians, and to the fact that the allocation of resources for these purposes should be made in the context of the over-all distribution of resources.

2. The Government of the Ukrainian SSR takes the view that the training of national technical personnel for the accelerated industrialization of developing countries is one of the most important objectives of the United Nations Development Decade, the more so since there is still a shortage of such personnel, which has a negative effect on the acceleration of economic and social progress in the developing countries. In that connexion, the Government of the Ukrainian SSR takes the position that the complete solution of this important problem will depend primarily on the efforts of the developing countries themselves, efforts to which the United Nations and the specialized agencies can and should give broad support. It is well known that the Ukrainian SSR, among other States, has previously taken the initiative in drawing the attention of the United Nations to the question of co-operation with the developing countries in the training of national technical personnel for their accelerated industrialization.

3. The activities of the United Nations and the specialized agencies in this field leave much to be desired. The Report calculates that in the developing countries of Asia, Africa and Latin America some 400,000 engineers and scientists, and 1 million technicians will need to be trained by 1975. It also gives an...
estimate in regard to the over-all volume of employment in industry in the
developing countries. It would be useful to know at this stage the extent to
which the developing countries' requirements in technical personnel, as estimated
in the report (E/3901), were met during the first half of the Development Decade.

4. An analysis of the report (E/3901) reveals that, on the one hand, its authors
have, without adequate justification, somewhat broadened the interpretation of
resolution 1824 (XVII), devoting a great deal of attention to the question of
training of management personnel, whereas it is clear that in the developing
countries there is a pressing need for engineers and technicians. On the other
hand, the report does not reflect the question, implicit in the resolution, of the
adequacy of existing training facilities with respect to the developing countries' requirements for technical personnel (para. 18).

5. The report does not clearly reflect its authors' reaction to the idea of
organizing regional centres for the training of technical personnel and their
role in the training of technical personnel for the industrialization of the
countries in the region concerned.

6. The report contains a brief and obscure reference to the organization in the
socialist countries, particularly the Ukrainian SSR, of training of qualified
personnel without interruption of employment. The sentence reading "In one factory
at least in the Ukrainian Soviet Socialist Republic every second worker was receiving
some kind of additional training" (E/3901, Add.1) in itself raises a question to
which the report should but unfortunately does not give an answer.

7. The report gives no indications as to the situation with regard to training in
the developed countries of the national technical personnel required for the
industrialization of the developing countries.

8. It would be useful to add to the report some information on the participation
of various developed countries not only in training personnel but also in
utilizing them. In particular, there should be an indication as to what proportion
of the technical personnel from developing countries trained in various developed
countries settles in the latter, as well as an analysis of the causes and
consequences of this situation. It would then be possible to make a correct
appraisal of the real contribution of the various countries to the solution of the
problem of the industrialization of the developing countries.

/...
9. In this regard, it should be noted that the Ukrainian SSR has had vast experience not only in training technical specialists but also in dealing with questions of education as a whole. In 1914 the total number of specialists with higher or secondary education in the area of the Republic was only 34,500, whereas in 1965 the number of such specialists was 2.3 million, and by 1970 there will be 3.2 million specialists with higher and secondary education working in the national economy and in the fields of science, culture and education. In the year 1965 alone, 72,000 specialists, of whom 32,000 were engineers, graduated from 132 Ukrainian higher educational establishments, and 743,000 persons graduated from specialized secondary schools. At the present time the higher educational establishments and specialized secondary educational establishments of the Ukrainian SSR are training workers in 293 and 354 specialities respectively. In addition, a system of vocational training has been widely developed in the Ukraine and caters for some 300,000 young persons of both sexes, who are receiving training at 700 vocational training centres and schools. Out of the Republic's total population of 45.5 million, some 13.8 million persons received training of one kind or another in 1965.

10. All forms of education in the Ukraine, from primary school to higher educational establishments, are entirely free. Students receive grants and free medical attention. The grants are provided continuously throughout the entire period of study, including holidays and periods of illness.

11. The above-mentioned reference by the authors of the report was presumably to the advanced training courses which are provided in all Ukrainian undertakings and, as a rule, include the re-training of one half of all the workers each year.

12. The Ukrainian SSR also makes an appreciable contribution to the training of national technical personnel for the developing countries. More than 4,500 foreign students attended courses at the higher and secondary educational establishments during the 1966/1967 school year. In addition, hundreds of specialists come from the developing countries each year to improve their qualifications in Ukrainian undertakings. The Ukrainian SSR also assists the developing countries in training national technical personnel by sending highly qualified Ukrainian teachers to their educational institutions, and by providing text books, visual aids,
laboratory equipment, technical syllabuses, etc. For the most part, this assistance is provided under bilateral agreements between the USSR and the developing countries which, it is felt, should be viewed in the context of international action to promote the training of national technical personnel for the accelerated industrialization of the developing countries.

13. The Ukrainian SSR will continue to give such assistance to the developing countries in the future. In addition, such assistance is and will continue to be given within the framework of the programmes conducted by the United Nations specialized agencies. The experience gained from the courses for metallurgists organized in 1965, 1966 and 1967 at Zaporozhe by the United Nations Industrial Development Centre shows that this form of assistance in the training of specialists from the developing countries has also proved its worth in full. Metallurgists from the developing countries who are awarded scholarships attend these courses for five months, and are able to benefit greatly from the experience of Ukrainian specialists.

14. Nevertheless, the United Nations and the specialized agencies still fail to make sufficient use of the possibility of calling on Ukrainian specialists to assist the developing countries in the training of national technical personnel. This is an important matter which should receive serious attention in the future, especially since the Ukrainian SSR's contributions to the United Nations Development Programme and regular programme of technical assistance are used only partially and to very little practical effect.

15. It should be noted that international and interregional symposia on industrial development organized by the United Nations and the specialized agencies can make an appreciable contribution to the training of national technical personnel for the accelerated industrialization of developing countries. The activities along these lines conducted by UNIDO, UNCTAD, the regional economic commissions, the ILO, UNESCO, IAEA and other specialized agencies can be very useful.

16. Measures of some sort should also be taken at the international level to prevent the drain of trained specialists from the developing countries - a trend which considerably hampers the developing countries' efforts to promote their own industrialization by using the services of trained personnel and is seriously
detrimental to their over-all development. According to information given in the Chilean periodical Desfile of September 1966, some 19,000 trained specialists, on whose education and training the Latin American countries had spent over $400 million, had emigrated from Latin American countries to the United States during the previous five years.

17. Convincing evidence has been produced by the Iranian sociologist Dr. Ehsan Naraghi who, as reported in the United States newspaper Gazette and Daily of 17 May 1966, made a study for the United Nations Special Fund of the causes and extent of the brain drain from the developing countries. It is puzzling, therefore, that the Industrial Development Board's document IDB/10, of 7 March 1967, refers to a lack of material for the production of a report in accordance with resolution 2090 (XX) of the United Nations General Assembly. The material published in the Press concerning Dr. Naraghi's research should be very carefully studied by UNIDO in connexion with its consideration of the problems involved in providing the developing countries with assistance and co-operation in the training of national technical personnel for their accelerated industrialization.

18. It is felt that the Secretary-General, when preparing the recommendations, should not only take into account the replies of Governments but should also study and analyse the comments and suggestions on that question submitted by the specialized agencies, IAEA, the United Nations Development Programme and the regional economic commissions, as called for in resolution 2090 (XX).

19. The foregoing leads to the conclusion that further efforts to solve the all-important problem of the role of the United Nations in the training of national technical personnel for the accelerated industrialization of the developing countries will require the most serious approach on the part of the United Nations.

UNION OF SOVIET SOCIALIST REPUBLICS

COMMENTS AND SUGGESTIONS

/Original: Russian/

1. In the view of the competent Soviet authorities, the document correctly assesses the role of trained personnel in industrialization and deals with important problems involved in their training. The implementation of the recommendations contained in...
the report will unquestionably make possible a more precise assessment of requirements for trained personnel for the industrialization of the developing countries and the elaboration of a system for the organization of such training. The report quite rightly points to the need to give attention to the basic problems of planning for, and implementation of, industrialization programmes and to train personnel to undertake these tasks.

2. The United Nations and its specialized agencies, when taking decisions on the question of the training of industrial personnel for the developing countries, should take into account the experience gained by the socialist countries in that regard. The Soviet Union, which has vast experience in the training of personnel for its own industrialization, has shared this experience with the developing countries and is prepared to continue to do so.

3. The Soviet Union trains national specialists and workers required for the construction and operation of enterprises established with Soviet technical assistance, as well as for work in other national undertakings of the developing countries, by admitting specialists and workers from those countries for industrial and technical training in similar undertakings and establishments in the Soviet Union.

4. Since the beginning of Soviet co-operation with the new independent States, more than 30,000 specialists and workers from those States have been accepted for industrial and technical training in the Soviet Union.

5. Moreover, the training by Soviet specialists of workers and foremen during the construction of undertakings established with Soviet technical assistance - which is provided entirely free of charge - is of great importance for the training of national personnel in the developing countries. More than 120,000 qualified workers and technicians from among the citizens of such countries have received their training in this way.

6. Six higher educational establishments, two technical training institutions, four schools and fifty teaching centres for the training of national personnel in a broad range of skills have been constructed and brought into operation in the developing countries with Soviet technical assistance. A large number of Soviet teachers in various disciplines are also sent to those countries to work in institutes, secondary educational establishments, colleges and schools.
7. The Bombay Technological Institute is an example of the type of higher educational establishment built with Soviet technical co-operation. It is one of the largest and best higher educational establishments not only in India but in the whole of South-East Asia.

8. In 1961, by a decision of the Indian Parliament, it was proclaimed an institute of importance to the State. The Institute has five engineering faculties - Building, Electro-technical, Chemical, Mechanical and Metallurgical - and faculties of Physics, Mathematics and Humanities. At the present time more than 2,000 students, research workers and candidates for doctoral degrees are studying at the Institute. The first group graduated in 1961, the second in 1964, and since that time the Institute has annually turned out hundreds of the highly qualified specialists whom India's developing economy so sorely needs. The ablest Soviet professors and teachers are playing a direct part in the education of those specialists; some sixty of them have already served at the Institute since it was founded.

9. The experience of the Soviet Union shows that the training of qualified personnel for the industry of the developing countries must be an integral part of those countries' economic development plans. Those plans must provide first of all for the training of personnel for the key industrial sectors in the country concerned. Of particular value is the training of personnel for pilot plants, inasmuch as the knowledge and experience gained by the personnel in such cases will be passed on to a large number of local specialists.

10. The method used by a number of United Nations specialized agencies for training personnel by means of a system of courses held in the developed countries has shown positive results. The courses for metallurgists from the developing countries held at Zaporozhe (Ukrainian SSR) which have been praised by the United Nations, are an example. This method should be encouraged and developed in every possible way. The Soviet Union, which participates in the work of UNIDO, proposes to organize courses in the Soviet Union, financed from its contributions to the latter's funds, for the advanced training of specialists from the developing countries in mechanical engineering, standardization in industry, construction of fertilizer plants, and industrial planning. It intends to hold seminars and symposia; to arrange for the supplying of equipment; to offer scholarships to nationals of the developing countries for study at higher and secondary educational...
establishments in the USSR; and to send Soviet experts to assist the developing countries in the field of industrial development. The Soviet Government stresses the need for United Nations bodies and specialized agencies to observe the principle of equitable geographical distribution of posts when appointing experts and sending them to all areas where their services are required.

11. The specialized agencies concerned, particularly UNIDO and the ILO should develop methods for the accelerated training of industrial personnel and for the further training of specialists in the developing countries who are already working, with a view to familiarizing them with the latest techniques and modern working methods. The methodology of the training of teachers to train technical personnel must be constantly improved, teaching aids must be devised, systematic programmes must be worked out, and the premises where training is provided must be equipped.

12. In the training of national industrial personnel, it is essential constantly to bear in mind such aspects as equal access to training for all those who desire it and the avoidance of any form of discrimination on grounds of sex, colour, social origin, religion, nationality, etc. It is likewise essential to observe the right of immigrants in this connexion, to recognize diplomas and certificates issued in other countries and to take into account other social, labour and legal aspects. The State should concern itself with the placing of persons who have completed their training; in particular, it should strengthen the State sector of the economy by employing in that sector, capable specialists selected from among those who have received training.

13. It should be noted that the report makes no mention of the important problem of the brain drain from the developing to the developed countries. It is a well-known fact that this problem is steadily becoming more acute. According to data compiled by the International Labour Office and submitted in the Report of the Director-General at the fifty-first session of the International Labour Conference, the migratory movements of trained personnel flow to and between industrialized countries and are ultimately of greatest benefit to those which have highly developed economies, in particular the United States of America and Canada. The specialists

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immigrating to those countries from developing countries are for the most part engineers, technicians, economists and architects - in other words, trained personnel in the categories urgently needed for the industrialization of the developing countries.

14. The report should therefore include an analysis of this situation and should recommend the international organizations concerned (ILO, UNIDO, UNESCO, etc.) to make a thorough investigation of the causes of the flow of skilled personnel to the developed countries and to propose measures to solve the problem. Unless this is done, United Nations efforts to promote the training of personnel for the industrial development of the developing countries will in the end be to the benefit not of the countries for which the programme was established but of certain countries which are already highly developed.

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND

[Original: English]

Recommendations made in report of the Secretary-General

1. The basic recommendations set out in paragraphs 102 to 104 of the summary of the Secretary-General's report are, in the view of Her Majesty's Government in the United Kingdom, soundly conceived, particularly in so far as they bring out the need for comprehensively planned programmes of technical education and vocational training, the need for training, teaching staff and supervisors, the need for training economic administrators and the need to complement training in the developing countries with more advanced training available in the already industrialized countries.

Identification of needs and priorities for the developing countries

2. The report brings out clearly the need for greater research into the requirements of training for industrialization in developing countries and reveals the inadequacy of present statistics, both those dealing with the manpower needs and educational facilities in the developing countries and those describing training facilities within the developed countries. If international organizations were to assist with research and study of the needs in the various countries, /...
industry by industry, at all levels of training, and to publicize the results of such studies, this could serve as a useful guide both to multilateral and to bilateral technical assistance agencies as to the types and levels of training which they should seek to provide in varying degrees of priority. Effort in this field would presumably consist of studies carried out directly by United Nations agencies and also the training of personnel from the developing countries so that they themselves conduct and publicize similar surveys in the future.

3. Research of this nature might well lead to a more effective use being made of industrial training facilities available in the developing countries, but the need is to produce some specific requirements rather than the vague figures set out in paragraphs 15 and 16 as a result of making global generalizations, which can lead to totally untrue ratios and therefore an over-generalized view of the situation.

4. The report is in our view less strong in these respects:

(a) The emphasis is almost wholly on national systems and arrangements to the exclusion of the part played by the individual institution. One senses an over-centralized approach with little room for manoeuvre in a locality or in an institution. The part which industry can play in helping a training institution or college of technology to become more effective through the medium of local advisory arrangements is a case in point – no reference can be found bringing out such elements;

(b) Little attention is given to the influence of background education on subsequent technical education or vocational training. In particular, the influence of practical and technical subjects in the curriculum at the primary and secondary stages of education, respectively, is obviously of considerable importance in this scene;

(c) There is a lack of any comment on the need for a liberal content in the training curriculum of a technician. Trainees require instruction in civics, in their national language and in social studies and none of these is mentioned.

Liaison between various United Nations bodies

5. We feel that there should be full co-ordination of the efforts of the ILO, UNESCO, and UNIDO. It often seems that the efforts of the ILO and UNESCO in the field are unco-ordinated and this situation might be usefully resolved if the areas of technical competence and responsibility as between these two agencies were better defined.
6. The United Kingdom is very much aware of the needs of the developing countries for high-level industrial training and it was in order to increase the facilities that a new industrial training scheme was brought into operation in April 1967. This is a joint exercise by the Overseas Development Ministry and the Ministry of Labour whereby, under the Industrial Training Act of 1964, overseas trainees would be able to take advantage of the Grant and Levy System already coming into operation in industries where Industrial Training Boards have been set up under the Act. It was hoped that this would lead to an annual increase of some 500 overseas trainees, all of whom would be nominated by their Governments. It was hoped that the scheme would achieve the following objects:

(a) Give wide publicity for facilities for industrial training in this country and so increase the numbers from overseas;
(b) Encourage employers to take more trainees from overseas;
(c) Ease the burden of cost of industrial training by making use of the Grant and Levy Scheme;
(d) Widen the scope for placing overseas personnel by making use of the regional and local offices of the Ministry of Labour.

7. It is too early yet to evaluate this scheme and some difficulties have already been encountered. It has been slow to get under way because the wider network of the Ministry of Labour local offices throughout the country has been used and placing has taken longer, though the field available has, it is hoped, been expanded. Employers have not so far shown themselves willing to take extra trainees from overseas, particularly when the economic climate makes the placing of all trainees very difficult. And firms have not so far taken any of the trainees coming under the scheme on to their payroll. Nevertheless the scheme is in the process of being reviewed and there is no doubt that it can and will be improved.

Statistics of training provided by the developed countries

8. Much of the report's comments contained in the section entitled "Training of technical personnel from the developing countries in the industrially advanced countries" applies to our experiences in the United Kingdom.
9. It is, in fact, very difficult indeed, statistically speaking, to find out exactly what the United Kingdom is doing in terms of industrial training for overseas students from developing countries, because they come to this country under the auspices of many different organizations and at different levels, although a useful indication of the numbers of overseas students following courses of further education is given by the extracts from the document entitled "Statistics of education", published by the Department of Education and Science. The Council of British Industries runs a scholarship scheme for graduate engineers; many large firms who operate overseas bring their own employees to train in this country; the British Council and many international agencies support industrial trainees here. To get a clearer picture of the position, a survey was mounted in May 1965 as a joint operation by the Ministry of Labour and the Overseas Development Ministry to find out exactly what the position was. This did, in fact, give a clear picture of the situation at the time and there has been some discussion about mounting a similar survey at a later date, but the work and time involved is very expensive and the idea has been allowed to lapse for the time being.

10. Nevertheless, there is no reason to suppose that the situation has changed very greatly since 1965. At that time, about 6,000, or 64 per cent, of all the overseas industrial trainees in this country came from developing countries; 27 per cent of these came from India and 10 per cent from Nigeria; Ghana, Malaysia, Pakistan and the non-Commonwealth countries of Africa, America and Asia made up the bulk of the rest.

11. As regards level of training, 29 per cent of those from developing countries were classed as technicians, 33 per cent were above that level - first degree, professional or post-graduate - and the remainder at craft or similar level. As far as the Overseas Development Ministry is concerned, only trainees above the craft level are normally sponsored.

12. About 25 per cent of the trainees from developing countries came for two to six months and slightly fewer for periods ranging from one to two years. The largest group came for six to twelve months. As far as those sponsored by the Overseas Development Ministry are concerned, training for less than six months is not normally given, while very few students stay for more than three years.
13. The main field of training was found to be in mechanical, production and other engineering, followed by electrical engineering and electronics. Training in the chemical and coal mining industries came at the bottom of the list.

14. Two problems mentioned in the report certainly arise here. The first is that procedures, though well established, are in fact very slow. This would seem to be inevitable, particularly so long as funds are limited and extensive inquiries have to be made about the student's qualifications in relation to his country's needs. Secondly, the placing of trainees has becoming increasingly difficult. No doubt this is due very largely to the economic climate in this country. So long as there is a relatively high level of unemployment, industry is unable or unwilling to absorb as many trainees from overseas who stay for only a short time and can themselves often contribute very little while they are training.

15. Another of the most distinctive features of the development of technical education in the United Kingdom during the past ten years has been the extensive and successful use of the sandwich and block release systems, in which periods of study in a college alternate with periods of practical training in an industrial plant. The successful integration of these components calls for very close liaison between the colleges and the industrial organizations. In a few of the former British territories overseas, these methods have been or are about to be introduced. When the student is "works based", that is, employed by the industrial organization throughout his period of training, this method has the great advantage that the education and training are in accordance with known industrial needs and there is no danger that the student will be unemployed when qualified.

16. The Ministry of Overseas Development itself provides assistance in the field of technical education and industrialization. The numbers of students and trainees on courses financed by the Ministry on 31 December 1966 are 191 in the engineering industry, 137 in works and communications and 132 in mining and manufacturing.

Regional training facilities

17. We would wish to stress the usefulness of any steps leading to the full use on a regional basis of training facilities in the developing countries. In areas with limited education services, it can happen that technical training
institutions may lack an adequate intake of properly qualified students from within the home country.

18. The United Kingdom, through the Colombo Plan, has always encouraged the full use of facilities for training within the South and South-East Asia region, particularly at the middle or technician level.

Instructor and supervisor training

19. We are in agreement with the views expressed in the report on the great need for the training of supervisors and feel that it is in this field that the developed countries and the specialized agencies can give most vital help and recommendations along these lines deserve our support.

Management training

20. The United Kingdom Government has supplemented the moves taken by the private sector of British industry for providing or encouraging management training either at home or in the developing countries, particularly those of the Commonwealth. In the past two or three years, a great deal of progress has been made in this country by the establishment of business schools, at which students from developing countries take advantage of courses.

21. There has also recently been a fairly rapid development in the setting up of professional institutes of management in the developing countries. Such institutes have been established in Jamaica, Kenya, Nigeria and Zambia in the past two or three years, and those in Ghana and India have been assisted by Britain. Experts from the United Kingdom help with the setting up of these institutes and with their administration, and provide short courses and seminars for managers and industrialists in the developing countries. All this is now proceeding at an accelerated pace. The main difficulties encountered are, first, it is not always easy to find the expert personnel to give the services of the kind required for the necessary period. Secondly, as is mentioned elsewhere in the report, the machinery for seeking assistance is often cumbersome and slow and the need for help is not always matched by formal but necessary requests for it.

22. The whole subject of training for management, which is a growing and complex one, is now being reviewed by the Overseas Development Ministry and it may well be that the United Kingdom may be able to increase its help to developing countries in this field.
### FURTHER EDUCATION

Full-time and sandwich students from outside the United Kingdom enrolled at grant-aided establishments

#### TABLE 14 [2/30]

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<tr>
<th>Commonweal th students</th>
<th>Foreign students</th>
<th>All students</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English and Wales</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Teachers' certificates</td>
<td>4 7</td>
<td>4 8</td>
</tr>
<tr>
<td>2. Medical, health and welfare group</td>
<td>69 64</td>
<td>113 73</td>
</tr>
<tr>
<td>3. Engineering</td>
<td>27 22</td>
<td>21</td>
</tr>
<tr>
<td>4. Agriculture</td>
<td>10 30</td>
<td>8</td>
</tr>
<tr>
<td>5. Chemical</td>
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<td>6. Naval architecture</td>
<td>97 97</td>
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<td>7. Civil</td>
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<td>503 3</td>
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<tr>
<td>11. Building</td>
<td>131 3</td>
<td>136 2</td>
</tr>
<tr>
<td>12. Chemical technology</td>
<td>2 2</td>
<td>11</td>
</tr>
<tr>
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1. The report of the Secretary-General continues to be a very useful reference for persons in charge of training programmes and training facilities. There is much useful material scattered throughout the documents and many of the recommendations in paragraphs 101-103 remain pertinent.

2. Nevertheless, the documents written in 1963 for the most part are outmoded, particularly the statistical material, and cannot be the basis for any operational programmes. Nor are they the basis for replies to the three basic questions raised by the Executive Director of UNIDO. Too much has been written and published in the field of human resources development as applied to industry, even by the United Nations itself, to expend additional effort on the documents in question. For example, for the Industrial Symposium held in Athens in 1967, the International Labour Office prepared a book entitled Human Resources for Industrial Development.²/

3. In any further pursuit of the subject of training of national technical personnel for the accelerated industrialization of developing countries, UNIDO may wish to consult with the interested specialized agencies, including the ILO. If UNIDO has not already done so, it may desire to work with these agencies in developing an up-to-date bibliography on the subject.

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²/ International Labour Office, Studies and Reports, New Series, No. 71.