

CERN

PUBLISHED MONTHLY FOR CERN STAFF MEMBERS
(European Organization for Nuclear Research)

N° 2
September 1959

Last month at CERN

It seems to be getting quite a habit for the proton synchrotron to provide the most important CERN news every month.

On 24 August a 50 MeV particle beam was obtained at the output end of the last of the three linac cavities. Final energy of the linac was thus reached.

That evening the accelerated proton current reached half a milliamperere. Tests made at night — maximum energy is only produced at night so as to avoid unnecessary radiation hazards for the staff — have since made it possible to increase this figure to nearly 5 milliamperere. This is almost the maximum beam intensity for this part of the machine. The beam then passed through a port in the radiation shielding wall at the end of the linear accelerator room.

Further on, the proton beam entered the inflector, which should be completely installed by the middle of September.

The purpose of this device is to bend the beam emerging from the linear accelerator into the 100 m radius orbit of the proton synchrotron ring. In addition, the inflector gives the 50 MeV beam the optimum shape and characteristics for use in the big circular accelerator.

After final adjustments have been made on the inflector, the beam will enter the synchrotron vacuum chamber for a distance of about 15 to 20 magnet units. This distance corresponds to what

is known by scientists as a "betatron wave length" and will allow careful study of the behaviour of the beam after it has been injected into the proton synchrotron proper.

Simultaneously, the beam may be directed into the circular vacuum chamber to make one or more complete revolutions. During this preliminary test, the beam will not be accelerated.

All this is planned for September. In October, all the components of the radio frequency accelerating system will have been assembled. The beam will probably be accelerated for the first time at the end of that month.

The running-in period will follow. This may perhaps end with the announcement of a high energy beam before the end of 1959. In the opinion of those concerned, this will however be the critical period. Although it may be relatively easy to design the components of a machine, test them separately and assemble them, it is the perfect running of the machine as a whole that always gives the most trouble.

Of course,

there is a precedent — the energizing of the electromagnet — when a whole system was brought into regular operation without any major snags. A magnetic field corresponding to the maximum energy of the accelerator, 25 GeV, was obtained. Apart from some details needing adjustment, only one addition will be necessary: in the interphase transformer assembly.

While on the subject of corrections, some readers have been kind enough to assist an absent-minded proof-reader... Thanks to their eagle eye two misprints have been spotted in the French edition of our first issue.

It is certainly rather incongruous to have reduced the CERN site to a tenth of its actual area. The Organization will run much better if it is restored to its original size of about 41 hectares.

Also — and the reader will probably have corrected this himself from the context — the final energy of the proton synchrotron should have read 25 000 million electronvolt and not 25 million.

To err is human... as they say.

On 27 July, the PS electromagnet was energized for the first time. This view of the magnet power supply control room shows M. Georgijevic, E. Ratcliff, J. B. Adams and F. Grütter, a few minutes after the first test. An account of the PS electrical tests appears on page 3. (CERN photo)

