

CERN Courier Archive: 1969

A LOOK BACK TO CERN COURIER VOL. 8, MARCH 1969, COMPILED BY PEGGIE RIMMER

COMMENT

Opening up the Particle Zoo

In 1935 Julian Huxley was elected Secretary of the Zoological Society of London, with responsibility for the London Zoo. He opened the doors of the Zoo to the public and the number of visitors rocketed. This helped to generate an awareness and love of animals which may well have been vital in providing a climate of opinion in which wild-life conservation schemes could be promoted and get political backing.

Huxley's policy did not go unopposed. The more conservative zoologists resented the public intrusion into what had been virtually exclusively their domain and they manoeuvred Huxley out of power in 1942. But by then the doors of the Zoo could not be closed.

Particles are not as accessible as animals but it is possible to get across much of the fascination of particle physics. There is almost a moral obligation to open the doors of the Particle Zoo to the people who pay for the research.

But perhaps a more telling argument is one of self-interest. At present there are indications of a widespread and growing disenchantment with science and a rapid drift away from science among young people. Another sensitive sign is the declining amount of space given to science by newspapers. Political decisions and budgets often reflect situations like this. Unless scientists are prepared to come out of the ivory tower onto the soapbox they may find out too late that the foundations of the tower are crumbling.

● Compiled from texts on pp62–63.

SACLAY

Superconducting coil

At the end of February a large superconducting coil (called BIM) was operated at Saclay. It may eventually be incorporated in experimental equipment but its initial purpose is to confront the problems of construction and operation of large superconducting coils.

The coil is in two halves each 0.4 m high, with an internal diameter of 1 m and external diameter of 1.3 m, separated by a gap of 0.2 m. The superconducting ribbon, 10 mm wide by 1.8 mm thick, is made of niobium-titanium filaments (about 0.25 mm in diameter) embedded in copper. It is coated



The large superconducting coil (BIM) being operated at Saclay to gain experience in superconductivity techniques.

with epoxy 50 μm thick to withstand 1500 V while still allowing good heat conduction.

The coil is designed for a critical current of 1750 A. During tests, which began at the end of February, the current was raised without problem to 1360 A – corresponding to a magnetic field at the centre of the coil of

36.5 kG and a stored energy of 8.5 MJ. At this current a low resistance appeared in a section of the coil (involving about 30 m of ribbon). This ‘normal’ zone did not spread to the rest of the coil and the superconducting state could be completely recovered by slightly reducing the current. Further tests are under way to correct the fault and to push the performance higher.

● Compiled from texts on p76.

ILLINOIS

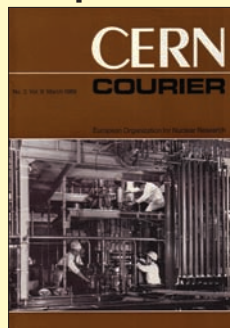
Superconducting microtron

At the 1969 Particle Accelerator Conference at Washington in March, the design of a 600 MeV superconducting microtron for the University of Illinois was presented. The machine, intended for nuclear physics research, involves several novel features.

The first stage of the project is a 30 MeV superconducting electron linac. The main advantage of superconducting machines for physics experiments is the high duty-cycle (the percentage of time for which the machine is providing particles) made possible by the dramatic drop in power consumption. In some cases, duty-cycle is more important than beam intensity. Compared with a conventional linac duty-cycle of about 0.2%, Illinois will have 100%. Tests are underway with single lead and niobium cavities to find a satisfactory method of fabricating and assembling superconducting cavities into a linac.

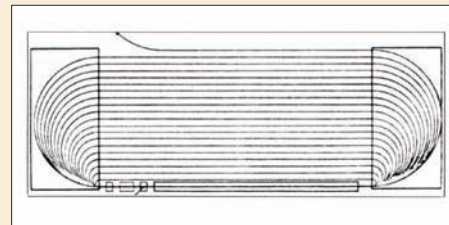
● Compiled from texts on pp78–79.

Compiler's Note



Well, particle physicists have certainly come out of their ivory towers. Media headlines regularly feature Higgs bosons, speedy-neutrinos and all that they entail; even the

$X_b(3P)$ made it. The opening salvo of a recent *Times* (UK) editorial on CERN's political as well as scientific achievements indicates how times have changed: “At a time when more than half a century of European co-operation may seem to be in peril, those in need of some good cheer would do well to raise their eyes from Brussels and look south to Geneva.” Let's hope that this kind of publicity prevents scientists from becoming an endangered species.



Schematic diagram of the 600 MeV racetrack microtron. The boxes at each side represent magnets, about 7 m apart, bending the electrons back to pass a total of 20 times through the 30 MeV superconducting linac, represented by the long thin rectangle at the bottom. The magnets will be about 3 m wide and have slots of a few centimetres aperture between the pole faces where the beams travel.

