The report of the Working Party on Training and Education was circulated to the Management Committee (CERN/SPC/154) and several comments were received. It was then discussed with the Scientific Policy Committee on 3 March and, as a result, the enclosed paper has been produced as a draft for eventual submission to Committee of Council and Council. Before then, it will be discussed at the Management Committee on 3 May.

This document was never distributed either to the Committee of Council or to the Council.

It is superseded by CERN/446.

Never translated into French.
TRAINING AND EDUCATION AT CERN

After having discussed the report of our Working Party with the Scientific Policy Committee, we would like to propose the following measures to be taken in order to improve the training and education facilities at CERN.

These proposals for the immediate future fall short of the recommendations of the Working Party. The reasons for this are twofold. One is the critical shortage of experienced manpower at CERN and in Europe. The people who are able to give useful courses are exactly those who are essential for our present research and construction programme, and therefore are under a heavy load already. The hiring of additional staff for that purpose is next to impossible not only because of budget limitations but also because they cannot be found easily. The second is the fact that a reasonable training and lecture programme must grow: in order to avoid grave mistakes which would jeopardize the whole venture, we must start on a relatively modest scale and re-examine later the possibilities of further expansion. The present proposals are for the immediate future and imply preparations for training during the coming school year (October, 1962?).

The problem falls definitely into two rather separated parts. One is the training of technicians (this term is meant in a wider sense and includes operators, foremen, mechanics). The other is the training, on an academic level, for scientists and engineers.

As far as the first category is concerned, we are aiming at training which is directed towards skills that are needed in the work at CERN. We do not wish, at present, to offer opportunities of general education, i.e. of the kind that would be available as basic courses in technical training schools. We would propose to organize courses on such topics as:

- Transistors
- Vacuum Technology
- Computer programming
- Solid State Devices

but not in general:

- Physics
- Industrial Drawing
- General Electronics, etc.

The repetition of the course on CERN physics for non-academic personnel would also be recommended.
In these courses (with the exception of the last suggestion) it is recommended to have regular examinations and some kind of document should be given to the person who has passed the examination, so that he can use this for future job applications. It is not the intention, however, to prepare the candidate either for future jobs, or for some outside examination. Our aim should consist only in making the man more useful for CERN. This implies, of course, that success in one of our examinations would be taken into account in considering future promotions.

The courses will take place during (possibly half inside - half outside) working hours, so as to ensure full and regular attendance. The course and the examination will assume supplementary work to be done outside working hours.

For lecturers, the work involved will be regarded as part of their normal CERN duties.

The emphasis on specialized training for CERN purposes should not exclude the use of general training facilities in Geneva. CERN will study the possibilities in the city and encourage its employees to use them by special arrangements.

The question of recruiting young technicians as apprentices and training them in CERN is still open and was not discussed in detail.

The carrying out of the programme thus delineated does not seem to require a full-time officer. It probably needs one senior man half-time with secretarial help.

We now come to the second category, the courses at an academic level. Here we should mainly aim at a small post-doctoral school in high-energy physics. The selection of courses should be accordingly. Courses should be given, for example, in field theory, scattering theory, strange particle and weak interaction physics; seminars on fundamental concepts; courses on high-energy experimentation and detection equipment; accelerator theory and design, etc. It should, however, not include topics such as electro-magnetic fields, quantum mechanics, thermodynamics, that is topics of very general nature which are usually given at post-doctoral level.
We shall run into similar difficulties as with the technicians' training programme in regard to the availability of teachers. This is why the beginning of this post-doctoral school must be on a modest scale. We envisage for the next school year a 50% increase in the number of theoretical courses and seminars held at present and to run one course on more practical subjects. We hope, however, that there will be a systematic organization of these courses and also we plan to introduce a system of examination for some courses.

In addition to these academic courses we would like to expand and encourage the use of CERN as a place to perform work towards a Ph.D. Degree at a University in a Member State.

Since many Member States have no opportunities to perform experiments in high-energy physics, it seems natural that a University would, from time to time, send a student to CERN in order to work on a thesis in this field under the supervision of a CERN staff member or visitor who has some connection with the home University.

This procedure has been carried out a few times already, and we would like to extend it to more Universities as a service of CERN which could be of benefit both to CERN and to the Member States.

An expansion of our academic lectures and seminars also would require for its organization about half of the time of a staff member. The secretarial work would be carried by the same office which does the technicians' training programme.

We therefore propose to establish an office for the administration of both training programmes, consisting of two staff members, serving half-time, with the necessary secretarial help. We also propose to nominate an advisory committee to support and advise this office. It should contain three members, one "academic" physicist, one engineer or applied physicist and one member acquainted with personnel problems.