

Field trip 2011: Asten *secretariat* 3

Plans for the 2011 field trip involve the Asten Carillon and Natural History Collection (which includes the new De Dondi astrarium) as well as lectures on various subjects.

Meeting, 24 September 2010 *secretariat* 4

Nineteen members were present. – A request for assistance with the *Sundials in The Netherlands* section. – The Society was a guest at the Deil Art Fair in June to help promote the Geldermalsen Sundial Walk. – In 2010, and for the first time in the Society's history, the annual field trip was cancelled. Causes are discussed. Suggestions for the 2011 trip are invited. – A plea for web site material. – The 2011 meeting dates.

Pals recounts his getting lost during the 2009 trip to München, and how well things were solved. – Spruijt noticed a photo book, made by a sister society. Apparently, printing costs are bearable. Would a book of Dutch sundials and descriptions be a good idea? – Groeneweg discovered two interesting dials in Bulgaria, but it is unclear how they are supposed to work. – Maes helped artist Kolsté complete the Roman Clock, an antique hours sundial. – He also photographed a polyhedral sundial in a Stuttgart museum. Maes analysed canonical dials, graphing their readouts with respect to local apparent time. – And he is raising funds for the restoration of the Echten Twin Dials. – Sasbrink wrote a hand-out concerning the use of golf leaf. – Hollander designed and made a horizontal sundial showing retrogradation.

Meeting, 8 January 2011 *secretariat* 8

Again, nineteen attended. – Who can help manage the Sundials in The Netherlands archive, and which sundials are to be archived? – More 2011 field trip considerations. Speakers? Other symposia? – Meeting dates for the new year finalised.

Maes succeeded in raising all the needed funds for the Echten Twins. Congratulations! The Twins are at the restorer's. – Maes shows photographs of sundials he encountered, and of the new Budel-Dorplein terrace dial. – He notes that the new sundial in Nieuw-Roden (in which the Society nor any of its members were involved) is quite defective. – Pals calls to attention some beautiful photos of halo and other phenomena. – Van Drunen shows photos of dials on a sundial walk in Krippen (near the Elbe river). – Schoorel mentions the 'solargraph' experiments of the Zeeland observatory. A sheet of photo paper is fitted inside a soda can with a small hole in the side, so recording the diurnal arcs of the sun. The exposure is so long that the paper does not need to be developed; it is sufficiently darkened for the arcs and the landscape to be visible. Reversing the black-and-white image is done using a scanner and editing software. – De Rijk invented a virtual sundial. Hour lines are marked on a

photograph of the view from the window, using the shadow of available structures. Comparing actual shadows with the picture gives the time. – Hollander designed and made a sundial for a client who works with renewable energy. Besides time, the dial shows incoming sunlight as a percentage of maximum. – He also brought some spare New Year's cards, for those who missed it. The card shows the sky at one minute to midnight and fireworks.

"Suncatcher", Etten-Leur *T.J. de Vries* 10

A large pole style terrace dial, unveiled 26 November 2010. Up on the gnomon, a human figure catches the sun with a solar panel. In the evening, the figure glows, using the 'collected light'. The dial shows standard time, longitude adjusted, without EOT correction.

Terrace dial, Budel-Dorplein *editors* 11

Unveiled 16 October 2010, this is another pole style terrace dial. Volunteers designed and built it. Note the mosaic work. It is expected that this Bulletin will cover the dial in greater detail later.

Chris Doomernik *obit. notice* 11

Member Chris Doomernik passed away at age 87.

Retrograde sundial, Hoofddorp *H.J. Hollander* 12

The text of II Kings 20, or Isaiah 38, continues to inspire sundial makers because it describes a backward or retrograde motion of the shadow. This motion naturally occurs on analemmatic sundials for latitudes between the tropics, and for any dial derived from such a one by translation. It is also possible to design a *horizontal* analemmatic, showing retrogradation, for latitudes outside the tropics directly, by choosing a projection angle other than vertical. Hollander used a zenith angle of (90–53) degrees, as shown in the drawing. The sketches show the direct and retrograde motions. In this respect, the dial behaves as if it were an ordinary analemmatic for, and in, 15 degrees latitude.

The resulting dial is in the Bible Garden in Hoofddorp.

Hohenfeld polyhedron, reconstruction *F.W. Maes* 15

This sundial, a gift to Prince (later Duke) Friedrich I from Ludwig von Hohenfeld, is a 26-faced semi-regular polyhedron consisting of squares and equilateral triangles, all sides measuring 70 mm. There are dials on all faces except the bottom one. All 25 gnomons are square to their respective surfaces.

The author, wanting to make a copy of the sundial, photographed it as well as could be managed and used a 2005 version of Paint Shop Pro processing software to remove perspective distortion from the images.

The Perspective Correction Tool will restore right angles, but will not always return a true square. However, it is an easy matter further to turn a rectangle into a square. All squares were normalized to 500 pixels width and height.

A trick enabled the author to use the tool on the triangle surfaces as well. He imagined a rectangle around the triangle (see Fig 3) and restored that to right

angles; afterwards, the width and height were made 500 and 433 pixels, respectively, which is the proper ratio for an equilateral triangle.

All surface images were individually corrected for brightness, contrast and colour balance, and sharpened. Finally they were joined to make up the “cut-outs”.

There are different kinds of hour lines, mostly indicating local time. Two faces show roman numerals, the others arabic. The four vertical ordinal faces have Babylonian and Italian hour lines. Zodiac signs are on the vertical cardinal faces, as well as on the top south and bottom north faces. The top and bottom east and west faces have day length curves. None of the eight triangles have date curves.

By measuring the relatively long equinox lines on the vertical east and west faces, the author determined the latitude for which the sundial was made. From the east face, the latitude works out to $48,2 \pm 0,2$ degrees. The west face puts it at $48,4 \pm 0,2$. Stuttgart latitude is 48,8 degrees, but perhaps the sundial was designed for Tübingen at 48,5 degrees, where both Hohenfeld and Prince Friedrich studied at the time.

The author checked all the dials using ZW2000 by Fer de Vries. See Fig 6 for an example. In general, the fit was good, except in the lower NE face. The error is obvious if one compares it with the corresponding NW face. This is odd, because Hohenfeld appears to have made good use of meridian symmetry elsewhere. The gnomons on the lower SE and SW faces are incorrectly placed. And it seems that the gnomon lengths are not always right. Perhaps this error was introduced only recently, as the gnomons look quite new.

The author thanks Dr. Müsch for making the sundial available for photographing, and Klaus Eichholz for his inducing him to put this story on paper.

The cut-outs for the sundial may be downloaded from the author’s web site.

Hohenfeld polyhedron, history and symbolism Eichholz/trans. Maes 21

This is a translation and adaptation of the paper by Klaus Eichholz which appeared in DGC Jahresschrift (49/2010, p169-). It is full of interesting facts, the sheer multitude of these however making a sensible précis impossible. Note however Fig 7, outlining the symmetric distribution of allegorical subjects: S=seasons, D=periods of the day, K=liberal arts, V=birds, W=arms/inscriptions.

Prague sundial walk E. Daled 28

“A secret guarded too well” is that there are over 180 sundials in Prague – rather more than in either Paris or Amsterdam, not to mention Brussels. And it is not just Prague; there are about 130 sundials in Budejovice, and another 100 in Klatovy. In the Czech Republic, over 3000 sundials are listed, photographed, described and – in surprising numbers – restored.

Miroslav Broz outlined a sundial walk of about 7 km, from the railway station to the Stefanik observatory on Petrin Hill. Besides over twenty beautiful sundials, the walk takes some clocks and a meridian in its stride.

One of the highlights is the Clementinum, the former Jesuit St. Clement College, where there are 18 sundials, although not all are accessible.

*Solargraphy: pictures from a soda can**vd.Voort/Zeeuws Archief 32*

The diurnal arc of the sun, photographed with a six-month exposure, from summer to winter, on a sheet of photo paper in a soda can used as a *camera obscura*. The sun tracks and the landscape are visible on the paper even without a developing bath. Reversing the picture is done using a scanner and software.

*A new light on the oldest known sundial**S. Symons**34*

In 1910, German Egyptologist Borchardt hypothesised that old Egyptian sundials had a crossbar on them, and that they were aimed east-west (and turned around at noon). The crossbar would have an adjustable height according to season. In 1965, Dutch mathematician Evert Bruins checked if the marks on existing sundials were in fact consistent with this assumption. He thought they were, within acceptable error.

In 1999 however, Sarah Symons roundly rejected this theory, and on seemingly good grounds. The Osireon text, which describes the make and use of the L-shaped sundials, mentions neither crossbars nor unequal hours. Nor does it explicitly state the east-west orientation of the device; it may be interpreted as an instruction to aim the instrument towards the sun at every reading.

Again, the hieroglyph for 'sundial' is very clear, yet does not show a crossbar. And the Bruins calculations leave much to be desired; they do not, in fact, justify the assumption that the sundial approximated classic unequal hours at all.

Symons concludes that it is far more likely that the L-sundial was used by aiming it at the sun and reading the shadow of the short vertical section on the horizontal scale. The instrument did not show antique unequal hours. It is time to bring descriptions of the instrument up-to-date.

*Hand-out: Gold leaf work**G.J. Sasbrink**37*

The author described in detail and in a practical, matter-of-fact fashion the use of gold leaf for gilding. How to clean the object, how long the glue should dry, how to apply the leaf and to avoid corrosion. Important tips are to keep count of the number of leaves you used up, and to watch out for wind – once blown away, the gold is irretrievably lost.

*Sonnenuhrenjubiläumstagung 2011: Freiburg**Fachkreis Sonnenuhren 38*

An invitation to the 40th-anniversary conference. Anyone interested should probably be able to read this text.

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