

amateur astronomy groups, and even gifted students.

As you can imagine, these special groups represent a very small fraction of our attendance at the planetarium but they need special treatment, and for that reason many planetaria around the world have at one time or another prepared a unique program in the star theater for them, built new and special exhibits, or given technical tours of their installations.

Earlier this year, the Dow Planetarium was involved in an unusual experience. At the planetarium, it is relatively easy to initiate the general public in astronomy. With shows in the star theater, observing sessions, and spectacular exhibits, the public can make direct relations between images and the real celestial objects visible in the night sky. But how can we initiate people who have never seen any stars — people without sight?

The Dow Planetarium in collaboration with the Botanical Garden, the Aquarium, and the Zoological Garden of the City of Montreal was involved in an exhibition to initiate these special people to the world of science. Our exhibit was a scale model of the orbits of the nine planets of our solar system. To permit exploring the exhibit, each orbit was drawn in relief so as to be easily located with the fingers and each planet was represented by a unique symbol. Experiments done with the visually handicapped have shown us that this concept was ideal for the exhibit. We also indicated in braille the names of the planets and the sun. But as only a small fraction of these people is able to read braille, an audio-guide describing each planet and the sun was available and highly recommended.

The exhibition was a great success. Imagine, for the first time, a complete scientific exhibition designed especially for the sightless person! At the Planetarium, we have learned a lot about this neglected clientele and the work we have done sets new standards for future exhibits (height, angle, and so on...).

Planetarium Activities in the Federal Republic of Germany

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The planetarium was invented by the German engineer Walther Bauersfeld of the Carl Zeiss Company in 1919, and the first projection-planetarium in the world was installed in the Deutsches Museum in München (Munich) 1923. Most of the German planetariums were destroyed during World War II. Today, nine major planetariums with dome diameters greater than 15m are in operation in the following cities in F.R. Germany; the numbers in brackets are the year of opening, the dome size and the seating capacity: West Berlin (1965; 20 m; 320), Bochum (1964; 20 m; 300), Hamburg (1933; 20.6 m; 270), Mannheim (1984; 20 m; 287), München (1925; 15 m; 156), Münster (1981; 20 m; 280), Nürnberg (1961; 18 m; 255), Stuttgart (1977; 20 m; 277), and Wolfsburg (1983; 15 m; 148).

The total seating capacity of all the major German planetariums is 293, and the total attendance is 1,130,000 at 16,300 performances and star shows. The main goal of the German planetarium shows is to teach astronomy with an element of entertainment, but not entertainment only or primarily.

Besides the major planetariums, there are 14 smaller ones, the most active being located in Bremen, Freiburg, Kiel, Osnabrück, and Recklinghausen. In the next few years planetariums will be put in operation in: Augsburg, Laupheim, Kassel, Ulm, and Wiesbaden.

At the opening of Stuttgart Planetarium in 1977, the Arbeitsgemeinschaft Deutschsprachiger Planetarien (Working Group of German-Speaking Planetariums) was founded (for the planetariums of Austria, F.R.G., G.D.R., and Switzerland). Since 1987, the Rat Bundesdeutscher Planetarien (Council of Federal German Planetariums) represents the planetariums in the F.R. Germany.

Bochum Planetarium: The Bochum Planetarium is a part of the Public Observatory Bochum. The tasks and aims of the Bochum observatory are popularization of astronomy and space sciences, and adult education. About half of the planetarium presentations in Bochum are public sky shows. A well-chosen proportion of astronomical information and entertainment has successfully proven to yield a maximum impact on a broad range of visitors. Regular light shows with a multitude of musical styles enhance the planetarium's importance as a local cultural center.

To ensure a continuing high standard of performance, the public sky shows are taped and pre-programmed. Our automation system meets all industrial standards and allows the application of many special effects.

Hamburg Planetarium: Located in the impressive Municipal Park Water Tower, the planetarium's Zeiss-Mark VI projector is the third instrument in a long history of the Planetarium. Hundreds of auxiliary devices enrich the performances with planet representations, galaxies, pulsars, panoramas, northern lights, and cloud formations. The dome of the Hamburg planetarium seats 270 visitors, to follow the monthly-changing programs or one of the special performances. The program is rounded out by exhibitions and telescopic guided tours.

Münster Planetarium: Münster Planetarium is an integrated part of the Westphalian Museum of Natural History. As in most museum-planetariums, we offer several taped programs a day for a general audience. But the scope of our many different programs (taped and live) includes general shows, shows on special astronomical topics, shows for children and advanced courses. Our presentations emphasize information rather than show elements.

Nürnberg Planetarium: The Nicolaus Copernicus Planetarium Nürnberg was inaugurated in 1961 as the first new planetarium built in Germany after the war. For 15 years, it was operated with a modernized version of the projector that had belonged to the old Nürnberg Planetarium (in operation 1928 to 1934). In 1976, a new Zeiss-projector model V was installed. More than 20 special-effect-projectors

were bought during the last 20 years.

Public shows are carried out by tape; 10 to 12 special lectures per year are given by foreign astronomers. Most demonstrations for pupils are live. Occasionally we have music performances.

Stuttgart Planetarium: Stuttgart, the capital of the German Federal State Baden-Württemberg, the Swabian metropole, was one of the first cities to have a major planetarium. It was opened in 1928 and destroyed in 1943. In April 1977, the new Stuttgart Planetarium was opened. The Carl Zeiss Company donated a Mark IV projector and additional financial support toward the cost of the building. It was the first planetarium in Germany with a fully automatic control system. The Zeiss-projector can be lowered under the floor with an elevator. In the first ten years, more than 2 million visitors came to the star performances. Besides shows for the general public, we give live presentations for school and special groups. About 50 per cent of the visitors are students and scholars. The full-time staff of eleven persons is supported by 21 part-time workers. The main tasks of our planetarium are to teach astronomy for the general public and for advanced students, too, and to demonstrate how small our blue planet is — a tiny island of life in the giant, deep, boundless universe — and that the fate of mankind depends on skilled behavior of all human beings for living in peace and freedom.

Marketing for Planetariums

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The sales promotion of the planetarium is a marketing problem. Program arrangements must take this into account. Marketing is not exclusively a tool to obtain a maximum profit: marketing methods can control the exchange problems between the public and the nonprofit planetarium. The planetarium produces a service. This service must be distributed to the public. The public must know that the planetarium distributes a special service.

The public visits the planetarium during leisure time. (One exception — the school classes — is not considered here.) Therefore one marketing problem of the planetarium is to sell its service as recreational value.

The leisure time activities of the public can be divided into 10 categories. These categories contain the basic patterns and needs of the public. The content of the public planetarium performances must try to cover the leisure-time categories. The communication windows of the public can only be reached by simplifying astronomical facts.