Introduction

Situated at the head of Seacombe Valley, Worth Matravers, Dorset, this observatory commands fine views over the English Channel, with an unobstructed sea horizon from east to west. This aspect also serves to protect my southern skies from the scourge of light pollution, allowing me fine views of deep-sky objects in the southern skies.
My interest in constructing a domed observatory was spawned by aperture fever - a desire to observe with larger telescopes with the aim of housing a permanently mounted 500 mm (19½ in) f/4 reflector. I live in an exposed site and needed a domed structure to shelter the telescope from strong winds. I decided to build an observatory 4.5 m (15 ft) in diameter with the idea of mounting the dome on a low concrete block wall 0.5 m (2 ft 6 in) high. This configuration allows me to observe objects of low declination in the southern skies.

**Design and Construction**

The first observatory I constructed was in fact a converted geodetic greenhouse, the frame of which I purchased as an ex-demonstration model from an agricultural show. I replaced the glass with Filon glass fibre sheets and although this worked well for ten years, the dome was eventually demolished by the infamous Great Storm of October 1987.

Having enjoyed the benefits of observing from a dome, I realised that I needed to replace, and with a stronger structure. I sought the advice of Derek Rolls, a fellow member of the Wessex Astronomical Society who happened to own a sheet-metal works.

We decided that the dome should be able to withstand storm force ten winds and would be built on the existing dwarf wall of the original observatory. We used a framework of 70 mm (2½ in) semicircular angle-iron, which was mounted on a 100 mm (4 in) angle steel dome base-ring. The dome was constructed in two halves and clad in 40 segmented plastic-coated steel gores, which were joined together by clamping them with 25 mm (1 in) stainless steel strips. A rubber strip insert at each joint and bolts every 150 mm (6 in) keep the dome fully watertight. Although the resulting structure (see Figure 17.1) must nearly weigh 1000 kg, it rotates easily on five heavy-duty all-steel wheels, and is kept on the dome track by five side-thrust wheels.

The 1 m (3 ft 3 in) wide dome shutter is made of three sections which run on eighteen Teflon wheels located in a 70 mm (2½ in) channel either side of the