

The Farnham Refractor

In 1911 a 9-inch refracting telescope, soon to become known as the 'Oddie' after its first owner, was off-loaded in crates at Queanbeyan Railway Station and trucked up a rough track to the summit of a barren, windswept mountain called Strom. For over a decade it stood as the sole telescope on the mountain, on land leased and then commandeered by the Commonwealth Government from a landowner by the name of Frederick Campbell.

Through the Oddie were made the earliest astronomical observations from the ACT - aside, of course, from naked-eye observations by the Ngunnawal Aborigines. Stromlo, as the mountain was renamed, was to be the site of the Commonwealth Solar Observatory (CSO), and it was on the basis of early observations through the Oddie by Pietro Baracchi and Dr J. Baldwin that the site was chosen. By the time it found its home, the telescope was already over 20 years old. But it seems that the Oddie was not the oldest telescope destined for Mount Stromlo.

That distinction appears to go to a 6-inch refractor, the Oddie's smaller sibling known as the Farnham telescope. Many a CAS member has cast a wandering eye over its dome. Just uphill from the Duffield building is the original Mount Stromlo Administration building, with two small domes symmetrically mounted on its wings. The east dome houses the Sun Telescope, which was the original purpose for which the observatory was constructed; inside the west dome reposes the Farnham.

Little is known of this telescope's use or travels before it found its way to Canberra. Its maker and date of manufacture are no mystery: cast for posterity into the mounting is "Grubb Dublin 1886". This probably predates the Oddie, which is thought to have been ordered from the Sir Howard Grubb Company by James Oddie in 1889. Mount Stromlo records offer no details of the early use of the telescope; the first reference describes its offer to the CSO by Mr W.E. Wilson, one of the trustees of the estate of the late Lord Farnham, on 12 August 1907.

Somerset Henry Maxwell (JP, DL, Co Cavan), born in Wexford UK in 1849, became the 10th Baron Farnham when his uncle James died in 1896. The Farnham lineage can be traced back to Sir John Maxwell, Knight of Calderwood in Scotland, whose son the Very Reverend Robert Maxwell went to Ireland during the reign of Queen Elizabeth in order to "secure an interest in that kingdom" for James VI.

A military man, Somerset Maxwell was a Lieutenant in the 98th Regiment as well as a Captain and Honorary Major in Princess Victoria's Royal Irish Fusiliers. He married in 1875 and fathered six children. In common with other barons his recreations included shooting, hunting, golf and natural history; more unusually he was also interested in physics and astronomy, and was a member of the Royal Society. When he acquired his 6-inch refractor is not known. He died in 1900 and his son Sir Arthur Kenlis Maxwell succeeded him as 11th Baron Farnham. At the time of his death, he owned some 26,000 acres of countryside.

Lord Farnham had stated in his will that his telescope should be devoted 'to the best advancement of astronomy', which is just what Dr W.G. Duffield had in mind for it

when he brought it with him from England to Australia around 1914. Duffield was at that time assembling everything he could find to establish a solar observatory near Canberra, and the Farnham scope was gratefully accepted. The following year, in addition to the Oddie, three cases of instruments intended for Stromlo were being stored at Melbourne Observatory under the care of the Commonwealth Astronomer Pietro Baracchi; shortly they were passed on to his successor Dr Baldwin. It is likely that the Farnham was among this equipment.

Work on the Solar Observatory was going full steam ahead by August 1923 when the next reference to the Farnham is found: it was intended to be mounted in a dome on the 'Observatory building' (administration building). In February 1927 an interim housing was proposed and designed, a wooden hut with a split peaked roof which rolled off longitudinally. Duffield was not impressed and told the Federal Capital Commission architect that the refractor was to go into the permanent building as soon as possible, stressing 'we are anxious to use this instrument at once'.

Early in 1928 the Farnham was finally lifted into place in its dome. Its new home was worthy of its lineage: Duffield had insisted on ornate panelling around the hexagonal tower, and also arranged for a photographic dark room to be incorporated below the dome. By July the telescope was being tested, and was soon fitted with a Gunther & Tegetmeyer photoelectric photometer for measuring variable stars. Initial trials, however, showed this early device to be relatively ineffective with the small aperture, and only the brightest stars could be monitored. The future use of the telescope for measuring the colour index of stars was considered, but again its light gathering power was insufficient for any major role in that work. In late 1931 the photometer was removed and the telescope reserved 'for observations of special objects appearing in the sky', although no viewings are recorded.

So throughout the early 1930s the Farnham's main role was to impress visitors with high quality views of the heavens through it. By 1936 however it was being put to scientific use. Here is a summary of its main achievements, taken mainly from Mount Stromlo Annual Reports and Memoirs:

- 1936/37 - A solar disc camera is made and fitted to the telescope.
- 1946 - Sunspot sketches are made at the telescope on 311 days of the year.
- 1947 - An electron multiplier photometer is installed and used for measuring spectroscopic variable stars. A total of 2433 photometric observations are made on 57 nights. In particular the stars Sigma Scorpii, Mu Centauri and Zeta Phoenicis are found to exhibit small brightness variations.
- 1948: 75 photometric observations of stars are made on 126 nights. The stars Theta (2) Crucis and Canopus are found to vary in brightness by 0.05 magnitude, and Zeta Phoenicis is found to be an eclipsing binary star, varying by 0.5 magnitude. Electronic slow-motion controls are installed on the telescope.
- 1949 - 400 photometric observations are made on 30 nights during the year. Observations produced a complete light-curve for the star Zeta Phoenicis, and a determination of its orbit is made.

- 1950 - The results for Zeta Phoenicis are sent for publication. Work on Sigma Scorpis and six other stars is continued, and results prepared for publication. A variable star card index is being compiled for stars brighter than 10th magnitude. A 4-inch spectrograph is mounted on the telescope and is calibrated on lamp 6070 Angstroms (yellow).
- 1959 (7 February to 15 June) - Under contract with the Office of Naval Research, a photographic survey is conducted to produce a brightness map of the Milky Way galaxy. Only one other photographic photometric survey of the southern Milky Way has been made, in 1949 on unfiltered blue-sensitive plates. In the present survey, three glass filters are used: Hydrogen alpha (red), hydrogen beta (green) and 6070 Angstroms (yellow). 78 plates are exposed using the 8-inch Schmidt Camera, the telescope being used as the guide scope during the exposures. An instrument is incorporated in the camera to calibrate the standard tube sensitometer in which the plates are exposed. The camera produces a uniformity of illumination across the plates to within a few hundredths of a magnitude.
- May 1960 - Astronomer Hugh M. Johnson publishes the results of the survey in the Memoirs of Mount Stromlo Observatory No.15, titled 'An absolute isophotometry of the southern Milky Way and two fields in Orion'. The results are published as isophote (brightness contour) maps which were traced from photographic enlargements. They are distributed to observatories worldwide, and are immediately put into use for the optical identification of radio-emitting objects.
- 1977 - The last professional use of the telescope is made, by astronomer Martha Cleary who makes a study of high-latitude H (II) hydrogen regions of the Milky Way. The purpose is to map H (II) to H (I) regions, extending work previously done by Rodgers, Campbell & Whiteoak. During the program Cleary falls through the rotting wooden floor of the dome, landing in the photographic dark room below.

The Farnham refractor has sat in its dome atop the Mount Stromlo administration building for seventy of its 111 year life. When I last saw it some years ago the old Meinel-Pearson Schmidt camera was still fitted, and although covered in dust and cobwebs, the telescope was in sound condition. Climbing into the dome takes you on a journey seventy years into the past, to an age when much of the science of astronomy was being carried out with refractors. I hope the old Farnham stays in its dome.

By Michael Nelmes