A new survey of radio sources at 151 MHz, which has not been described previously, is in progress at Cambridge. There are several of us working on it including Warner, Kenderdine, Waggett, Masson and Mayer. The results of the first observations are at present in a preliminary state but we hope that in time they will form the first part of the 6C survey. The purpose of the survey is not to reach the faintest sources detected so far in aperture synthesis observations but to study moderately faint sources at a low observing frequency and to cover a large part of the northern sky rapidly. The deepest survey made so far at a low frequency is that of Ryle and Neville (1962) at 178 MHz over a region of 50 square degrees near the north celestial pole. The faintest sources detected had flux densities of 0.25 Jy, corresponding to a source density of $10^4$ sr$^{-1}$. It is already 15 years since that survey, which was the first trial of aperture synthesis using the earth's rotation, and much more is now technically possible. One of the most interesting features of a low frequency survey is its ability to detect preferentially sources with steep radio spectra and to be sensitive to sources of very low surface brightness. We know that in many cases these two properties go together and are associated with old radio sources, or at least with those parts of sources which are old. Many of the weak radio galaxies in nearby clusters are obvious examples of this type of source while the final, and so far unidentified, stages of the development of the most powerful double sources may be exciting candidates for discovery.

The telescope on which the survey is based is an east–west earth rotation synthesis instrument. It differs from other telescopes of this type in the low observing frequency, the large number of interferometer spacings and the simultaneous coverage of all baselines. The main characteristics are summarised in Table 1.
Desirable characteristics of telescopes are cheapness, speed and sensitivity. In this telescope the fifty elements of the interferometer are simple arrays each comprising four Yagi aerials, resulting in a rather low total cost of £3 x 10^4 in 1973-5. The speed of observing was an important feature of the design, the aim being to cover the sky north of δ = +20° in about two years. Fig. 1 shows profiles of a map of an area of sky about 15° x 15° centred on the north celestial pole, obtained by averaging 10 separate 12-hour observations. This averaging procedure was a necessary feature of the design for the following reason. Fig. 1 illustrates the large dynamic range, and hence good sidelobe level, which is needed in the maps.

Fig. 1. Profiles of the first 151 MHz map centred on the north celestial pole.