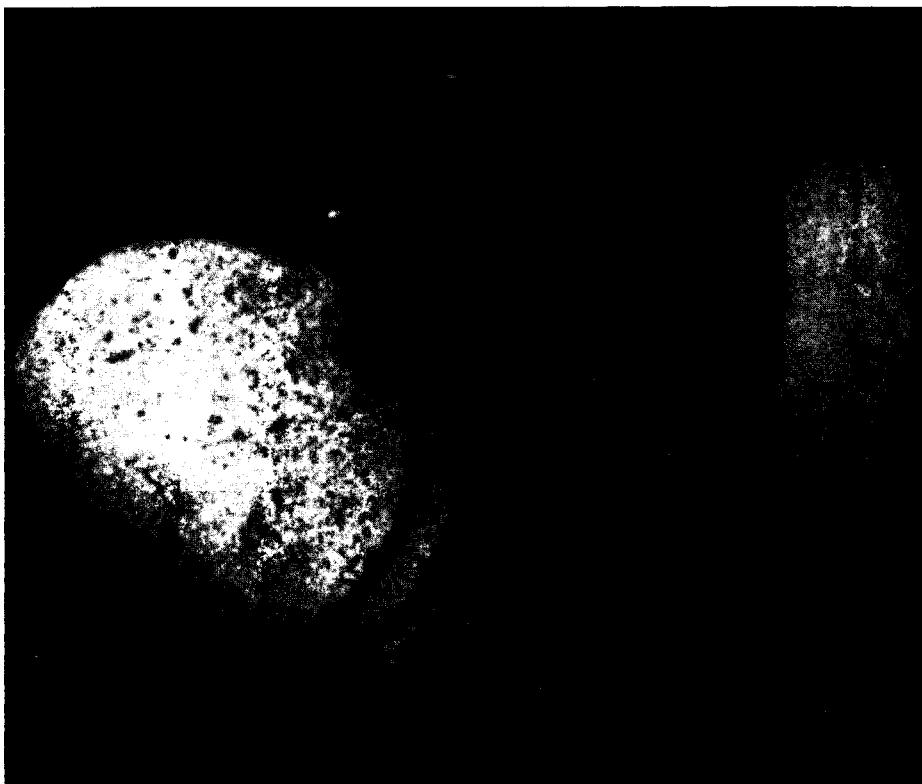


The first tests with the hyperon bubble chamber HYBUC (see vol. 10, page 353) filled with liquid hydrogen began on 16 December. The aim was to check the hydrogen filling procedures and the thermodynamic properties of the chamber with the expansion system in operation. A fair amount of nitrogen crept in with the hydrogen and a heap of nitrogen 'snow' meant that conditions were far from clean.

Nevertheless the temperature regulating and expansion system worked well and the hydrogen volume was made sensitive with a static pressure of 5 atmospheres and a pressure swing of 3 atmospheres. The expansion pulse width was 15 ms. For fun, a cobalt radioactive source was brought alongside to give gamma rays into the chamber and electron tracks were detected as well as an occasional cosmic ray.

The photograph is blown up from a polaroid. It is fogged in the lower part by the nitrogen snow but this is not a serious problem. Production of an electron pair can be seen. The chamber is now being cleaned up and further tests will be carried out shortly. The next big event is the expected arrival near the end of January of the superconducting magnet from the USA which is designed to produce a field of at last 11 T in the hydrogen volume.



The Instrumentation Group of the Track Chambers Division has carried out a series of tests to evaluate the use of a laser beam in an automatic film measuring machine. This type of device has been developed particularly by a group at Cambridge University who have christened it 'Sweepnik' (see vol. 9, page 206). Special lens and prism arrangements produce a tiny rotating line of light which is swept over the film to search for tracks.

In the CERN tests a helium-neon laser, with a strength of 1 mW, produced a continuous beam of light. In the photograph the laser is on the left and the light beam is initially vertical and then bent horizontal to the right where it is formed to give a thin line 1 mm long and 5 μ m wide which is made to rotate over small areas of the film (the film plane being top right) by means of small plane parallel spinning glass plates. The film can be displaced along x and y directions, so that the line can cover all interesting regions of the film. Plans for future developments (which it is not now intended to carry out) were to control these movements by a small on-line computer in order to follow tracks automatically.

A particular advantage of this type of device is that, thanks to the high intensity of the laser beam, a high signal-to-noise ratio is achieved, making it possible to follow feeble tracks on low-contrast film. Due to the philosophy of the track-following procedure, first developed in Sweepnik, only modest on-line computing facilities are required.

