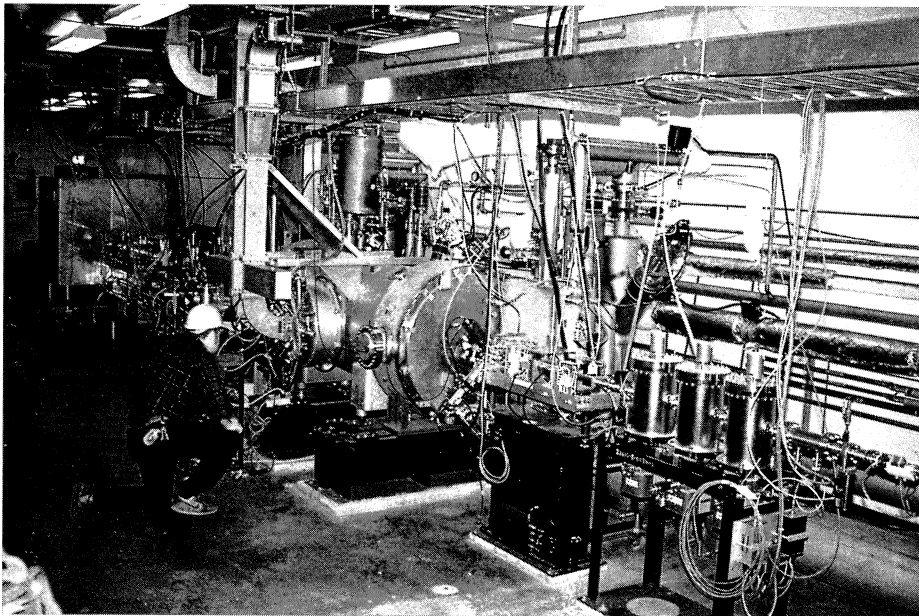




Initial superconducting equipment is now operational for the Continuous Electron Beam Accelerator Facility (CEBAF), Newport News, Virginia. This 5-MeV injector section – electron gun cage (rear), room-temperature section, 5-MeV quarter-cryomodule – with its two superconducting cavities, operated in the tunnel on 30 March. Not shown is the 20-MeV cryomodule downstream which reached 25 MeV in April.

portion of the CEBAF injector.

First superconducting acceleration in the tunnel had been achieved on 30 March, when successful operation of the injector's initial 5 MeV quarter-cryomodule, equipped with a twin superconducting cavity, began CEBAF's injector systems test of permanently installed components.

Detailed measurements are being made of electron beam properties as the test's 25 MeV phase continues. With the addition later of a second cryomodule, the test will proceed to 45 MeV, the full CEBAF injection energy.

Injector systems are nearly identical to those being prepared for the full 4 GeV recirculating accelerator.

DESY HERA pause

After an initial taste of protons (May, page 27), commissioning of the 6.3-kilometre HERA electron-proton collider ring at the DESY Laboratory, Hamburg, switches to electrons. In parallel, the quench protection system for the super-

conducting proton ring will undergo high current testing.

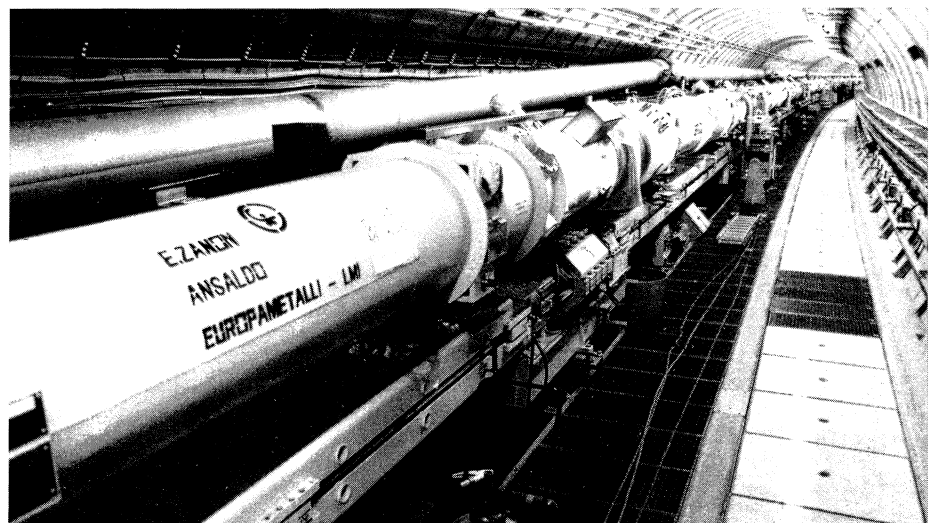
During the initial proton run, single 40 GeV bunches regularly coasted round the superconducting ring for some 30 minutes.

These protons originate from the 50 MeV linac, supplying 6 mA of negatively-charged hydrogen ions which are stripped of their electrons before injection and accumulation in the DESY III proton machine, where about half of them survive being ramped to 7.5 GeV.

The next link in the injector chain is the PETRA ring, where 70 bunches at 10% of design intensity have been stored and taken to 40 GeV, ready for HERA injection. But these are still early days.

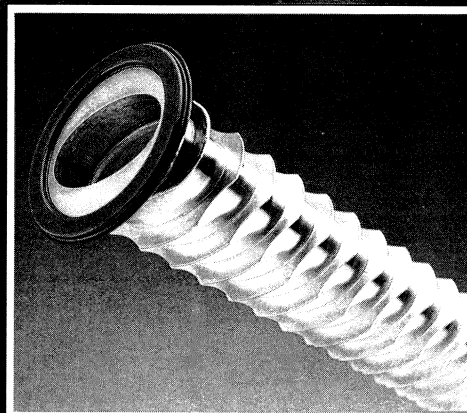
The electron ring was ramped to 27.5 GeV in November 1989. For its next run, it will have a damping system, similar to that used in PETRA, and 16 four-cell 500 MHz superconducting cavities to boost the electrons to 30 GeV.

After initial tests with protons in the superconducting ring (above), commissioning of the 6.3-kilometre HERA electron-proton collider ring at the DESY Laboratory in Hamburg switches to electron beams.



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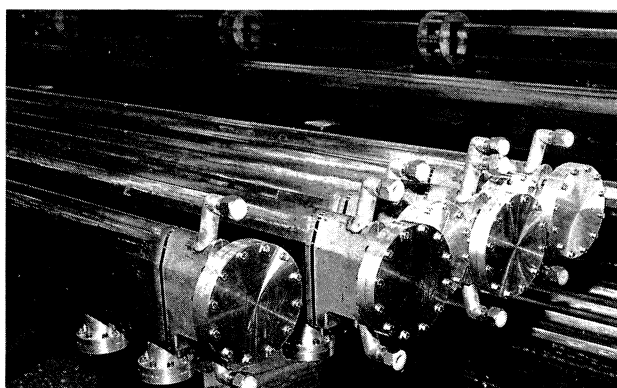
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- the LEP-ring at CERN, Geneva, made of lead with metallic bonding to the aluminium chambers
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