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**Autor:** Craddock, M.K.  
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Supplementary note by M. K. CRADDOCK

**The Polarized Proton Source for the Harwell Proton Linear  
Accelerator**

15 March 1961

A polarized beam has been successfully accelerated to an energy of 30 MeV. The polarization and the proton intensity obtained depend somewhat on the adjustment of the source. At the maximum polarization measured ( $0.31 \pm 0.02$ ) the proton intensity was  $1.5 \times 10^7$  per second. At the maximum intensity ( $6 \times 10^7$  protons per second) the polarization was  $0.216 \pm 0.004$ . It is now known that when these measurements were made the transmission factor of the accelerator was 30% below normal; so in future experiments, a corresponding improvement in the proton intensity can be expected. In addition to the statistical error quoted, the measured values of the polarization have an uncertainty of  $\pm .01$  due to the uncertainty in the value used for the polarization efficiency of the analyser.

The measurements of BROCKMAN and YAMABE of the polarization ( $P_2$ ) in elastic proton scattering from carbon at 15.9 MeV were used to determine the beam polarization ( $P_1$ ) in an asymmetry measurement ( $\epsilon = P_1 P_2$ ). After suitably degrading the energy from 30 MeV the protons were scattered at  $45^\circ$  and detected by two double coincidence scintillation telescopes placed to the left and to the right of the incident proton beam. The telescopes were not moved during the experiment, but the direction of polarization of the beam was changed by reversal of the magnetic field across the ioniser with a switch in the Control Room. Background counting rates were less than 1 part in 1000.