

# From Trincomalee to Mars:

## The journey of Percy B Molesworth (1867 - 1908)

By Nalaka Gunawardene

Christmas Day 2008 marks the hundredth death anniversary of a remarkable man who pioneered astronomical observations in colonial Ceylon (now Sri Lanka). Most people in the land of his birth might not have heard of him, but a large crater on Mars immortalises his name.



By profession, Percy Braybrooke Molesworth (1867 - 1908) was a major in corps of Royal Engineers, but he was better known as one of the world's leading amateur astronomers at the beginning of the Twentieth Century. From his personal observatory in Trincomalee, on Ceylon's east coast, Molesworth both observed the night sky and photographed celestial bodies, the results of which he shared with leading astronomical groups in the west. Armed only with a basic telescope, a sharp eye and good drawing skills, he made significant contributions to advancing our knowledge of the heavens at the time. And although he blazed new trails in a short life time, the events since his death show how callously our

nation treats its scientific legacy.

Percy Molesworth was born in British-ruled Ceylon on 2 April 1867. He was the youngest son of Sir Guildford Lindsey Molesworth (1828 - 1925), the first general manager of Ceylon Railways, best remembered for having driven the country's first train engine on its maiden journey from Colombo to Ambepussa in December 1864.

Molesworth Junior was educated at Winchester College in England and obtained his commission in 1886. After passing through the Royal Military Academy at Woolwich and Chatham, he was first stationed at Fort Camden in Cork Harbour, Ireland. In 1891, he was sent to Hong Kong for three years, during which period he engaged in night sky observations and dispatched drawings of Mars to the British Astronomical Association (BAA) where he was a founding member.

## Return to Ceylon

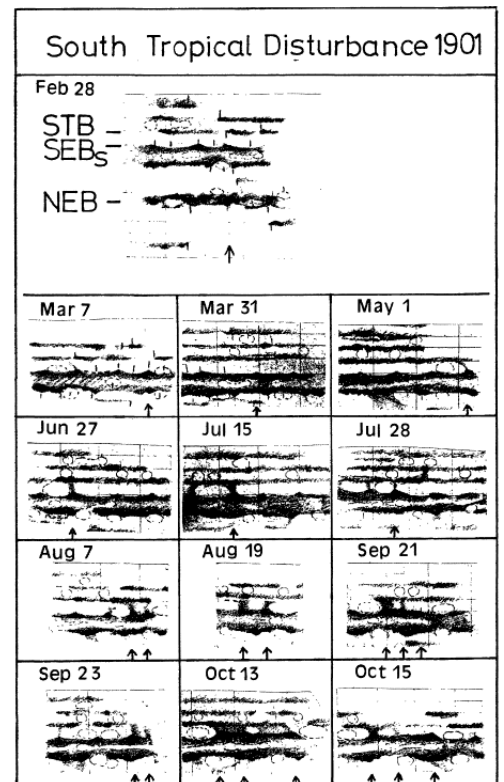
After Hong Kong, Molesworth sought a placement in Ceylon. He was posted to the island of his birth in 1896, and assigned to be 'engaged in perfecting the defences of Trincomalee'. This mainly concerned the deep water harbour there, whose strategic importance was well understood by the colonial administration. Although his work and hobby still took him to various places in Asia and Africa, Trincomalee soon became home from where he would scan the equatorial skies for over a decade.



Contemporaries have described Molesworth as having 'keen eyesight, great artistic skill, and above all, enormous energy'. Sir Arthur C Clarke, another astronomically-inclined Englishman who was to settle down in Ceylon decades later, has written: "As an invasion from India did not seem a serious threat, Molesworth had plenty of spare time -- and used it very effectively to make some superb maps of Mars, using a 12.5-inch (32cm) Calver reflector."

Molesworth set up his personal observatory on the front lawn of his bungalow, from where he could view the sea in one direction and Fort Frederick in the other. His property was several hundred feet above sea level, which gave him a superb sea horizon for his observations. Moreover, being located just 8.5 degrees north of the Equator, he had a clear advantage over astronomers on higher latitudes in Europe and North America -- he could see far more of the southern skies.

Molesworth exploited all these advantages for astronomical observations, and soon made a name as one of the finest of his kind in the East. At that time, a dedicated amateur -- working alone and in his spare time -- could still advance knowledge in certain areas of astronomy. Recognition came when he was admitted to membership of the prestigious Royal Astronomical Society (RAS) in 1898 -- the same year he joined a solar eclipse expedition to India.



Extract from Molesworth's detailed maps of Jupiter in 1901 when he made a major discovery

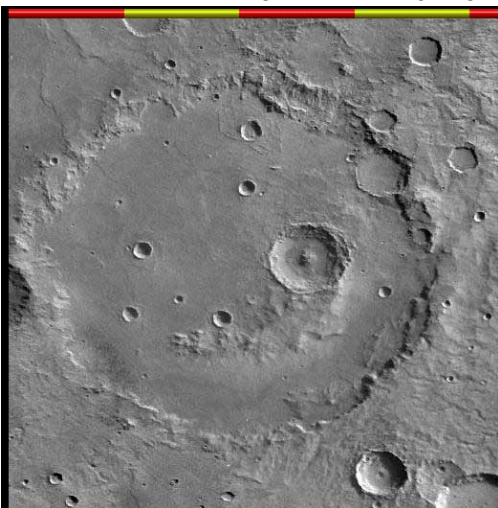
Molesworth often observed the Moon, and took some rare photos of a great comet that was more visible in the southern latitudes in 1901. But it was the planets -- especially Mars and Jupiter -- that most engaged his interest. Richard McKim, writing in the *BAA Journal* in 1997, suggests that for the decade 1896-1905, Molesworth was 'arguably the finest amateur planetary observer alive'.

In February 1901, he became the first observer in the world to notice the beginning of the great South Tropical Zone Disturbance on Jupiter that was to last until 1939. This discovery was important in understanding Jovian atmospheric currents. Its conjunctions with the 'Great Red Spot' gave clues to the magnitude and directions of wind speeds on the largest planet in the Solar System well before unmanned spacecraft flew past in the 1970s and 1980s.

### Over-worked

Molesworth did not merely observe and draw; he also analysed what he saw. This often required crunching large numbers which, in those pre-calculator days, had to be done entirely manually. One such set of calculations took him seven months of spare time, at the end of which he noted: "Had I known the amount of labour they would entail, I should, I think, have hesitated before embarking on such a task."

Driving himself hard was characteristic of the man, but it soon took its toll. In 1904, a sharp attack of pleurisy and fever forced him to return to England for five months. E M Antoniadi, a leading Mars observer of the time, later wrote: "Overwork of this kind, in such a torrid climate as that of Ceylon, finally injured his health."



Molesworth took early retirement in 1906, and bought an estate in Trincomalee to devote his time and energies to astronomical work. But it was not to be. According to the RAS obituary, "on his return from a short visit to England, he succumbed to a severe attack of dysentery, and passed away on Christmas Day 1908." He was only 41 at the time.

His friend Walter Maunder transferred his papers and notes to the care of the RAS, where generations of astronomers have been studying them in awe and writing many scholarly papers. In 1973, the International Astronomical Union (IAU) named one of the largest craters on Mars in his honour. Crater Molesworth, located on the Red Planet's southern hemisphere, is some 175 kilometres across.<sup>1</sup>

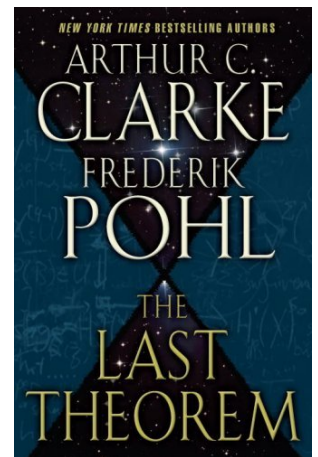
<sup>1</sup> <http://www.roving-mouse.com/planetary/Mars/Atlas/features/maps/m/molesworth.html>

In the land of his birth, meanwhile, Molesworth is remembered only by a handful of latter day star-gazers. One of them, the late Herschel Gunawardena, went in search of Molesworth in 1971 and found the house being used as a tourist centre in Trincomalee. He later wrote in *Equatorial*, journal of the Ceylon Astronomical Association: "Only a little of the observatory now remains, a part of the original foundation with a central rock slab which Molesworth may have used to attach his heavy pier can still be seen."

### Forgotten legacy

Herschel tracked down Molesworth's tombstone in the Trincomalee cemetery with great difficulty, but found no other memorial. Writing in the *RAS Journal* in 1977, Sir Arthur Clarke also lamented how there was no trace of Molesworth anywhere in Trincomalee.

Three decades later, Sir Arthur was to include several references to Molesworth in what turned out to be his last science fiction novel, *The Last Theorem*, published posthumously in August 2008. When the novel's protagonist Ranjit Subramanian is growing up in Trincomalee during the closing years of the Twentieth Century, his father tells him stories about Molesworth. This inspires the young man to study mathematics and astronomy, leading to some dramatic results for himself and humanity...



In the real world, however, the plight of the Molesworth observatory illustrates a lack of interest in preserving our cultural and intellectual heritage, especially those from the colonial periods.

Nobody is certain exactly what happened to the observatory following Molesworth's death. According to some reports, the custom-made Calver telescope went into disuse; others say it was stolen. It somehow turned up in Colombo years later, where it was restored and used for a while at the Colombo Observatory attached to the Department of Meteorology. It was then gifted to the University College, later University of Colombo, which housed it in a small dome on the University ground adjoining Reid Avenue.

During the Second World War, the Royal Air Force took over the dome to place an anti-aircraft gun that defended the city against Japanese air raids. When the War ended, the telescope was left with a broken diagonal and roughly handled mirror. It took many years for the instrument to be repaired and involved efforts by several academics including professors C J Eliezer and A W Mailvaganam and a lecturer in mathematics named V K Samaranayake.

"We had to overcome a lot of difficulties," Samaranayake wrote in 1970, "for by then most of the components were scattered around the workshops or lost."



Above: Sir Arthur Clarke visiting Colombo University's telescope dome in 2004; Below: Sitting next to the historic telescope, with a photo of Crater Molesworth. Photos courtesy: Arthur C Clarke Estate



Once restored, the Molesworth telescope went through periods of use and disuse. In early 1988, while the country (by then renamed Sri Lanka) was engulfed in a brutal southern insurgency, vandals looted the dome and removed several parts purely for their metallic value.

### Death of an Observatory

I covered that incident as a young science journalist then working for *The Island* newspaper, and later wrote a feature article titled 'The death of an observatory' (26 March 1988). I still remember being ridiculed by some for reviving the memory of a long dead man at a time when hundreds of lives were being lost every week due to extra-judicial killings.

The telescope never fully recovered from that looting, and the University administration has shown little enthusiasm in preserving it. Occasionally, an amateur astronomer or university academic would take a personal interest, but the institutional indifference continues.

Sometime in 2004, while researching material for *The Last Theorem*, Sir Arthur Clarke visited University to take another look at the Molesworth telescope. Ever the optimist, he noted afterwards: "The local amateur astronomers are working to repair it -- and although Colombo is hardly a good observing site, I hope they can use it effectively. At least they can see more than 90 per cent of the world's sky - - everything except a small patch over the South Pole."

In the months that followed, Sir Arthur sent more than one letter to the University's vice chancellor, drawing his attention to what is possibly the

oldest piece of scientific equipment in their inventory. These were not even acknowledged.

Alas, little has changed since I chronicled the observatory's looting two decades ago. As a century passes since Molesworth's death, my concluding words in that 1988 article still hold true: "Molesworth may be a forgotten man in his native town and land of birth, but millions of miles away from home on that freezing surface, witnessing golden sunsets, he will remain safe from looters and vandals.

*"Well, at least until humans reach Mars..."*

### Sources and Acknowledgements:

It was Sir Arthur C Clarke who first told me, nearly a quarter of a century ago, about a forgotten Ceylonese astronomer who has a Martian crater named after him. Molesworth combined in him several elements that deeply interested Sir Arthur -- Ceylon, Trincomalee, night sky observations and Mars. In the years that followed, Sir Arthur allowed me unrestricted access to his library and archives where I read more about Molesworth, principally from BAA and RAS journals and newsletters. Sir Arthur circulated my 1988 newspaper coverage on the observatory looting to both groups, who printed comments on the incident at the time. I'm very grateful for his guidance and support.

I had the privilege of associating the late Herschel Gunawardena, who had co-founded the Ceylon Astronomical Association with Arthur Clarke in 1959, and served as its first secretary and later president. Herschel told me details of his personal quest for Molesworth, which he had chronicled in an article he wrote in the *Equatorial* in 1971. Others who gave me information or insights into this story include the late Dr V K Samaranayake, who played a part in restoring the telescope in the 1960s, and Fr Dr Mervyn Fernando, a keen amateur astronomer who continues to promote the subject in the local languages through the Subodhi Astronomy and Space Study Centre, <http://subodhi.net/astronomy.htm>

My plans to visit Trincomalee to personally find out the current status of the Molesworth bungalow and tombstone did not materialise this year due to pressure of work and other distractions. I might well do that in 2009, designated the International Year of Astronomy.

*Trained as a science writer, Nalaka Gunawardene worked for Sri Lanka and international media, and was associated with Sir Arthur C Clarke as a research assistant for over 20 years. He blogs on media, society and development at: <http://movingimages.wordpress.com/>*

1,740 words

20 December 2008