SUMMARIES OF CONCLUSIONS AND RECOMMENDATIONS

The seminar, after full consideration of the reports of group sessions, puts forward the following conclusions and recommendations for the consideration of Commonwealth governments and institutions, industries, the Commonwealth Secretariat, and other international and regional organizations.

Project One - Partnership: The National Framework

1. Enhanced co-operation between technical education and industry is vitally necessary to the efficient training of technical manpower, and is to be achieved through organizational structures that constitute a genuine partnership, are responsive to training needs and pay due regard to cost-benefit considerations.

2. Closely related to its central planning machinery, each country should have a national council for technical education and industrial training, to oversee such education and training at all levels and to ensure that it is relevant to the needs of industry. Such a council should be a statutory body, and its powers mandatory or advisory according to the policies and conditions obtaining in each country.

Its terms of reference should include:

(a) deciding or recommending general policy for technical education and industrial training;

(b) setting up (where they do not exist) appropriate boards and committees, eg. industrial training boards, apprenticeship boards;

(c) organizing such manpower planning and manpower surveys as are needed for the proper development of the system;

(d) continuous appraisal of the numbers and categories of persons trained, to guard against over- and under-training;

(e) setting, directly or by delegation, national standards to ensure the quality of training and related education;

(f) deciding or recommending the means of financing technical education and training.

Such a national council must be fully representative of government, of education (at official, institutional, and teacher association levels, with the possibility of student representation), of commerce and industry (at the levels of employers, employees, chambers or federations, and major individual enterprises), and of professional bodies. This representation should be reflected on subsidiary and associated bodies.

3. There should be legislation to provide for the implementation and control of co-operative training schemes (between technical education and industry), normally an Apprenticeship Act or Industrial Training Act. This legislation should be regulatory, promotional, and financial, and aimed at securing the right amount and the right standards of training. It should also provide that on-the-job training is the responsibility alike of government, quasi-governmental organizations, and the private sector of industry and commerce.

4. Bonding or a similar contractual arrangement binding on both parties should be introduced to protect the interests of both trainees and training establishments and to ensure that trainees receive appropriate on-the-job training and related technical education.

5. Apprenticeship, where at present confined to craft or trade training, should be extended to provide for the apprenticeship of technicians.

6. Expenditure on training should be shared equitably between government and industry, and the legislation should lay down a clear demarcation of financial responsibilities (which might be carried out through a levy and grant system). The financial resources of government should be directed towards generalized technical education and basic industrial training, including industrial training in transferable skills.

7. The roles of Labour and Education Ministries should be carefully defined so that machinery for co-ordination is built into them and no important education or training function is omitted.

8. Since science and technology have a decisive role to play in the social and economic transformation of society, expenditure on technical education should be regarded not as part of expenditure on the social services but as a separate commitment and an investment in development.

9. Group training schemes should be organized on a national or regional basis where technical and financial resources are limited or where units of industry are too small to provide the necessary training capacity or capability.

10. The principle of partnership should extend to the training of technical teachers, and as a financial incentive for senior staff development, places for Senior Industrial Fellowships should be endowed, in a manner similar to university professorial chairs, in order to place (a) senior practising teachers in industrial positions, (b) experienced specialists from industry in educational institutions.

Project Two - Partnership: Educational Institutions and Industry

1. The partnership between educational institutions and industry must be achieved through joint responsibility at all levels. At the level of the education and training process itself, educational establishments should be responsible for providing the basic skills and related science and technology, and industry for providing on-the-job training.

2. Advisory committees should include representation of industry, commerce, educational establishments, professional bodies, and government, and should advise on all matters relating to education and training, not simply on course content. Such matters should include the programmes and the management of institutions, staff development, public relations, and assistance to students.

In advising on course content, advisory committees should be guided by considerations of relevance, of economy (giving priority to needs common to many situations in industry), and of good articulation between various parts of a programme.

3. It should be a joint responsibility of educational institutions and industry to provide opportunities for the technician in employment to receive further education and training, (a) to up-date his knowledge and skill, (b) to diversify his field and extend it to supervisory or management skills, or (c) to raise the level of his qualification. Adequate provisions should be made to allow personnel to take advantage of such opportunities.

4. Technician education should ideally be provided not through full-time courses which are 100% institution-based, but through sandwich or block-release courses. Courses could range from industry-based courses of which two-thirds are spent in industry and one-third in an educational institution to institution-based courses, one-third in industry and two-thirds in the educational institution. Day release and evening courses are not in general recommended for initial technicians training because of the work situation and the demands on the individual, but are valuable, if well-devised, for upgrading and where there is no practicable alternative.

5. There should be continuous analysis of the functions and duties of technicians as a joint activity of industry and educational establishments, and training programmes should be organized and curricula designed on the basis of the data obtained.

6. Firms in the same industry should be encouraged collectively to sponsor technical institutions or departments of institutions, on the understanding that this does not limit them to providing courses which serve the immediate needs of the particular firms.

7. Full-time industrial training officers should be appointed wherever practicable. Their duties should include laying down training schedules and standards, liaising with educational institutions and with Ministries or Departments of Labour, visiting schools and offering career guidance, and advising on further education and training. Governments should assist in the development of industrial training officers by providing relevant courses in association with the training of technical teachers.

8. The main educational requirement for entry into technician courses should be successful completion of a secondary education course with a technical bias, with passes in the language medium of the country's technician institutions, mathematics, and a relevant science subject. Alternatively, the candidate should have successfully completed a craft apprenticeship and have his employer's recommendation.

9. Technical examinations should be assessed as to their suitability on the criteria of relevance, balance, validity, and reliability, and should match the real needs of the country.

10. The release as part-time teachers of personnel serving in commerce and industry should be widely encouraged to ensure the relevance of teaching to current industrial needs. They should be provided with induction and refresher courses as necessary, to develop their competence as teachers.

11. Staff development programmes for teachers serving full-time in technical institutions should be the primary responsibility of the institutions but should have the assistance of industry. This assistance should include (a) making available the services of industrial representatives to serve on staff development committees, (b) the provision of facilities for attachments, (c) the loan of specialists in a particular field, (d) the supply of information about new skills, machines and techniques.

12. Inter-visiting between technical institutions and industry should be encouraged at all levels, particularly at the level of industrial training staff and of heads of institutional departments and lecturers, but not excluding governors, directors, technicians, and students. The cross-fertilization to be achieved in this way could extend to working visits of, say, three weeks.

13. The evaluation of technician courses in operation should be mainly the responsibility of the educational institution, but industry should play a continuous part in it through visits, the day-to-day work of the industrial training officer, and representation on joint committees.

Project Three - Technical Education in an Industrializing Society

1. In most developing countries, the constraints on resources are such that new facilities for technical education should be provided on the basis of proven manpower needs related to the economic development of the country, and the preferences of individuals, though taken into account, should be subordinate to this consideration.

2. Similarly the improvement of the schools is, in most developing countries, a pre-requisite for the improvement of technician education, and the availability of a required facility in a neighbouring country should be explored before a decision is made to invest in a marginally economic technical institution rather than in the schools system.

3. Each country should have a well-co-ordinated overseas scholarship policy designed to meet its own manpower needs and care should be taken to ensure that the candidates' academic attainments are relevant, that they have the right personal qualities such as enthusiasm and perseverance, and that suitable positions will be available on completion of the scholars' studies. The maximum advantage should be taken of scholarships offered by national

authorities, international, charitable and industrial agencies, and bilateral aid agencies, but co-ordination of effort must be secured.

5. Although concentration must necessarily be on large and medium-scale industries, the needs of small-scale industries and of prospective entrepreneurs who will be self-employed should not be overlooked and special programmes for them should be developed where possible. The entrepreneur who is already self-employed and therefore unable to attend a regular course of education or training could also be assisted through the media of radio, television, and correspondence.

6. Career counselling should be available in schools from the age of 14 or even earlier in appropriate cases, and in technical institutions, to enable the individual to make a choice within the education and training facilities; and provision should be made for (a) training in counselling for at least some secondary teachers (b) careers talks by industrialists and technical educators, (c) "open days" and exhibitions in schools technical institutions, and industry.

7. To encourage young people to embark upon the rigorous discipline of technician education and training, the rewards for its successful completion should include salaries closer to professional salaries than those prevalent in most countries; improved conditions of service; and a more purposeful and positive approach by employers to promotion opportunities. In this way the status of technicians can and should be greatly improved.

8. The education and training problems posed by new developments affecting the Asian and Pacific regions and by new technologies associated with them should be recognized by the establishment at some suitable centre of a clearing house of information and ideas which would enable countries to co-operate by pooling information concerning solutions to problems, innovations, and research.

9. General studies should be included in all technician courses, to provide a broad background to industry and commerce and to assist the individual's development as a person, a citizen and a worker. General studies lecturers should be carefully selected, having regard not only to their educational qualifications but also to their enthusiasm, their personal relationships, and their ability to teach and to exploit all available resources for teaching and learning.

10. So far as the customs of a country permit, determined attempts should be made to remove the barriers and constraints that operate against the employment of women in technician and other middle-level occupations, and therefore against their education and training for such employment. Governments should ensure that there are no such barriers and constraints in educational institutions, including the schools.

11. In the planning of technician courses consideration should be given to the adoption of an interdisciplinary approach in appropriate circumstances. Teachers should themselves be trained in an interdisciplinary way, and exposed to diversified subject areas.

12. Technician education should aim, in its particular fields, at relevance, quality and standards that genuinely reflect the needs of the community. The desire to meet outside academic standards should not lead to any diversion from this primary aim.

Commonwealth and Regional Co-operation

1. Greater provisions should be made for awards for study visits between Commonwealth developing countries in the two regions with reference to industrial training in general and apprenticeship training in particular.

2. Participants of the seminar/workshop should act as informal points of reference on questions of technician education and training in their respective countries.

3. Support should be given to the adaptation and production of books and other instructional materials for the technician level of education and training.

4. Assistance in the form of specialist services on a regional basis should be made available to help develop specific schemes in technician education and training.

5. Greater efforts be made to compile and disseminate information and case studies of experimentation and innovation in technician courses and programmes.

6. Support should be given to assist staff development and exchange programmes for further training in Commonwealth countries in the regions.

7. Twinning and other forms of association between technical institutions in the regions should be encouraged in order to maximize the utilization of expertise and facilities.

8. Advantage should be taken of existing staff training colleges to organize regional courses to meet specific needs.

9. A Standing Conference of persons involved in technician education and training on a regional basis should be established to enable them to meet on a regular basis for finding solutions to common problems.

10. In organizing comparable seminar/workshops at sub-regional or national levels efforts should be made to ensure that apart from government institutions and departments, industry itself, together with staff of polytechnics with responsibilities for industrial liaison, staff from employers' associations, education secretaries of professional bodies etc., should be strongly represented.