

The European Organization for Nuclear Research (CERN) came into being in 1954 as a co-operative enterprise among European governments in order to regain a first-rank position in nuclear science. At present it is supported by 13 Member States, with contributions according to their national revenues: Austria (1.96%), Belgium (3.85), Denmark (2.09), Federal Republic of Germany (22.86), France (18.66), Greece (0.60), Italy (10.83), Netherlands (3.94), Norway (1.48), Spain (1.68), Sweden (4.25), Switzerland (3.20), United Kingdom (24.60). Contributions for 1964 total 107.2 million Swiss francs.

The character and aims of the Organization are defined in its Convention as follows:

'The Organization shall provide for collaboration among European States in nuclear research of a pure scientific and fundamental character, and in research essentially related thereto. The Organization shall have no concern with work for military requirements and the results of its experimental and theoretical work shall be published or otherwise made generally available.'

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The cover photograph, more typical of the season than of high-energy physics, is nevertheless part of CERN. It shows the winter's first covering of snow on the lawns and some of the trees in front of the restaurant, enhancing the view across the Geneva countryside towards Mt. Salève.

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Roger Anthoine

Editor:
Alec G. Hester

Assistant Editor:
Frédéric C. Maurer

CERN, 1211 Geneva 23, Switzerland
Tel. 41 98 11

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Last month at CERN

The proton synchrotron

The second of the major **shut-down** periods planned for the proton synchrotron this year was from 1-26 November. As usual, this time was devoted to work on the accelerator that, in general, cannot be carried out conveniently during the three-and-a-half days each fortnight between each run for experiments. Such work includes modifications to the machine, installation of new equipment and major changes of beam lines, in addition to routine maintenance. Unfortunately, space and time do not allow a full account of the activity during this latest period; suffice it to say that the programme issued in advance ran to more than thirty pages.

Among the **beam changes** carried out this time were the dismantling of the o_3 and d_{17a} beam lines, the construction of d_{18} and d_{18a} (in the South hall), w_1 (in the East hall, for the 2-metre bubble chamber) and part of o_7 (also in the East hall) and the installation of a new 3-metre separator instead of the former 6-metre one in the k_4 beam line.

During this time, also, the Lagarrigue group and their **1-m heavy-liquid bubble chamber**, from the **Ecole Polytechnique, Paris**, left CERN for Saclay, where they will carry out experiments at the 3-GeV accelerator 'Saturne' during the next few months. Since its arrival at CERN in July 1960, this chamber has provided some 3 million photographs for many different experiments. It is expected to return here in the second half of 1965.

On 24 November the whole of the MPS Division **fêted the fifth anniversary** of the first successful operation of the

synchrotron at its design energy of 24 GeV (see *CERN COURIER* no. 4, November 1959). Included in the programme were speeches by J. B. Adams, under whose guidance the accelerator came into being, P. Germain who became leader of the Division in 1961, and Prof. V. F. Weisskopf, CERN's Director General. A fascinating display involving three slide projectors, a ciné projector and synchronized tape commentary presented the history of the PS from the days when cows roamed the fields on which it now stands to the current projects for storage rings and other additions and improvements.

The same day saw a reunion of the former 'parameters committee' of the PS, the senior scientists responsible for the major points of its design, providing an occasion for those now scattered in various institutions throughout Europe to meet again with their former colleagues at CERN.

It was presumably only a coincidence, but the jubilation was cut short in the following two weeks by a succession of breakdowns and other difficulties that reduced by more than a quarter the time that could be used for physics experiments during the first period of running after the shut-down.

Nevertheless, good use was made of the time that was available, particularly by groups setting up or testing new apparatus. In the East hall, the experiment on proton-proton elastic and inelastic scattering, now running with the **SDS 920 computer 'on-line'** (see *CERN COURIER*, vol. 4, p. 104, August 1964), continued to collect data at a much faster rate than previously.

Health Physics contributions to International symposium

From 23 to 27 November a number of members of the CERN Health Physics Group, led by its Head J. Baarli, took an active part in the **International symposium on the dosimetry of irradiation from external sources**, held in

The editor and assistant editor of CERN COURIER, and everyone else in the Public Information Office, send their best wishes for 1965 to all readers.

Paris under the auspices of the French section of the Health Physics Society. The Congress brought together several hundred specialists in dosimetry from all parts of the world, the discussions being divided into three main sections covering theoretical aspects of dosimetry, methods and apparatus, and the results of dose measurements carried out under various conditions.

The participants from CERN presented a number of papers in all three sections, dealing mainly of course with the special problems arising in the dosimetry of high-energy radiation. A. H. Sullivan spoke on the theoretical aspects of possible methods for the direct measurement of 'dose-equivalent' for different kinds of radiation. During a session on special problems, at which the chairman was J. Baarli, J. Dutrannois spoke on the particular problems of using nuclear emulsions for personnel dosimetry at high-energy accelerators, T. Overton presented a paper by K. Goebel on the role of activation detectors in high-energy particle dosimetry, and S. Charalambus reported on a study of the dose-rate at the surface of materials activated by the CERN accelerators. Finally, in the session dealing with radiation control, A. Rindi spoke of the risks arising from the activation of the CERN 600-MeV synchro-cyclotron, and J. Baarli discussed the radiation protection of the CERN laboratory and its surroundings during operation of the accelerators.



Scene in the main control room of the proton synchrotron during the shut-down. With the development of new techniques in recent years, the adjoining counting room has been used less and less whilst the amount of control equipment for the accelerator has grown. A convenient solution has been found by removing a partition and incorporating one bay of the counting room into the control-room area.

CERN FORTRAN

As mentioned in the article on CERN computers last June (*CERN COURIER*, vol. 4, pp. 73-77), various 'automatic programming languages' have been developed in recent years to simplify the preparation of the sets of instructions (or 'programmes') required for the solution of each specific problem on a computer. These languages were a big step towards simplifying the task of preparing long programmes, but a

change of computer, especially to one from a different manufacturer, still meant that a considerable number of alterations had to be made to the programme. In particular, this left a number of problems in the exchange of computer programmes between CERN and other laboratories collaborating in the same experiment.

In November, however, 'CERN Fortran' was announced by CERN's Data Handling Division. This is a new programming language, developed as a result of discussions within CERN and a meeting of representatives from various bubble-chamber groups held at the Weizmann Institute of Science, in Israel, last May. It is a version of the Fortran series, allowing programmes to be run with only minor modifications on computers that otherwise use Fortran IV (IBM 7090/94, IBM 360 series, Univac 1107) or Fortran 63 or 66 (CDC 1604, 3600 and 6600). Considerable work has been done in CERN in recent months to convert large programmes into the new language and test them on both IBM and CDC computers. This experience has shown that, correctly used, CERN Fortran goes a long way towards making programmes easily interchangeable between these computers, and it has been adopted for all programmes to be used on CERN's new computer, the CDC 6600.

The language has been described in the **CERN Fortran Manual**, which can be obtained from the Computer Documentation Service, Data Handling Division, CERN, 1211 Genève 23, Switzerland ●

Because English and French are the official languages of CERN, and because the translation of every item in CERN COURIER from one language into the other already leads to sufficient trouble, many readers have unfortunately to be content with a journal that is not of their own tongue. As a very slight recompense for some of them, the following contribution, alluding to the literal translation of the word 'antiparticle', is included in its original German form; others may like to amuse themselves by producing their own English or French versions.

DIE GROSSE LAMENTEI

Schönheit vergeht :

Denn neben jedem Veilchen
wächst schon sein Gegen-Veilchen.

Zeit auch verweht :

Denn neben jedem Weilchen
bläst schon sein Gegen-Weilchen.

Raum auch zergeht :

Denn neben jedem Meilchen
läuft schon sein Gegen-Meilchen.

Ding auch zerweht :

Denn neben jedem Teilchen,
Ach Gott, da hockt sein Gegen-Teilchen.

Gegenteilchen
enteil-chen
Teilchen
Eilchen...

Gertrude Weisskopf