

# Rutherford Laboratory

## Technical Leaflet

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E3

### ELECTRONICS AND INSTRUMENTS SECTION

The aim of this Section is to provide a comprehensive service in electronic engineering to the Laboratory, it includes engineering design, development, manufacture, calibration and maintenance. A small instrument loan pool is also provided.

During the construction of NIMROD much of the equipment produced both by private industry and in our own workshop was for the accelerator and although this type of equipment is still required, for example, in local control rooms to control specific experiments, there is now a greater emphasis on relatively large quantities of specialised counting equipment for beam experiments. They are often required at short notice as experimental requirements on the Laboratory's accelerators change.

The workshop specialises in making proto-types and special equipment while a high proportion of the numerous electronic chassis required by the Laboratory are produced by private industry and the Section contains a small group to deal with this aspect.

The display illustrates the stages in the design and manufacture of a typical counting equipment required very quickly. Much of the work concerns high power equipment and thus a portion of the Sections work is concerned in the development and manufacture of such equipment. Typical items produced are two fully engineered 50 kW audio amplifiers used for ripple correction on NIMROD coils, electronic controllers for various rotating plants, radar type modulators, radio frequency amplifiers, etc. The 500 amp current stabiliser illustrated (Figures 1 and 2) has a current stability of one part in a hundred thousand. It was designed and made in eight weeks, and is used in conjunction with the polarised proton target.

The development laboratory is generally engaged on equipment of the industrial electronics type such as precision temperature controllers, stabilised supplies, etc. As much of the work is concerned with servo systems the development laboratory has a Pace TRIO analogue computer and a rudimentary analogue computing service to the Laboratory is provided, a typical problem is displayed.

The Section is also responsible for electronic and physical instrument maintenance throughout the Laboratory and this is supported by a small standards and calibration room which also provides a general service as required.



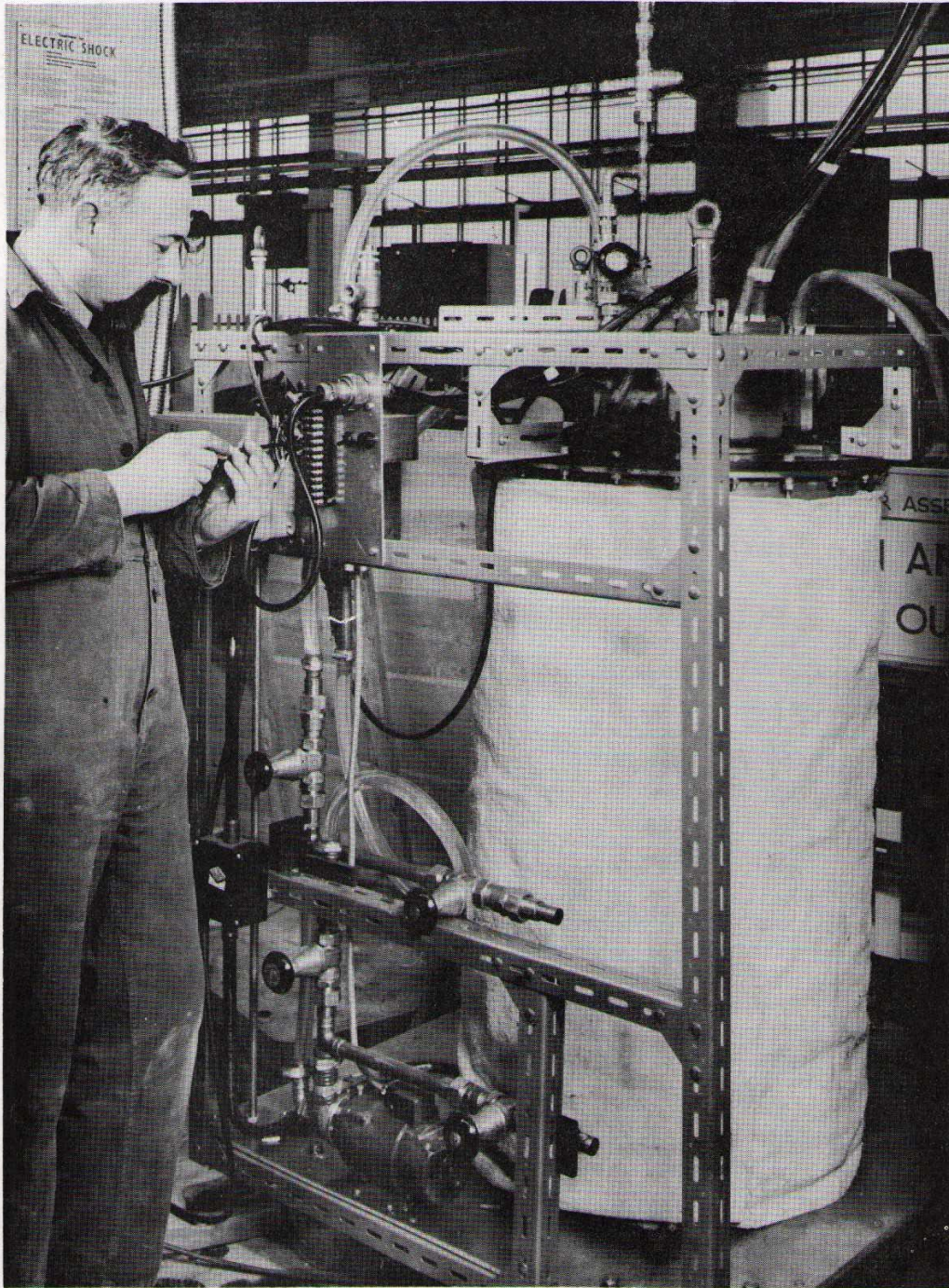


FIGURE 1. SHUNT FOR STABILISER



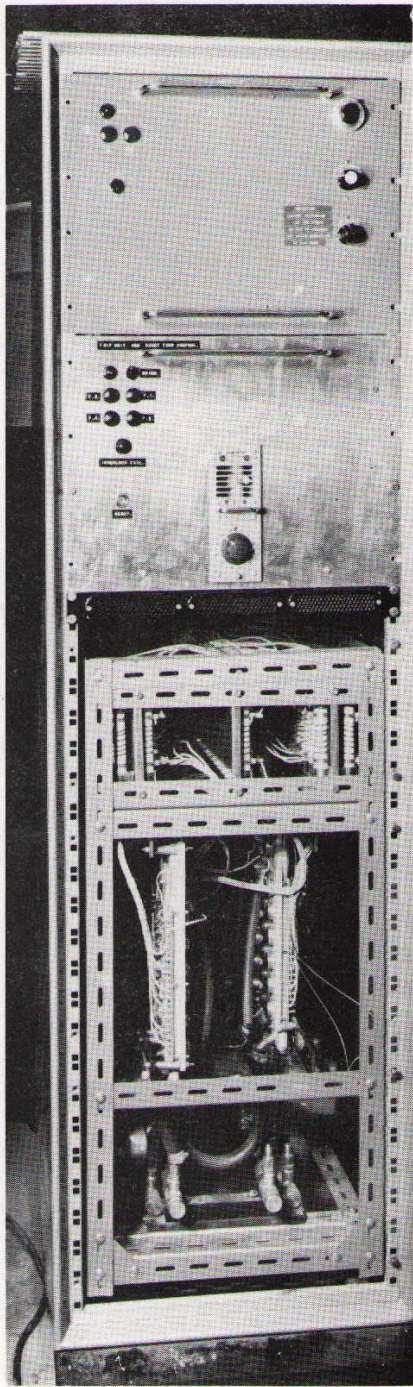


FIGURE 2.  
FRONT OF STABILISER PANEL

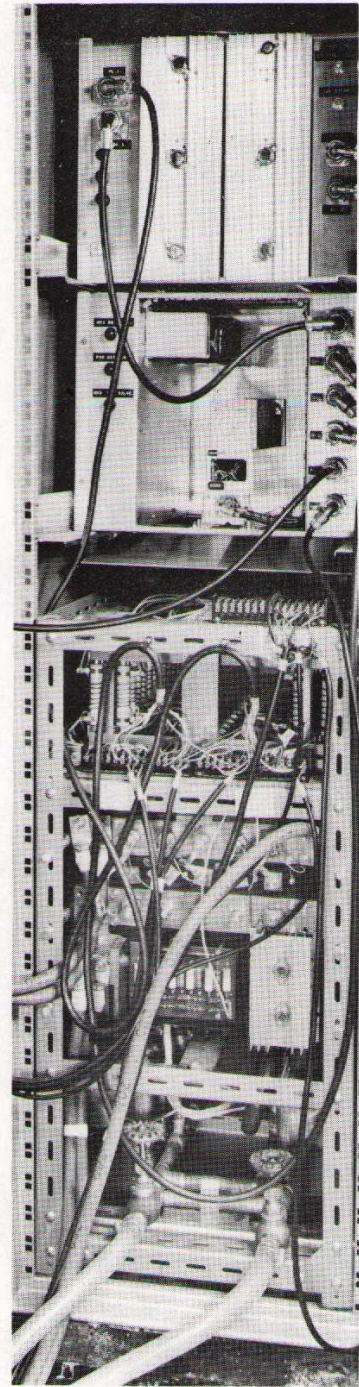


FIGURE 3.  
REAR OF STABILISER PANEL