SUMMARY OF DISCUSSIONS

Discussions were held in group and plenary sessions and led to the Project Two conclusions and recommendations set out on page 5.

The groups discussed the topics set out in the "seminar contents", and also selected points from the comprehensive exposition given by Dr Chandrakant in his lead paper and in his address presenting it to the seminar. They concentrated on practical methods of effecting a direct partnership between technical education and industry, in the first place in devising and providing integrated programmes of education and training for technicians. The general view was that the educational element should not normally be provided through full-time courses, but it was appreciated that geographical and industrial conditions sometimes made this necessary. A learning process which was 100% institution-based was not considered the best preparation, practically or psychologically, for technician employment in industry. Instead, delegates favoured sandwich and block release courses in which there was a real parallelism between the academic content and the content of practical training in industry. Day release and evening courses were not thought to be suitable for technician education; the latter in particular made too much demand on the young person after a day's work. Nevertheless, it was accepted that such courses if well devised were suitable for up-grading and up-dating purposes, and often the only practicable way of meeting them.

Much attention was paid to the emphasis placed by Dr Chandrakant on the need to ensure that the period in industry was carefully structured and closely supervised by a training officer who should himself be trained, qualified, and experienced. This implied a responsibility on management to provide the necessary facilities, with its financial implications; and a responsibility on government, in partnership with industry, to make public provision for the training of training officers. This could often be carried out in a technical teacher training college or department; although the roles and training needs of the technical teacher and the industrial training officer were different, they had a common concern with the teaching and learning processes and with other pedagogical aspects, and in some countries training colleges and departments were successfully training both categories. The seminar agreed upon recommendations on these lines.

The role of the training officer was considered in detail by the group concerned, which felt strongly that this role should not be confined to devising and operating training schedules and maintaining standards, but should include a more generalized function of liaison with technical institutions, with ministries or department of labour, and with secondary schools. In this last role the training officer should visit the schools and offer career guidance and advice on further education and training opportunities. This was endorsed by the seminar in plenary session.

Groups were often critical of the inadequacies of advisory committees and governing bodies whose composition did not include representatives of all the interests which ought to have a say in what is taught, and how, to whom, for what purposes, and at whose expense it is taught, in the technical institutions and their departments. One group went into the question of the role of advisory committeees in some depth, and its suggestions were also endorsed in plenary session. This role included a responsibility for ensuring that courses were relevant and well put together, and that priority was given to categories for which there was the greatest general need.

There were no agreed conclusions about the best methods of testing the standards reached by technician students. One group had looked at the level of entry into typical courses and considered that the three main educational requirements were successful completion of a course of secondary education with a technical bias, including the attainment of good standards in the language - medium of instruction in the country's technician institutions, in mathematics, and in a relevant science subject. Continuous assessment was called for, both of theoretical knowledge and of practical training; a modular construction for courses was favoured by some, though a few thought that modules, while suitable at the craft level and for technician up-grading purposes, were not suitable for technician courses generally; but recognised that the credit unitary system was finding favour in UK polytechnics and in the Hong Kong Polytechnic. There was general agreement that final examinations for technicians were needed, in the interests of all concerned. Most delegates reported that their countries were moving away from overseas examinations to locally-set examinations which had a more detailed relevance to their requirements. But the point was made that in many branches of technology requirements were of universal validity, and little modification to the content of syllabuses and examinations that had been found right in developed countries was needed. There were merits on other grounds in having national and/or institutional examinations and awards, and it was often appropriate to adopt or adapt the syllabuses and examination of the overseas examining bodies. It was noted that some of these bodies gave their active co-operation to the transfer of examining responsibilities into local hands and provided training in the theory and techniques of examining. The main objective was agreed to be the relevance of examinations to the real needs of a country, and the seminar recommended accordingly.

No-one thought there was enough coming and going between technical education and industry, and it was agreed that visits in both directions could stimulate partnership at all levels. Company directors for example could both provide and derive support through visits to technical institutions, and the principals or directors of those institutions through visits to industry; there were many things for both sides to observe, to give and take, and to decide. Similarly teachers at all levels must visit industry to keep in touch and up to date with its policies and practices and technologies, and technicians working in industry can provide background and detailed information to students and teachers alike.

Such visiting could extend to longer periods, of say three weeks, during which a teacher might do a job in industry, and vice versa. It was agreed that the cross-fertilization that could be achieved in this way should be strongly encouraged. But the seminar was also emphatic that the process of providing the technical teacher, and particularly the technician teacher, with industrial background and experience should start much earlier; that no initial course of technical teacher education was complete without periods

of both practical training and practical experience in industry; and that this experience should be renewed from time to time throughout a teacher's working career. Indeed, his career prospects should be advanced in this way. Groups were convinced that technical education and industry had a joint role in staff development that was not sufficiently widely appreciated. Industry also had an additional role that it could play with advantage to both sides, and that was the provision of part-time teachers. This would help to ensure that teaching was relevant to what was going on in industry at the particular time, and to bring students closer to the world of work. Part-time courses for part-time teachers should be provided where possible.

Emphasis was placed on the responsibility of industry for providing opportunities for the further education of a technician. Purposes served would include the up-dating of his knowledge and skill; the diversification of his field of training, and its extension into supervisory and managerial functions; and occasionally the up-grading of his qualification. Delegates also considered that industry should co-operate in the provision of opportunities for continuing education, whether to provide a broader understanding of the industrial background or of a more general nature.