VIDEO EXCERPTS OF THE PLATISPHERE

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Abstract: A demo videotape that is in production shows excerpts of the construction and use of a paper Platisphere. Variations of the device, which shows the circumpolar stars visible at any given time or date, include a children's version, a tactile version, and an astrophotography version. GLPA members are asked to evaluate the sample footage shown at the conference.

A planisphere is a device that represents the sphere of stars on a plane surface. In this activity we will make a Platisphere, which depicts the circumpolar stars on the surface of a paper plate. On the conference poster, sample Platispheres and variations are displayed, and a demo videotape showing how to make and construct paper plate activities includes lessons on the Platisphere. GLPA members who are interested in evaluating the tape and sample activities prior to a final production are asked to contact the author.

Because the instructions for making a Platisphere will likely be available soon on a videotape or website, the following instructions are abbreviated. Using astronomy software, print out a star chart of the north circumpolar stars centered on Polaris. Select a limiting magnitude of 3.5; field of view equal to 100 degrees; horizon being transparent; the meridian line indicated; and the starfield set for January 1 at midnight. Cut off extra paper from the star chart to include the circle of stars from Polaris down through 40 degrees of declination.

To mass-produce enough Platispheres for an entire class, center and affix the chart to the top of a stack of black paper plates. Clamp the stack so as not to cover any stars. Using a drill or drill press, drill a hole through the stack of plates at each of the stars shown on the top star chart.

Where the meridian line extends to the perimeter of the paper plate, drill a large hole to indicate the "Up" position for January 1 at midnight. When you hold the plate so the stars are shown with the hole up, the starfield should coincide with the real sky view as the new millennium begins.

Next make a local horizon plate. On the center of a larger white plate, punch a hole. As an option, attach a small strip across the bottom of the plate and draw a scene to the north, including trees or buildings as reference points. To mass-produce local horizons, tape a horizon template onto a stack of large white plates and cut local features out of the plates using a band saw or scroll saw.

Secure the optional foreground horizon to the white background plate so as to have a three-dimensional look. Slide the black starfield plate between them and secure the black plate with a paper fastener through Polaris and through the hole on the white plate. The foreground horizon should be low enough to cut off Alkaid from view as the black plate is rotated through 180 degrees. This suggests that Alkaid is technically not a circumpolar star from much of the Great Lakes viewing area. Your device is ready to use.

Circumpolar stars appear to rotate counterclockwise around the north pole, which is conveniently marked in the sky by Polaris, the North Star. Unlike the seasonal stars seen toward the south, circumpolar stars and their respective constellations are visible throughout the year. From the Great Lakes region, the major circumpolar constellations are Ursa Minor (the Little Bear), Ursa Major (the Great Bear), Cepheus (the King), Cassiopeia (the Queen), and Draco (the Dragon).

Because the Earth rotates once per day, the circumpolar stars appear essentially to travel around Polaris every 24 hours. Each hour the stars sweep through 15 degrees of sky. Therefore if you were to note the position of a circumpolar constellation at, say, 9:00 PM, you would find that six hours later at 3:00 AM the constellation would have rotated 90 degrees around Polaris. A long-duration photograph depicts this stellar motion as a smear of concentric arcs called star trails.

When the indicator hole on the perimeter of the plate is centered on top of the plate held vertical, the Platisphere sky is aligned for January 1 at Midnight. Relative to this starting point, you will align your dial with the current sky by positioning the indicator to the current date and time. The white background plate and foreground horizon will remain stationary and upright as you rotate the black starfield plate through the hours and months.

To use the Platisphere, first set the dial to the current date. Because the Earth revolves 360 degrees around the sun in 365 days, the sky seems to shift about 1 degree per day. Mentally subdivide the plate into 12 pieces of a pie to mark the 12 months of the year. Rotate the indicator counterclock-