ILLUSTRATING SHADOWS

316 pages

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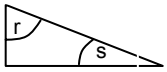
NOTE:

Illustrating More Shadows is more advanced. It covers the astronomical equation of time, valid for several millennia, the planispheric astrolabe both geometrically as well as trigonometrically, very extensive coverage of the declination or calendar curves, and the inclined decliner. Also covered are DeltaCAD macro programming and BASIC programming for sundials. There is extensive work on glass and clay dials for outdoor use, as well as the use of ordinary building materials.

GENERAL INDEX ~ to a chapter or appendix

altitude	the angular distance of the sun above the horizon – A4.1, A8, Ch 15. Ch 3
armillary	a dial whose dial plate is cylindrical paralleling the polar axis – A8, Ch 5
analemmatic	a dial whose gnomon varies by date, with hour points not lines – A4.3, Ch 15
apparent time	time indicated by any sun dial, often said as L.A.T. – A8, Ch 2
arctic	latitudes whereby day may be 24 hours, or night similarly, depending on the season
astro-compass	a device to locate true north or south usually using the sun – Ch 4
astrolabe	an altitude dial directly using the ecliptic – see Illustrating More Shadows
Atkinson's Theorem	Rotating an hour angle dial around the style can create a longitude shift - Ch 11
azimuth	the angular distance of the sun from its noon time "southing" – A4.2, Ch 15, Ch 3
Babylonian	hour lines showing hours from sunrise – Ch 16
CAD	computer aided design, helps with construction drawings – Ch 10, 18, 20
calendar lines	indicate the sun's declination at a time of the year – Ch 8, 16
Capuchin	an altitude dial that teaches us much – Ch 15
center	dial center is where the hour lines all meet – A9, Ch 5
co-latitude	this is 90 degrees minus the latitude
compass	can be magnetic for north, or drafting for drawing circles – Ch 4
cylinder dial	a dial on a cylinder, may be altitude or azimuth based – Ch 15
daylight saving	a political expediency of little benefit in the information age
declination of the sun	the sun's angular distance north or south of the equator, or celestial equator, seen or measured from the center of the Earth, +/- 23.5°, also see ecliptic – Ch 8
declination - magnetic	difference between magnetic and true north, mariners/aviators call variation – Ch 4
declination of a wall	alignment of a wall from either north or south – Ch 12, Ch 14
declination lines	nodus lines or arcs for a given date or declination – Ch 8, 16
degrees	angular measure, 360 of them to a circle
deviation	over and above magnetic variation (or declination) the displacement of magnetic north due to local magnetic materials
dial plate	the place where hour lines and other items exist – Ch 5
difference in longitude	a longitude displacement (DL) where the dial may be horizontal – see style height. When the shadow is on the sub-style - Ch 12, Ch 16.
Durer, Albrecht	A scientist in the 16th century – Ch 10
ecliptic	the apparent orbit of the sun around the Earth, or the Earth around the sun – Ch 20
empirical	trial and error
EOT	equation of time – how much the sun's indicated time is fast or slow – A2, Ch 2
equal hours	hours we use in modern times
equation of time	the correction to make sun time match mean time and thus legal time
equinox	when the sun is over the equator, its declination is zero and day equals night, and is approximately March 21 and September 23. Every day on the equator is one. Ch 2, Ch 3
equator	the great circle line around the planet, perpendicular to the polar axis, that the sun moves north and south of over the year, baseline for latitude, and for solar declination – Ch 2
equatorial	a dial plate paralleling the equator – Ch 5
equinoctial dial	same as equatorial dial
formula	a mathematical set of steps to derive a result – Ch 18, A8
furniture	items on the dial plate, such as calendar lines – A9
geometrical	derivation of results from the use of tools and angles
gnomon	the fin or rod or other device that is used to indicate time (see nodus) – A9, Ch 5
great decliner	vertical almost east or west – Ch 14
Greenwich	a city in England through which longitude 0 passes
horizontal	flat, parallel to the horizon – Ch 8
hour angle	the angle the sun makes around a polar aligned style at 15° mean per hour – Ch 3 also the angle the moon makes around such a style at about 14.5° mean per hour – Ch 20
hour line	lines that indicate the time on a dial plate – Ch 5
hour line angle	angle of an hour line – derived from a number of variables – function of latitude, hour angle, wall declination, and dial plate slope or reclination
hour point	a location to which a shadow points, as opposed to an hour line, see analemmatic dial
inclining	tilted, measured up from horizontal (complement of reclining from the vertical) – Ch 13
Italian	in practice: hour lines showing the hours left until sunset – Ch 16 by formal definition: hours since the last sunset
latitude	a measure of how north or south of the equator you are – Ch 2
L.A.T.	local apparent time, time indicated by a sun dial – Ch 3
limiting hours	hours a dial can possibly display – Ch 17
longitude	a measure of how far east or west of Greenwich England you are – Ch 2

mass clock	dials with lines scratched out to mark church services
mean time	a fictitious time, parallels clock time, the sun needs to be corrected by the equation of time in order to match mean time – Ch 2
meridian	a line of longitude running north to south through a location, often a noon time association exists with this word – Ch 7
Middleton Scales	graphical design method – Ch 18, A8
minutes of arc	one minute of arc is 1/60 of a degree
minutes of time	on minute of time is 1/60 of an hour
moon	our major natural satellite, or the other half of the binary planet system comprised of the Earth and moon, hour angles are not 15 degrees per hour
mottoes	words of contemplation often placed on dial plates – Ch 16
multi-face	a dial with several dials as on a cube or other complex solid
nodus	the part of a gnomon or style that often indicates the date – Ch 5
noon dials	dials that focus on indicating noon time very accurately, often use an analemma, or figure of eight
north pole	the northern place around which the Earth rotates – Ch 2
north star	a star very close to the extension of the north pole – Ch 4
o-g dial	an altitude dial with graceful curves – Ch 15
pillar dial	a cylinder dial, shepherds altitude dial, or other dial on a column – Ch 15
planets	heavenly bodies reflecting light, orbiting, within a solar system, mostly on the ecliptic plane
polar dial	a dial plate paralleling the latitude – Ch 5, Ch 6
polar axis	the imaginary line around which the Earth rotates – Ch 2, Ch 3
projection	taking a line designed for one surface and making it work on another surface
protractor	a device for measuring angles between lines
radians	an alternative angular measure, often used by spreadsheets
reclining	tilted, measured from the vertical – Ch 13, Ch 11
reclination	The angle a slope makes with the vertical. A roof that has a gentle slope (incline) of 20 degrees has a reclination angle of 70 degrees, Reclination and slope (inclination) are the complement of each other. This book uses slope for reclining or inclining dials because the slope and the latitude use the same base. Other books use reclination and co-latitude. Same end result, but two extra steps.
rules of thumb	**CH 14, 17, 20, AP8. see index**
scratch dial	dials with lines scratched out to mark church services (mass etc)
second of arc	one sixtieth of a minute which is one sixtieth of a degree
second of time	one sixtieth of a minute
shepherd	a shepherd's dial is a column dial using solar altitude – Ch 15
solstice	when the day is shortest (winter) or longest (summer). June and December 21 – Ch 3
southing	when the sun is at its highest altitude at noon – Ch 4
spreadsheet	a computer program facilitating calculations in tables – Ch 18, A9
stained glass	opaque or translucent glass – Ch 19
standard time	a legal time at a specific longitude, used in a geographic area – A8, Ch 2
stars	heavenly bodies radiating light, well outside the solar system, fixed in position
style	the shadow casting part of a gnomon – A9, Ch 5
style distance	the angular (usually) distance between the sub-style and noon – A9, Ch 5
style height	the angular distance (usually) between the style and sub-style – A9, Ch 5
sub-style	the sub-style is that part of the gnomon affixed to a dial plate – A9, Ch 5
sunrise/set	many definitions exist and each varies somewhat. – Ap 8, Ap 6
temporary hours	hour lines that vary day to day, or hour to hour, not used much now
time	a measure of the progress of the mysteries of the universe
time zones	legal areas in which all agree upon a common time, also see standard time – A2
trigon	a device to aid in projecting angles on a dial under construction – Ch 6
trigonometry	a mathematic process using functions to aid in calculating angles or distances – A1
trivia	**see index**
tropics	the limits of the sun's journey north or south, where the declination is plus or minus 23.5 degrees – Ch 2, Ch 3
unequal hours	hours that are not fixed
usable hours	hours a dial can possibly display – Ch 17
variation	is what mariners and aviators call the variation from true north of magnetic north, dialists call this declination.
vertical dial	a dial whose dial plate is vertical – Ch 12, Ch 9
zodiac	a calendar system more related to the natural scheme of things in the solar system



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NOTE: There are two indexes. One is general, and names only the chapter or appendix, and is blended with a glossary. The other is page specific and addresses the chapters only. The former is designed to let you see the forest, the latter is designed to let you see the trees, and leaves. Please use both indices to best achieve your search goals. This edition of the book dropped the cross reference to the benchmark books of Mayall, Rohr, and Waugh since those page numbers can vary by edition.