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The Foucault Pendulum

The Foucault Pendulum, now located in the Public Lobby area of the General Assembly Building, is a gift from the Government of the Netherlands. It gives visual proof of the rotation of the earth.

The principle was first demonstrated in Paris in 1851 by the noted French physicist, Jean Bernard Leon Foucault, who suspended a cannon ball from the dome of the Pantheon by a wire about 250 feet long, and at each swing the pin swept over a circular ridge of sand, cutting into it and tracing the movement of the pendulum. The plane of swing was found to shift slowly in a clockwise direction. Actually the floor underneath the pendulum was turning since a free-swinging pendulum cannot change its plane.

The pendulum now on display in the public lobby of the General Assembly Building is a 200-pound gold plated sphere, 12 inches in diameter, partially filled with copper and suspended from the ceiling 75 feet above the ceremonial staircase by a stainless steel wire. A universal joint allows it to swing freely in any direction. The sphere passes directly over a raised metal ring at the centre that contains an electromagnet, which induces a current in the copper inside the ball. This supplies the necessary energy to overcome friction and air resistance and keeps it swinging uniformly.

The sphere takes approximately 36 hours and 45 minutes to complete its cycle. The time of rotation has been found mathematically to vary in accordance with the latitude of the location of the pendulum. At the North Pole, where the pendulum would be directly above the earth's axis and the latitude is 90 degrees, the time of rotation is 24 hours. At the equator, where the latitude is 0 degree, the plane of the pendulum would not shift at all. At other latitudes the Foucault effect varies, becoming more pronounced nearer the poles.



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