

declination results agree to within half a degree. Errors are obvious as outliers.

If you are interested, e-mail me and I will send pictures (106 kb JPG) and operating instructions for the dial.

A Declining Noon Mark

To: Mike Shaw, mshaw01@globalnet.co.uk
From: Fred Sawyer

>I am thinking of making a noon mark on a brick wall in my garden. The wall declines 14 degrees east. My nodus is c units perpendicularly horizontal to the wall. What is the formula for working out my analemma? - Mike

Mike - Let the foot of your stile be the origin (the point on the wall perpendicularly horizontal to the nodus), with x increasing to the east and y increasing towards the ground.

Let $M = \cos t \sin \text{lat} - \cos \text{lat} \tan \text{dec}$

Let $N = \cos t \cos \text{lat} + \sin \text{lat} \tan \text{dec}$

(lat is latitude, dec is solar declination, and t is hour angle of the sun).

Then the point on the wall where the nodus' shadow falls is:

$x = c (\sin t - M \tan d) / (M + \sin t \tan d)$

$y = (c \cos d - x \sin d) N / M$

(In your case, the wall's declination $d = -14^\circ$)

This gives you the point of the shadow for any time t and date dec. To draw the analemma, substitute values for t recognizing your longitude and eot corrections for each date dec.

To: Fred Sawyer
From: Mike Shaw, mshaw01@globalnet.co.uk
Fred - You will be pleased, though not surprised, to learn that your equations are, as expected, spot on. Yesterday was the first day of good sunshine since receipt.

I set up a rig (knitting needle attached to the soffit board, and a sheet of graph paper stuck to the wall) and marked the point of mean noon and at noon, the shadow pointed precisely, well within the accuracy of my rough set-up precisely, to the mark.

I think you should publish the equations in *The Compendium* - lots of others would find them useful I'm sure.

Personal Horologium

Mike Shaw produces a personal horologium - a table of shadow lengths at each hour of the day in each month of the year, based on the assumption that the person casting the shadow has a height equal to six lengths of his or her own foot.

Any member who would like to receive a personal horologium (a nicely printed, laminated table) designed for any specified latitude and longitude, with longitude and equation of time corrections built in, can request one from Mike. Send a \$5 bill to cover his costs (and avoid bank charges and currency exchange issues) along with the required latitude and longitude. Please also specify the longitude of the central meridian of your time zone.

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Dialing Bibliography

INTERNATIONAL BIBLIOGRAPHY OF GNOMONICA, by Charles K. Aked and Nicola Severino, West Drayton-Roccasecca, September 1997. This compilation is perhaps the largest published bibliography on dialing in the world. It contains approximately 11500 references to dialing books and articles. The Bibliography is written with Microsoft WORD 7 in Windows 95. It is available on 2 floppy disks at a cost of \$50 US. For further information, contact Nicola Severino, Via Lazio 6, 03030 Roccasecca Stazione (FR), Italy or by email at niksev@officine.it