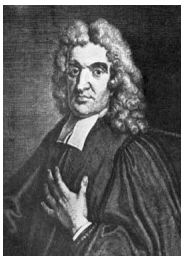


Issued for the Flamsteed Astronomy Society visit to Herstmonceux—March 11, 2004

History Bites

Flamsteed Astronomy Society

Special Edition March 2004

The RGO (Royal Greenwich Observatory) at Herstmonceux

By the end of the 19th century Greenwich was rapidly become unsuitable for astronomy. As long ago as May 1874, the Astronomer Royal, George Airy was writing "St Paul's fairly visible, the first time this year". At the turn of the century the London County Council added insult to injury by building the electricity generating station to power the tramways. Sitting right on the meridian, the power station began pumping hot air and soot into the atmosphere and produced vibrations which disturbed the instruments for transit measurements. The spread of the railways was a problem too. Beginning in the 1890s, electrification began to affect magnetic measurements at the Observatory. By the 1920s, magnetic work was becoming impractical and in 1924 operations were moved to Abinger in Surrey. The development of local street lighting was also having an effect at Greenwich. By the mid-1930s it was becoming difficult to see faint stars with close double stars impossible to measure.

Spencer Jones concluded that a move away from Greenwich must be made. It was important to stay close to the meridian with a preference for sites south of Greenwich. The start of the war in 1939 put a stop to the search before much could be done. With the return of peace, in 1946 the Admiralty announced that a number of possible sites in the south of England had been inspected by the Astronomer Royal and Board of Visitors, and they had recommended the selection of Herstmonceux Castle. Why a site at sea level was chosen is a bit of a mystery. It may be that the A-R liked the look of Herstmonceux castle, and also that the Town Clerk of Bexhill-on-sea, nearby, over the years had taken a somewhat rosy view in his weather records to attract tourists! In 1948 Spencer Jones moved down with the Chronometer department which had moved to Bradford-on-Avon during the war, but progress was slow. It wasn't until 1957 that most of the staff and instruments had completed the move.

In 1946 it had been proposed that the UK acquire a new large optical telescope to be called the Isaac Newton Telescope – the tercentenary of Newton's birth had occurred in 1942 but celebrations were held over until after the war. 20 years later (thanks to funding snafus – the 98 inch mirror had been acquired in 1949!) in 1967 the inauguration of the INT was held at Herstmonceux.

Research work carried out by the RGO included the measurement of radial velocities, parallaxes, and proper motions of stars, the study of globular clusters, the measurement of the chemical composition of different stars and research into black holes. In 1971 an RGO team visually identified the star known as the X-ray source Cygnus X-1, thought to be part of a binary system most likely with a black hole as partner.

Ironically, the opening of the INT marked the beginning of the end for Herstmonceux. It was soon realised that the site was less than ideal for a large telescope. During its time in Sussex the INT was used for only about a third of the time it could have been in a place with better weather. The decision was made to move to a better site in the northern hemisphere and in 1979 the INT was dismantled and refurbished before being shipped to La Palma 'Roque de los Muchachos' Observatory in the Canaries. In 1971 the Great Equatorial 28 inch had been pensioned off and returned to Greenwich.

The attention of the RGO was now focused on La Palma and the building of the 4.2 metre William Herschel Telescope (WHT). Responsibility for the RGO had passed from the Admiralty to the Science Research Council in 1965 and pressure for the RGO to move out of Herstmonceux gradually built up. In 1990 it moved to Cambridge and less than 10 years later it was shut down completely.

The RGO Telescopes at Herstmonceux

To the north of the castle was the **Spencer Jones Group of Meridian Instruments:** the Photographic Zenith Tube (PZT - for time determination and latitude variation); the Danjon Astrolable (for time and latitude determination): and the Cooke reversible Transit Circle (for star positions and planetary positions & motion). Between the castle and the West Building, the **Solar Dome** housed the Newbegin 6¼ inch refractor, the Photoheliograph, and an underground Spectrohelioscope.

The building that now houses the Observatory Science Centre was built to the east of the castle to provide six domes called the **Equatorial Group**:

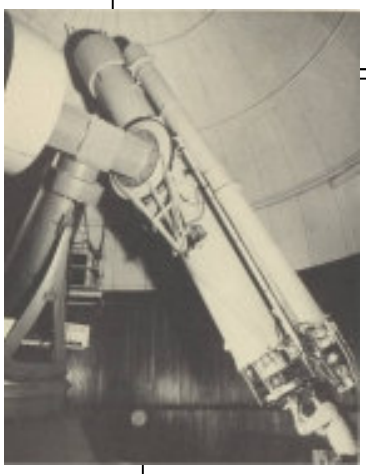
- the Thompson 30 in reflector
- the Yapp 36 in reflector
- the Astrographic 13 in refractor
- the Thompson 26 in refractor, and
- the Great Equatorial 28 in refractor

A Schmidt camera was planned for the sixth dome but never mounted.

The Isaac Newton Telescope (INT) 98 inch reflector was housed in a separate dome to the south of the Equatorial Group. The INT dome now houses an active **Satellite Laser Ranging instrument**.

13 inch Astrographic Refractor (1890)

By Sir Howard Grubb FRS, Dublin 1888. New mounting by Grubb Parsons, Newcastle 1969. Mounted at Greenwich 1890-1957. At Herstmonceux from 1958. 13-inch photographic refractor on German mounting. Originally used for the international *Carte du Ciel*. 1903: eclipse expedition to Tunis. 1919: Object Glass used in Brazil to photograph total eclipse which proved Einstein's theory of relativity. 1922: Christmas Island for eclipse. 1927: eclipse at Giggleswick. 1929: eclipse in Siam. 1950-1: the only general purpose telescope available at Greenwich, used for observation of comets and the brighter minor planets. August 1957: installed at Herstmonceux.

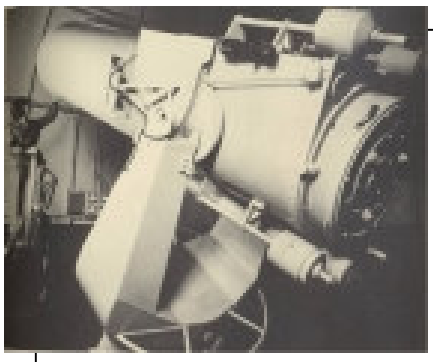


Thompson 26-inch Photographic Refractor (1896)

By Sir Howard Grubb, Dublin 1896. £5,000 gift of Sir Henry Thompson (1820-1904), surgeon and amateur astronomer.

Mounted at Greenwich 1897-1947 (South Building) with Thompson 30 inch reflector on same mounting. At Herstmonceux from 1958 with counterweight instead of 30 inch.

26-inch aperture, 22-foot 5-in focal length photographic refractor on German equatorial. Used for photographic parallax measurement, proper motions and photometry. 1939: Object Glass dismounted. 1947: dismantled and roller bearings inserted by Grubb Parsons. 1957-8: re-erected at Herstmonceux.



Thompson 30-inch Photographic Reflector (1896)

By Sir Howard Grubb, Dublin. Gift of Sir Henry Thompson (1820-1904), surgeon and amateur astronomer. Mounted at Greenwich 1897-1947 in Thompson equatorial (South Building). At Herstmonceux from 1956 on fork mountings by Cox, Hargreaves & Thomson

30-inch Cassegrain reflector focal length 11 feet 5 in (f:4.5). Coudé system added 1963. Stellar spectroscopy, with photographic or image-intensifier recording. **Feb 1908: Melotte discovered eighth satellite of Jupiter JVIII**

Yapp 36-inch Reflector (1932)

Grubb Parsons, Newcastle 1932. £15,000 gift of William Johnston Yapp, industrialist. Mounted at Greenwich 1934-55 in Christie enclosure. At Herstmonceux from 1958

36-inch Cassegrain reflector on glass, 15 foot focal length (f:5) on modified English equatorial with 24 foot solid cast-iron polar axis. Used for measurement of colour temperature of stars, photo-electric photometry, and stellar spectroscopy. 1934-39 at Greenwich. 1939: mirrors dismounted. Jan 1946: mirrors aluminized, but ceased use by 1948 due to tarnishing of mirrors from atmospheric pollution - mirror silvered and in use again. 1955: dismantled and sent to Herstmonceux

The Isaac Newton 98-inch (2.5 metre) Reflector (1967)

Pyrex disk presented by McGregor Trust, Michigan 1949. Grubb Parsons, England 1967. Mounted at Herstmonceux 1967. Dismounted for refurbishment and sent to La Palma 1979. Primary mirror 98-inch (2.5 metre) 24 foot 7 inch (750 cm) focal length with available foci: prime (f:3.3); Cassegrain (f:14); Coudé (f:32). Fork-type mounting.

Sources:

Derek Howse & Others — "Greenwich Observatory 1675-1975". London, Taylor & Francis 1975
Photos: David Calvert
The Observatory Science Center http://www.the-observatory.org
Chas. Parker http://www.cowbeech.force9.co.uk/RGO.htm
ING Telescopes http://www.ast.cam.ac.uk/ING/