

The Royal Observatory, Cape of Good Hope, a Cultural Treasure

Cape Town Heritage

The former Royal Observatory, now the headquarters of the South African Astronomical Observatory, forms part of the heritage of Cape Town, the 'mother city' of South Africa. It is probably the oldest scientific establishment in Africa.

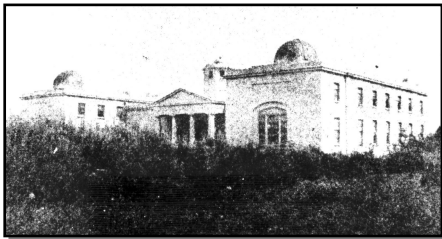
World Scientific Significance

The Royal Observatory is not only a beautiful set of buildings; it is the place where several important scientific advances were made.

The first observations that led to the distance of a star (Alpha Centauri) were made here in 1832-3. Before then, the distances of the stars were completely unknown. Though selected for observation by chance, Alpha Cen is still today the second nearest star known.

The first sky survey to be made by photography, the Cape Photographic Durchmusterung, was conducted from the Royal Observatory between 1885 and 1890. Gill's value for the distance between the earth and the Sun, the fundamental unit of length in astronomy, against which all other distances are measured, was determined from here and was regarded as the best available for 45 years.

Gill's telescope designs for the Royal Observatory were widely copied. Many visitors came from around the world to collaborate with him and learn his techniques.



The first photographs in South Africa were taken at the Royal Observatory in 1842, by Charles Piazza Smyth, then the Chief Assistant. This one shows the main building from behind a hedge. The domes on the roof were removed in the 19th century.

Historic buildings

The main building, with its neo-classical pillars, was designed by the British naval architect John Rennie and completed in 1828.

The oldest dome at present on the site dates from 1848 and rotates on cannon balls.

The McClean telescope building was designed by the famous colonial architect Herbert Baker and dates from 1897. It features a hydraulically-operated rising floor.

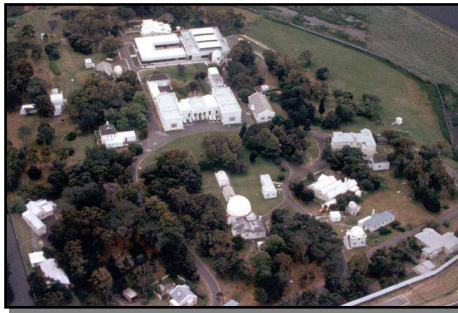
Many of the other buildings on the site have their origins in the nineteenth century.

Preserved Equipment

The buildings still contain many of the instruments used over the Observatory's almost two hundred years, for example, highly precise 'regulator' pendulum clocks.

Many of the smaller instruments are now on display in the astronomical museum.

Most of the nineteenth-century telescopes are still in place and some of them are still used to demonstrate astronomical objects to the public on open nights. Telescopes that remain more-or-less in operating order include the photoheliograph of 1878, the 6-inch telescope of 1882, the 13-inch Astrographic telescope of 1889, the 24-inch McClean telescope of 1897 and the 18-inch telescope of 1955. In fact, the latter was used well into the 1990s by the late AWJ Cousins to set up precise stellar brightness standards that are still in use worldwide.



Aerial view of the Royal Observatory today (Google)

History

The Royal Observatory was founded a few years after the Cape became a British colony, at the instigation of the British astronomical community. It was created by an Order of King George IV on 28 October 1820. Controlled by the Royal Navy, its purpose was to find accurate star positions and to provide a reliable time service to aid the navigation of ships.

Over the years, it was directed by nine 'His (or Her) Majesty's Astronomers', most of whom took leading roles in the life of the Colony, serving on the boards of cultural institutions and offering scientific advice to the government. It was the repository of standard weights and measures and a cannon was fired every day at noon (as it still is) to set the standard of time. The centre of the Airy Transit Circle in the main building was the point of reference for all geographic positions in South Africa.

The present appearance of the site is very much as it was left by Sir David Gill, who was HM Astronomer during the years 1879-1907. Gill was a figure of world influence in astronomy and the observatory he left behind was regarded as an ideal institution. Throughout its history, the Observatory has moved with the times. It was, for example, the first place in the colony to have its own electricity plant. Many buildings have come and gone or been altered to meet the changing requirements of science.



The entrance hall of the main building. The Royal Observatory contains the National Library for Astronomy. Most astronomical books and journals published worldwide are available here.

Heart of a Modern Institution

The Royal Observatory today is the Headquarters of the Southern African Astronomical Observatory, formed in 1972, and also of the Southern African Large Telescope Foundation, an international partnership. Many of the old buildings have been converted to offices. Because the city's sky had become so bright, the best telescopes were moved to Sutherland when the SAAO opened.

Construction of new instruments is carried out in the modern Technical Building which accommodates special rooms and laboratories for numerically-controlled machining, vacuum coating, metrology, electroplating and other technical matters needed in modern astronomy.

Artistic Heritage

Many well-known artists have drawn or painted the Royal Observatory. Thomas Bowler, later a famous painter, was employed by Thomas Maclear as a manservant. Others who made drawings included Sir John Herschel, CP Smyth and Charles E. Peers.



Lithograph of the McClean dome, a Herbert Baker building, by Charles E. Peers (ca 1930)

A unique site

The Royal Observatory site of about 9 hectares is situated on a low hill of about 15m altitude in the Two Rivers Urban Park, about 3 km east of central Cape Town. It had to be within sight of Table Bay so that visual time signals could be seen from the ships present there. Accurate time was needed for navigational purposes.

The area was probably used in pre-colonial times by San pastoralists on a seasonal basis. Being near the Liesbeek river, it was made a part of one of the farms granted to 'free burghers'. Until 1820 it was rocky, treeless and windswept, though it supports a remarkable variety of seasonal grasses and bulbs. Generations of astronomers have made the site more comfortable by planting trees and shrubs to moderate the wind.

Nature conservation

Successive astronomers have treasured the site and added to its attractiveness. Two of the HM Astronomers chose to be buried there.

It is one of the few places close to the City Centre where the original ecology of the area is preserved. The site is surrounded by the Two Rivers Urban Park, a wetland area that supports much bird and animal life. Its unique geology has made the upper parts the home of many flowering bulbous plants. The low-lying areas are subject to flooding in winter.

The Observatory is the northern limit of the Western Leopard Toad, *Bufo Pantherinus*, an endangered species.



It is also the only remaining natural habitat of the rare iris *Moraea Aristata*.

Public Visits

The SAAO is open to visitors on the 2nd and 4th Saturdays of each month at 8pm. These occasions usually include a lecture about the work of the Observatory, a tour and viewing through a telescope. Staff members and volunteers help on these occasions.