

METEOROLOGY

Space and Stars for All

A close look at the planets and stars is available at the more than 200 planetariums now operating. They are among the most popular educational centers in the U. S.

By ANN EWING

➤ SPACE TRAVEL is predicted within the next ten years, but a close look at the planets and stars is available now.

More than 200 planetariums scattered around the country are showing hundreds of thousands of persons yearly the nearness of the starry heavens.

Whether the twinkling lights of faraway suns are seen brilliantly portrayed against real space or against the artificial heavens of a planetarium dome, the grandeur of a star-sprinkled sky seems always to inspire breathtaking wonder.

In today's age of racing into space, the planetariums now operating in the U. S. alone are among the most popular centers of scientific education. For instance, in Chapel Hill, N. C., with a population of about 10,000, attendance at the University of North Carolina's Morehead Planetarium runs about 80,000 annually. More than 600,000 persons a year visit the American Museum-Hayden Planetarium in New York City.

The steady annual attraction of such large planetariums led to development of the medium-sized Spitz planetarium, whose cost is low enough to make it available to schools, museums or libraries even in small communities. For less than \$20,000, excluding land but including dome and seats, any person or group can have the stars almost literally in their backyard.

First Spitz Planetarium

Producing a cheap planetarium was long the dream of Armand N. Spitz, a self-taught astronomer with a background in newspaper and museum work. The first model appeared in 1947 and, since then, some 200 communities have installed these or later, improved projectors.

More recently the Spitz organization has produced large planetariums comparable to those in New York and Chapel Hill. Mr. Spitz has also gone down the scale in size, devising a small projector that can be used to bring the heavens into any suitable room. It is produced by a toy manufacturer.

The records of nearly every civilization show a fascination with and a desire to learn more about the pinpoints of light in the night sky. The attempts to re-create the motions of stars and other heavenly objects led finally to construction of today's planetariums. Many of these early attempts can now be seen in museums or are duplicated in the exhibit areas of planetariums, but none of them portray the sky with the breathtaking reality and the accuracy of a modern planetarium's darkened dome.

The first planetarium was completed at the Zeiss works in Jena, Germany, in 1924. Following this success, some 25 improved versions were built, six being installed in the U. S. and the rest in Europe. Besides New York and Chapel Hill, Zeiss projectors are installed in the Adler Planetarium in Chicago, the Fels Planetarium in Philadelphia, the Griffith Observatory and Planetarium in Los Angeles and the Buhl Planetarium and Institute of Popular Science in Pittsburgh.

The Morrison Planetarium in San Francisco contains a modified Zeiss instrument constructed in shops operated by the California Academy of Sciences.

The Zeiss projector is a dumbbell-shaped object about 12 feet long. In the two large globes at each end are the projectors for all the fixed stars visible from either hemisphere. The projector is a highly scientific elaboration of the familiar lantern by which slides are shown on a screen. The lantern slides are so shaped that the images fit together to make a complete picture of the starry heavens.

The Zeiss projector turns independently on any one of three axes: one parallel to

the polar axis of earth, one perpendicular to the plane in which the earth moves about the sun, and a horizontal one for demonstrating the appearance of the skies from different latitudes.

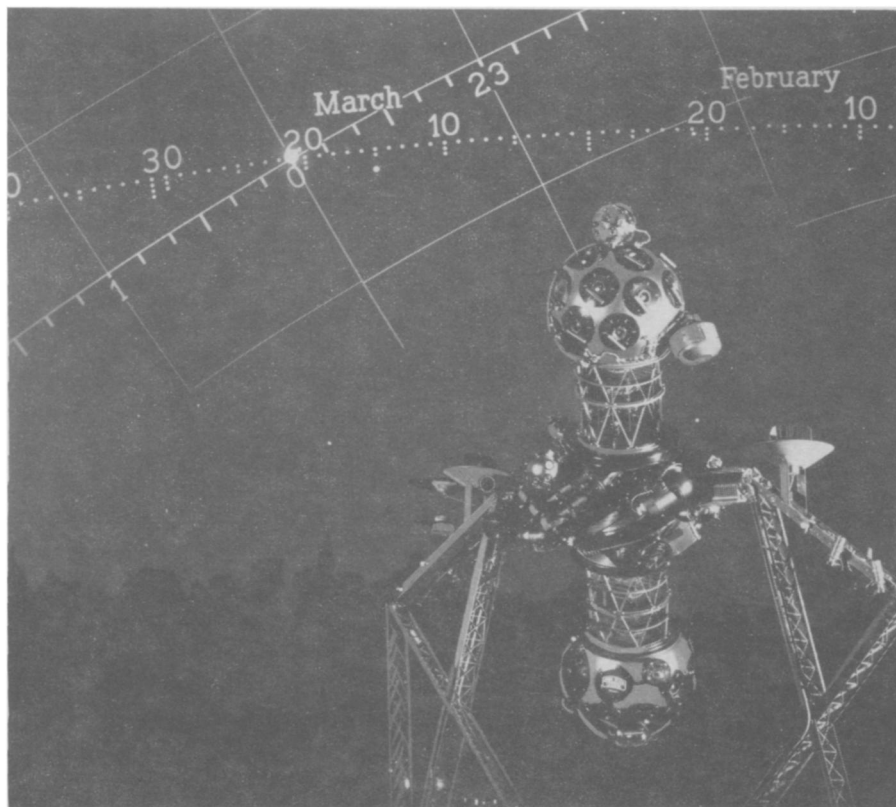
The whole apparatus has several different speeds, all many times faster than real motions. Thus a very long astronomical story, such as how the heavens looked 5,000 years ago, can be condensed into a few minutes. Separate projectors are used for nearby objects such as the planets and sun, and their motions are also separately controlled.

All possible motions of all projectors are remotely controlled by a lecturer from a switchboard located in a speaker's stand at one wall.

The small Spitz planetarium differs considerably from the Zeiss. The original model was a dodecahedron (12-sided) assembled from 12 pentagonally shaped black plastic sheets. At the center was a small electric bulb. Its light, shining through holes machined in the surface of the dodecahedron, made the star images.

In later models, the plastic has been replaced by aluminum, and special lens-type projectors have been attached for each of the first magnitude stars.

Large Spitz instruments, comparable to the Zeiss, are installed at Flint, Mich., the



SIMULATED STARS—How the seasons are shown by the sun's apparent motion against the background of stars is pictured in this photograph of a planetarium dome. Spring arrives this year March 21 at 3:55 a.m. EST.

U. S. Air Force Academy in Colorado Springs, and in Montevideo, Uruguay.

In Boston, another planetarium is being installed, part of the Museum of Science in Science Park. This instrument was built by Frank Korkosz at his shop in Springfield, Mass. It is a completely new design incorporating the advantages of both Zeiss and Spitz.

Many other planetarium installations are on drawing boards. Washington, D. C., St. Louis, Miami, San Diego, Milwaukee and Spokane are among the cities indicating interest in erecting a large planetarium.

The Zeiss works are again back in operation, both in East and West Germany, and each produces large planetariums to order. The Goto Manufacturing Company in Japan reportedly has said it would produce planetariums.

However, as Armand Spitz points out, the type of planetarium instrument used is not important. A planetarium is like a musical instrument, he said, and good or poor music is forthcoming depending upon who operates it. Its success depends upon the imagination, vision and dedication of the operator.

Planetariums Teach

A planetarium is actually a time and space machine. It is also, and more importantly, a most versatile and dramatic teaching aid.

It can be used to dramatize not only astronomy, but geography, mathematics, navigation and other physical sciences. It can be useful in teaching persons of all ages, from kindergartners to great grandparents.

The use of a planetarium in the general education programs of schools and colleges is augmented by the large part it plays in training for military operations.

The general field of adult education, separate from either schools or military requirements, also draws upon a planetarium. Boat owners, pilots, fishermen, hikers, and nature lovers in general take advantage of planetariums.

The medium-sized Spitz planetarium projector, which by itself costs about \$6,000, stands about three feet high and weighs only 25 pounds. Thus it is readily portable, and the Boston Museum of Science took advantage of this fact to set up the world's first traveling planetarium.

More recently, the United Nations Educational, Scientific and Cultural Organization bought a Spitz planetarium and is using it similarly on a world-wide scale.

Sometimes the purchase of a planetarium depends on the success of a fund-raising campaign. Among the ingenious methods devised to help promote such a campaign is one urging persons in the community concerned to "buy a piece of the sky."

The sun and the moon might, for instance, be sold for \$500, the planets for \$100 and up, constellations for \$100, choice bright stars at \$25 and lesser stars down to one dollar apiece.

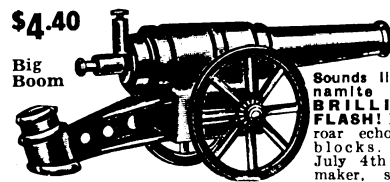
This kind of promotion could be used by any community seeking to enlarge its educational and cultural facilities for residents and nearby communities.

Science News Letter, March 7, 1959

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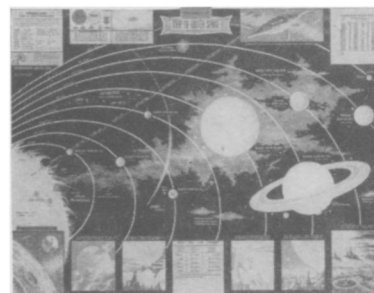


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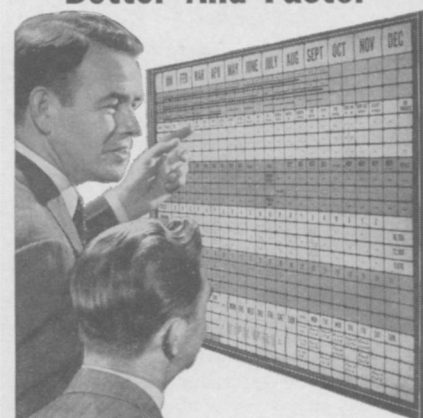
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