

# The Planetarium—a place to learn

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I would like to dedicate this paper to the memory of professor Edith A. Müller, deceased at the age of 77 a year ago, on July 24, 1995, until her retirement working at Geneva Observatory. She had been at the very beginnings of our IAU Commission 46 in the late sixties, she had been its President in 1970 when we all met during the General Assembly in Brighton, she always took great interest in further educational developments. I am personally grateful to her for much helpful advice during Commission 46 meetings at the General Assembly of 1985 in New Delhi. Wonderful teacher and organizer, she was also an extremely kind lady.

While I am not aware of any connection of Edith Mueller with a special planetarium, yet I have chosen this short biographical note to introduce my first problem, not so very obvious when mentioning generally planetarium activities. Nearly every planetarium bears the name of a patron, who either made the existence of that institution possible through financing, or was well known in the town or country for his/her interests in astronomy, etc. Let me mention two examples: Luiz Erro Planetarium in Mexico City, and Jawaharlal Nehru Planetarium in New Delhi. While Erro had been very interested in astronomy – he once studied at Harvard and helped introduce modern astrophysics to his country – Nehru had been a national person: the Planetarium is next to the Nehru Memorial Museum; Prime Minister Indira Gandhi, Nehru's Daughter, attended in person the Planetarium opening. And now, I should like to ask all astronomers connected with a planetarium: Is it customary to tell people about the Patron of your Planetarium? Do you mention his/her existence to groups of visitors, tourists, students, coming there for the first time? Do you know that it would be an excellent occasion to bring forward a new topic, to give a living lesson in history, or geography, or even ... patriotism?

In Torun, the city of Copernicus, we already have a University and a Museum bearing the name of that Astronomer, so the Planetarium opened here in 1994 was named after professor Wladyslaw Dziewulski (1878-1962), astronomer at Wilno and Torun Universities, first director of our Astronomical Observatory, whose name was also given to one of the lunar craters. Some photographs with a short biography of the Patron are displayed in the entrance hall of our Planetarium.

The Planetarium itself is built inside an old 19th century gasholder right in the middle of the Old City, which provides tourists with unique opportunities: between visiting an art exhibition in the old Town Hall, and looking at the immense interior height of the post-franciscan St. Mary's Church, one can go and relax sitting down and experience a wonderful excursion through the Universe!

The Planetarium building (dome diameter 15 m) contains a lecture room with multimedia facilities for 100 persons, the planetarium hall with 160 seats (recently arranged so that everyone will have a good view towards South) a small cafeteria with a sales stand for starmaps, astrophotographs, etc. staff rooms. The projector is a Zeiss (Jena, Germany) instrument.

The other nine Polish planetariums are either connected and administered by a school or Naval College, or they form parts of Museums and cultural institutions; in either case they get enough money for staff salaries, unrelated to the planetarium attendance. In Torun the situation is different, since the Planetarium is administered by a Fund connected with the Copernicus Museum, but must be self-sufficient financially; staff-salaries

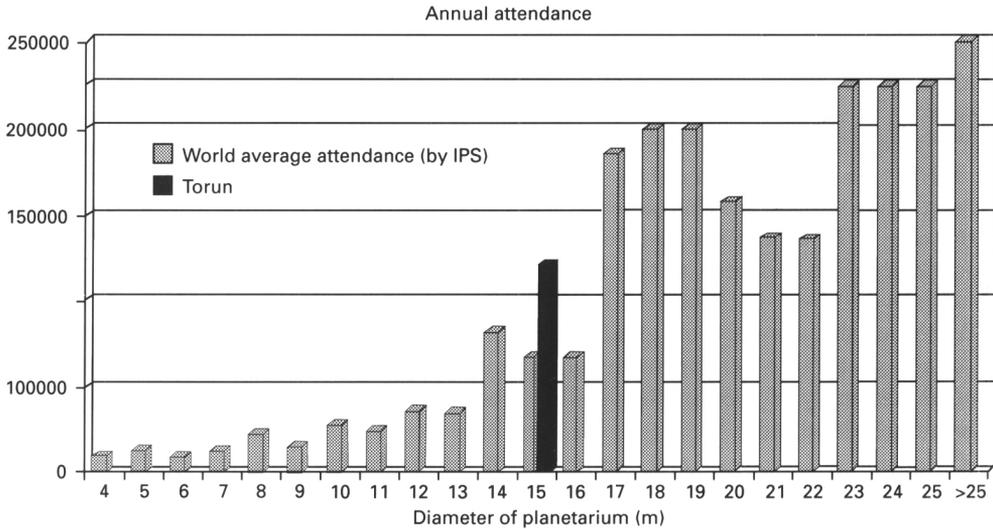


FIGURE 1. Torun attendance on IPS statistics of attendance vs dome diameter

as well as instrument repairs or new books are all paid from the entrance-fees of visitors. And the number of visitors may vary, it cannot be predicted accurately. For instance – it was unfortunate that an influenza epidemic last January considerably reduced the number of school groups visiting the Planetarium so that the staff did not get their New Year premiums! The number of performances was 1299 in 1994 with 102,837 visitors, while in 1995 the corresponding numbers were 1368 and 113,113, respectively. In 1996, during the height of the tourist season in May, the Planetarium had more than one thousand visitors daily. And according to the relation of annual attendance versus planetarium diameter prepared by the International Planetarium Society the Torun Planetarium shows a very high attendance for its medium size (Figure 1).

Large groups of tourists visiting our town from May till September attend one of the popular performances:

1. Copernicus and the Earth motion
2. The Blue Planet
3. The Great Encounter (of Comet Shoemaker-Levy with Jupiter)
4. Summer under the Stars.

Every programme is based not only upon the motions of the planetarium projector, but is enriched by well-adapted music and by slides, moving pictures from video-cassettes, etc. Not only school children but also professional astronomers find, for instance, the flight over Venus surface is quite exciting “when the instructor’s voice tells you what can be seen on your left, on your right, just like it would happen on a terrestrial excursion!”

Special attention has been paid from the very beginnings of the Planetarium existence to maintain good contacts with the provincial school authorities. As a result, regular conferences in teaching method for geography or physics teachers are being organised in the Planetarium lecture room: a lecture by one of the Torun University astronomers followed by a display of the possibilities of the Planetarium instruments and projectors. Six didactic programmes have been run during the past school year:

1. Wonderful Journey (beyond the Planetary System)
2. The Revolving Earth (consequences of diurnal motion)
3. Was Copernicus right? (consequences of Earth orbital motion)
4. The Solar Family (structure of the Solar System)

5. The Cosmic lights (birth, life and death of -stars)
6. The Star Islands (structure of galaxies).

Every programme could be adapted to the level of a particular class.

Nearly every Polish planetarium has still other types of specific activities, not necessarily related to the planetarium projector, but very important from the didactic point of view.

The largest Polish Planetarium in Chorzow (dome diameter 22 m) has been organizing Astronomical Olympiades for secondary schools for 39 years. They comprise three stages, the first at school, the second for neighbouring provinces, the final stage at the Planetarium. The jury is composed of ten professional astronomers, who not only allocate the final places, but are required to prepare the problems and exercises to be solved by students.

A small planetarium (dome diameter 8 m) built on top of a secondary school in Grudziadz (90 kms North of Torun) is the place where, for about 20 years, the final stages of an Astronomical Seminar take place. Secondary school students have to prepare their own scientific papers, based upon a chosen theme, or a computer programme, or own astronomical observations. Papers have to be presented at a meeting for every province, then the best go to the final presentation to Grudziadz. There are times when the jury members have to listen to about forty papers during the 3 days of the Seminar. This type of activity is prepared in collaboration with the Polish Amateur Astronomers Society whose members sit on the jury for this competition.

The Torun Planetarium is the place for the final meeting of the Astronomical Competition for Primary Schools (10-15 yrs). The Competition has been organised this year for the sixth time, jointly by the Polish Amateur Astronomers Society and the local school authorities. The first stage, some tests and simple astronomical observations, were prepared at home, and then twenty best students from 4 neighbouring provinces came to the Planetarium. I would like to tell here about two examples of didactic achievement. This year, the children have been shown video pictures of travel over the surface of the Earth, then Venus, and finally Mars. And after that: "You have looked at beautiful pictures, now give us some basic facts – write down the principal differences between the atmospheres of Mars and Venus"! And they did it; some children really presented samples of essential data. And they had to think quickly, having been given only five minutes time.

Another example. The group of seven best boys was given the last task: "Each of you must outline the most important information upon a given subject for 3 full minutes"! and the themes have been galaxies, or variable stars, or quasars, etc. And here also the children had to think quickly and to decide, which are the most important facts, how to present them to the audience, etc. I am thinking now about the answers of one of the youngest boys, Alexander, who took part in this competition for the third time. Two years ago, when he came here at the age of 9, he knew many things but he was too young, he did not know how to express himself, to present his knowledge. And this year, when he is already 11, he is more mature, he speaks more fluently and coherently about his favourite astronomical subjects. So I think young Alexander stands as a good example of the right effect of an astronomical competition upon the general abilities of children. Even if he will not become an astronomer in the future, Alexander has already gained one step in how to express himself, and that is something often not easily acquired. I see frequently my own university students finding great difficulties in expressing their knowledge coherently. So this is another unexpected result which will become useful for the general education of young people.

In more than one sense – the Planetarium is indeed a place to learn.