

Sundials and Armillaries

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Introduction

It's a basic human instinct to want to keep track of time - We're fascinated by its passage, our mortality is linked to it, our joys, our sorrows, our memories are highlighted on its stage. The popularity of sundials in the garden today reflects the fact that they appeal on several different emotional and practical levels.

On one hand, they recall a romantic aspect to less hectic lifestyles - one that predates the technology of digital clocks, watches, beepers, and faxes. Some dials, with engraved phrases recall Victorian sentiments about marriage, longevity and mortality.

On the other hand, sundials offer a practical design solution in the garden by adding height and visual interest in beds or lawn. A sundial and pedestal is a focal point that's taller than shrubs or perennials, but lower than trees. This visual plane (from 4 to 6' high) is often overlooked in garden design.

Sundials also appeal to our technical and mechanical natures, an appreciation for the combination of art and science. It fascinates us that we can track the hours with such a seemingly simple device. How exciting to see a visible sign of earth's mark and movement ...our place amongst the other celestial bodies!

History & Types

The earliest known sundial dates from ancient Egypt about 1500 BC. There were several forms including portable bar and stone models along with weighty obelisks constructed to mark not only the hours, but also calendar days and months. Sundials were also placed in temples as sites for votive offerings. Even the Old Testament (circa 700 BC) references a sundial when the prophet Isaiah called for a sign by requesting that the Lord "have the shadow go back ten steps." The Greeks and Romans developed many types of sundials including cylindrical, spherical, conical, planar, and combination models. Sundials came into widespread use in the 17th and 18th centuries in Europe.

Today most garden-variety sundials are one of four types - *Horizontal* (flat), *Vertical* (wall-mounted), *Spherical* (3-dimensional), or *Combination*.



The simpler flat and wall-mounted models are usually a round or square surface of metal or stone with an arc of hours marked upon it. A metal rod or gnomon is attached at an angle to the face plane and casts the shadow upon the hour marks. Many fanciful gnomons have been fashioned after garden insects and animals like the butterfly, dragonfly and hummingbird. Wall-mounted sundials are more common and popular in Europe (particularly France and Spain). Perhaps this is because there are fewer exterior 'walls' in American suburban gardens.



The spherical sundial or 'armillary' is a somewhat more complicated and visually interesting model. The original armillary represented Ptolemy's view of the universe (later displaced by Copernicus) where the sun, moon and stars revolved around the earth. So a 'true armillary' is an elaborate globe of revolving, nested spheres and ringed orbits. Ornamental and historically interesting, but not a timepiece.

What serves as a sundial today is a modified armillary. These *armillary-spheres* vary in their complexity but usually include an equatorial band (with hours marked upon it), an ecliptic band that represents the apparent path of the sun through the sky, and an arrow or rod through the sphere that corresponds to the earth's axis and casts the shadow onto the equatorial band. More complex ones have additional bands, which represent the solstice and equinox positions. Armillary-spheres are manufactured of lead, cast bronze, brass, aluminum or iron. They tend to be more expensive but showier and more commanding ornaments than flat or vertical sundials.

Combination sundials combine a flat style with a birdbath basin. Vertical dials can also announce a street address or residence nameplate.

Placement, Position & Accuracy

Sundials will never tell time as accurately in minutes as we have come to expect in our twentieth century lives. However, they can be more accurate based on how closely the angle of the gnomon off the horizontal plane matches the angle of your latitude position. For example, George Washington knew the latitude of Mt. Vernon, Virginia was 39 degrees, and he designed a flat, octagonal metal sundial with the gnomon set at 39 degrees off the horizontal. If you buy a reproduction of this sundial today, it is fairly accurate if you live in Maryland or Virginia but far less so for Florida or Minnesota.



Even when your latitude corresponds to the angle of the gnomon, the dial is most accurate approximately four times a year. Clocks measure mean solar time but dials indicate apparent solar time. These four dates roughly correspond with the summer & winter solstice, and the spring & fall equinox.

When placing a sundial in the Northern Hemisphere, the gnomon (that which casts the shadow) should point to geographic north (not magnetic compass north). In the Southern Hemisphere, it should orient to the geographic South Pole. The quickest way to find this north orientation is to set the sundial outside on a sunny day at twelve o'clock noon (not daylight saving time) and place the dial so the shadow falls at twelve. The gnomon will be pointing to geographic north.

Vertical sundials must be mounted on a south-facing wall.

Design Considerations

Selecting a favorite sundial is usually only half the decision process! What to place it on is also a big question. Obviously the best spot in the garden is an open, sunny one... a central focal point. Not all gardeners are so lucky to have such a spot and many dials have moved into shadier corners. In doing so, their design importance doesn't lessen at all.



The shape, size, height and bulk of the stand becomes important wherever the dial is located. Is it located in a planted bed, on mulch, brick, concrete or turf? What are the color, texture, surface, height and nature of the surrounding plant or hardscape material? These design elements influence how tall or short, how slender or bulky, how plain or detailed, how round or square the base should be.

Use your imagination to achieve the height and interest for this focal point in the garden. Be inventive with the bases. There are many other options besides stone or concrete pedestals. Consider using cast iron urns, olive/water jars, antique chimney pots, overturned pots, millstones & grindstones, even tree stumps or well covers!

The design uses for sundials in the garden is unlimited. They complement traditional/formal landscapes as well as rustic, informal, country or suburban locations. As mentioned earlier, they can add height, volume and form to a mid-ground visual area often overlooked after we have put in the perennials, shrubs and trees. Choose a sundial & base in good proportion, scale and style to its location, then reap the rewards of a unique and practical focal point in the garden.