

(Note: The first episode of this series was screened during the colloquium.)

Discussion

D. Brückner: *Do not mythology and astronomy form a complementary pair rather than a pair of opposites, and might not a complementary approach be more effective in presenting astronomy to the public?*

J.V. Narlikar: Yes, and in our present approach we are taking this into consideration, showing how both deal with the same subject in their individual ways, and so introduce the modern astronomical view.

THE MILLS PUBLIC OBSERVATORY IN DUNDEE

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The only full-time public observatory in Britain is the Mills Observatory in Dundee, Scotland. John Mills was a successful businessman in Victorian Dundee with an interest in astronomy. He bequeathed his money to build a public astronomical observatory in the city, for studying “the wonder and beauty of the works of God in creation.” The Mills Observatory was eventually opened in 1935.

Dundee is situated on the northern shore of the River Tay, in central Scotland. The Observatory stands on a wooded hill (an extinct volcano) near the center of the city. The trees shelter it from virtually all direct city light, while leaving an uninterrupted view south across the Firth of Tay. There is some scattered light, but in clear weather the sky can be surprisingly dark, and the Milky Way distinctly visible.

The Observatory is run by the City of Dundee District Council. It stays open till 10 pm, Monday to Friday, throughout the winter; in summer it is open only in daytime (at latitude 56°5 N it never gets dark in summer). There are just two members of staff, currently Fiona Vincent and Gary Hannan; between us we carry out all the work of the Observatory, from designing displays and giving public lectures to routine cleaning and maintenance.

The Observatory’s dome is 25 feet in diameter, and is made of water-proofed papier-maché on a framework of steel ribs; it can easily be rotated by hand. The telescope inside is a 10-inch Cooke refractor, made in 1871, with the superb optics you would expect. It has its original clockwork drive, and it is still in very good condition; the telescope can be moved with one finger, and remains perfectly balanced in any position. With a focal ratio of f/15, it offers the high-magnification views of the moon and planets that are just what the public wants to see.

The Observatory also owns a 10-cm Merz refractor on a portable equatorial mount, which is used in the dome alongside the Cooke to give visitors a choice of views of a celestial object. These telescopes are always pointed and supervised by the staff, who give explanations and answer questions. Visitors are free to use the large first-floor balcony, where smaller (and more robust) instruments are available for unsupervised use. This is a useful position, too, for learning the constellations. By day there are sundials here to study.

The main exhibition area is on the ground floor, and uses posters, photographs and models to provide an introduction to astronomy and space science. There is a large wall-mounted planisphere that the visitor can adjust, and a "Helios" orrery operated by pressing a button. Other interactive exhibits are planned, when money and staff time permit.

Next door is a small lecture-room, seating up to 30. Booked parties first tour the building, and then come in here for a talk with slides — usually a basic introduction to astronomy, adapted to the audience's age. When the room is not in use, casual visitors can walk in, press a button and see a pre-recorded slide-show. These shows are all produced in-house, with slides from the Observatory's extensive collection.

A wire framed cotton dome sits in a corner of the lecture-room; hoisting it reveals a "StarLab" planetarium projector. (There is also an inflatable dome but this is rarely used.) Up to 20 seats can be squeezed in underneath, or a complete class of 30 children can be accommodated on cushions on the floor. A boxed-in section of the exhibition area houses an even smaller planetarium, hand-made by Harry Ford, the previous Curator of the Observatory. Only 10-12 people can get inside, but the highly-realistic star-images make this one ideal for teaching the constellations.

Visitor numbers are currently over 17,000 a year. Many of these visitors come in pre-booked groups; some, such as school classes, come by day, but most prefer an evening visit. All available evenings in the winter season are always booked, and many groups have to be refused. Clear nights bring plenty of casual visitors too. On average, about one night in two is "viewable."

Dundee Astronomical Society has for many years used the Observatory as a meeting-place. In return, some members of the Society act as unpaid helpers on busy evenings. In recent years the Observatory has also been used for evening classes in astronomy, organized by the University of Dundee's Centre for Continuing Education. This is an introductory course of 14 lectures, spread over the winter season. The size of the lecture-room limits the numbers to 30, and the course is usually fully-booked. The advantage of using the Observatory is that a large number of models and teaching aids are available, as well as the Observatory's library of reference-books and journals. And of course, if the sky is clear, the classroom work can always be abandoned in favor of some real observation.

Dundee's daily paper, the *Courier*, carries a monthly feature on the night sky, and the local radio stations, *Radio Tay* and neighboring *Radio Forth* (Edinburgh area), broadcast weekly talks — all contributed by the Observatory. A duplicated sheet, "The Sky This Month," is available free to visitors at the Observatory, and

several copies are sent out each month to postal subscribers. Extra sheets are prepared as necessary for topical phenomena such as comets.

Other initiatives in recent years include summer workshops for children, where they have made such devices as sundials, planispheres or simple solar-system models. And there have been a couple of weekend astronomy courses for amateur astronomers.

This is a purely public observatory. The telescope is not for use by the staff, but by the public; and on a clear winter evening it is not uncommon for over a hundred people to look through it. The staff never get a chance! We content ourselves instead with watching the faces of visitors who are getting perhaps their first experience of that "wonder and beauty."

POPULARIZING ASTRONOMY AT PUBLIC OBSERVATORIES IN WEST GERMANY

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1. Introduction

Based on the pedagogical ideas of A. Diesterweg, a number of science associations have been founded since about 1880 under the name of URANIA; astronomy has been one of their subjects. In the 1920–1930's, the works of Bruno H. Bürgel and Robert Henseling initiated the founding of many more local and regional associations and of public observatories all over the country. But most of the currently active associations were founded to answer the sharp increase of general interest that followed the early successes and spectacular results of space science.

Aims of the associations always have been manifold:

- to share a fine hobby with like-minded people;
- to participate theoretically or practically in scientific research as far as technical and local circumstances allow;
- to offer to the public means and advice for celestial observations, and to share the joy of deep-sky wonders with guests;
- to mediate the progress, and the results of astronomical research to the public.

Public observatories either have developed as a result of an association's activities in popularizing astronomy, or become the center for an association's work where both internal (amateur, scientific, social) and external (public) interests can be followed.