My home-made “Celestial Sphere”. Gordon Lloyd, 24/01/11

This is about a transparent, Celestial Sphere I made for teaching astronomy.

My idea was inspired by a book called “Practical Astronomy” by H. Robert Mills. ISBN 1898563004.

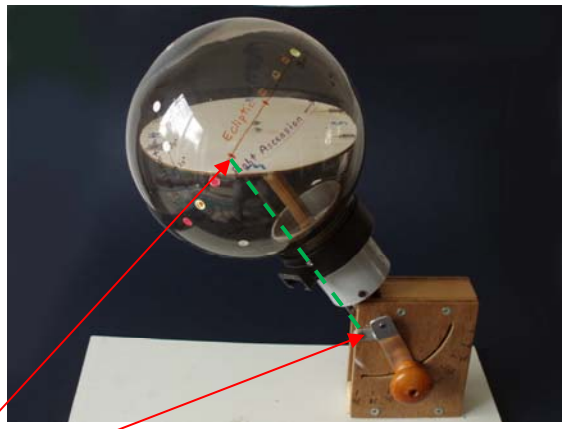
The most important things about my Celestial Sphere are:

- It only needs ordinary tools because it doesn’t have to be very accurately made.
- It uses wood, plywood and “junk” found at home, and handy bits from B & Q etc.
- Mine is only one example. Anyone can make their own version, in any size, depending on what “junk” they can find and with whatever skills and tools they have.
- Unlike 2-dimensional aids, this is 3-dimensional and very nicely illustrates the main features of “The rotating earth and sky”. (An old “Astronomy Now” article!)

The transparent globe was from a garden light. It is attached to the grey bit of plumbing tube and the black tube, which was part of a lamp!

This photo shows the sphere angled for our Latitude of about 51½°, as seen on the scale.

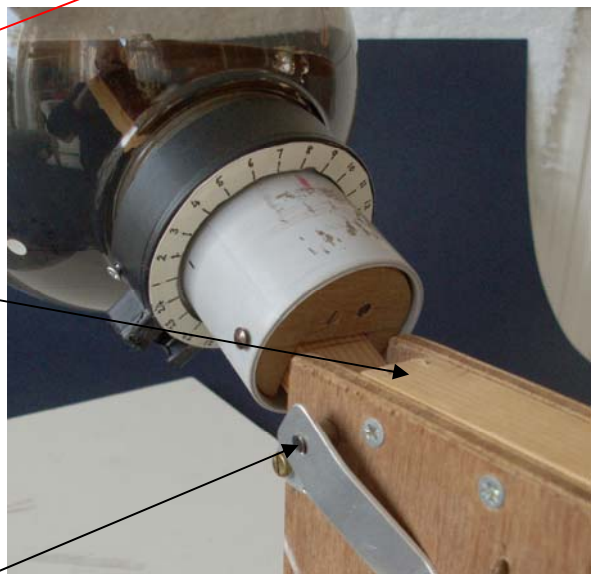
The white, circular card inside the sphere is where I should have placed a tiny “observer”! His horizon is the rim of the card.
A thin, steel rod (– – – line drawn on photo), is hinged on a bracket under the globe, runs inside the tubes, and is hinged here.
This lever system makes the card stay level as the system is tilted for different Latitudes.



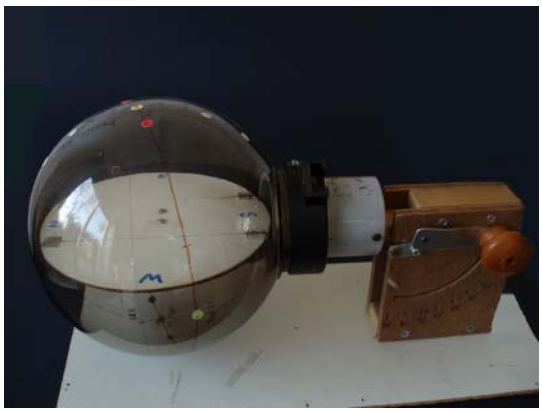
The Globe/black tube assembly rotates on the grey tube which is fixed on 2 discs attached to a wooden beam. This is hinged, under here, by a small hinge inside the top of the box.

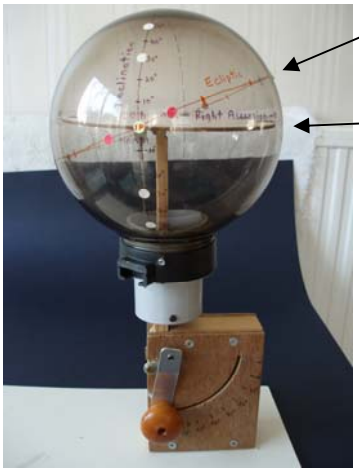
The beam carries on through the box to just beyond where one can see a curved slot and wooden, clamping knob (Top photo). This knob clamps its angle when it’s set for Latitude.

The aluminium lever is just a Latitude angle pointer which is hinged on a small screw, in line with the brass beam hinge and reads against a hand-drawn scale of degrees. (Top photo).

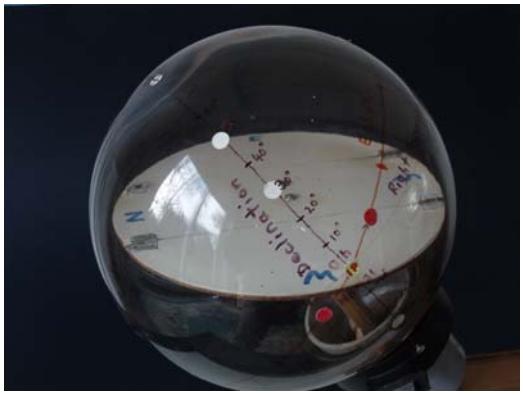


Also seen above is a scale of hours. This matches the Right Ascension scale drawn on the globe – as described on the next page. It is useful to illustrate the passing of time.





Left and Right. The Sphere set for observers at the Equator (above), or the North Pole (right).



The compass points NESW are marked on the card.

Some important things are drawn on the globe:

- The Celestial Equator (in black). Seen better on the right-hand photo above.
    - Four Hour Angles marked along it.
- The Ecliptic (in red). See right-hand photo.
    - Red, paper (Sun) stickers at Solstices and Equinoxes.
    - The 4 dates, above, marked there.
- The Zero Right Ascension circle (black).
    - Declination angles marked on it.
- White, paper stickers, as required, typically representing stars in particular positions such as:
    - Polaris.
    - Stars which reach the Zenith.
    - Circumpolar stars.