

## Bulletin 98.3 English summary.

R. Hooijenga, T.Brandsmastraat 42, 1964 BV Heemskerk

Finally my E-mail address is "permanent". It is, and will remain: [r.hooijenga@lvnl.nl](mailto:r.hooijenga@lvnl.nl)

Mail to the @lvb.nl address will be rerouted for the next half year. The @usa.net account is closed.

Thank you for your patience!

### *Inhoud*

nr. 67, september 1998

Contents of the September 1998 Bulletin, nr. 67

#### 01 *Verslag van de excursie naar Genk*

*F.J. de Vries*

"Account of the Genk outing"

After days of rain, this 20th of June was very sunny. We enjoyed a general gnomonics lecture by Prof. Mills, and then an introduction to the park designs by Jan de Graeve. Next, the designers gave more detailed descriptions of their work. After the noon meal we walked to the park to see the sundials, which worked beautifully in the constant sunshine. A lot of work remains to be done for our Belgian friends, but we congratulate them with the impressive work already finished. We thank them for their invitation to this pleasant day.

#### 01 *Mutaties ledenlijst*

*Secretariaat*

New members and changes in the list. Note: the treasurer's address has changed!

**New Italian bulletin** starting September 1998. We will exchange Bulletins with the Italian society.

#### 02 *De kwaliteit van Griekse en Romeinse zonnewijzers*

*J. Kragten*

"The quality of Greek and Roman sundials. Moving dials to a different latitude"

The author has already established that his method will determine the design latitude of a sundial with good accuracy. This value is sometimes different from the latitude of the site of find. He now investigates the effects of moving a dial to a different latitude.

If a 38 lat dial (Sicily) is moved to 43 lat (Florence), "parallel to itself", then indicated time will be off by a maximum of 16 minutes at sunup and sundown at midwinter and midsummer. At the equinoxes, and at noon, the error is zero. -If the dial is now placed so as to have its top face level, the sunup and sundown errors go to zero. Maxima of 5 to 7 minutes remain at the mid morning and mid afternoon hours.

The author used the point shadow from a light bulb to watch the changing indications. Later he had opportunity to check his readings against calculations by Mr. Van den Beld.

The date arcs often have declinations rather greater than 24 degrees. The hour lines are often longer than necessary for the design latitude. These facts, plus the relatively minor error if the dial is moved in latitude by an amount of up to plus or minus five degrees, lead the author to believe that it was the intention of the makers that these dials should be useable over the whole of Italy.

#### 07 *Enkele opm. bij de zonnewijzers te Genk.*

*J. Kragten, F.J. de Vries*

"Some remarks on the Genk park sundials"

-The Book of Time: see article below "Genk 6".

-Analemmatic dial by René Vinck, Belgium. This is the projection of a circular ring onto the horizontal plane. The documentation carries the wrong result, however. The hour marks run counter-clockwise and the date strip is mirrored. René Vinck assures us the final design will be correct.

-Bifilar dial by Rafel Soler Gaya, Spain. The first bifilar design, attributed to Micknick of Germany, used two straight wires parallel to the dial face. Since then many variations have been developed. In this one, one "wire" is the edge of a style triangle. The east-west "wire" is a chain, the formula for a catenary is given. -Cone dial by Javier Moreno Bores, Spain. In the opinion of the authors, the most original. See the article in Bulletin 97.3 (p30).

A cone, lying on its "side" on a horizontal surface, will cast a shadow with two edges. If the apex is twice the latitude, the shadow lines will indicate Babylonian and Italian hours. As always, the figures tell one rather more. Also, the BSS bulletin 97.3 (p53) has a photo of a model of this strange dial.

Genk 6: The Book of Time by Jean-Michel Ansel; with real zodiac signs.

Normally, we use the zodiacal signs, or symbols, in their old places: each 30 degrees apart on the Ecliptic, with the First of Aries indicating the Vernal equinox. In the course of 2000 years the precession has moved the constellations one position. At the Vernal equinox, the Sun enters the *sign* of Aries, but actually, it is in the *constellation* of Pisces.

Mr. Ansel uses date lines corresponding to the actual constellations, using modern star data, but in old Chaldean style. There is no Libra (the Chaldeans regarded these stars as the pincers of Cancer, the crab), but there *is* a "Snake" sign. The durations of the signs are unequal. The sun spends 44 days in Virgo, for example.

10 *Nogmaals het etmaal.*

*A. Griffiths*

(summary by the author) In Bulletin 86.1.16 Marinus Hagen speculated that the Dutch "etmaal" (meaning a period of 24 hours) might have something to do with the Scandinavian division of the circle of the horizon into eight. He was seduced by a similarity of the prefix *et-* and Nordic words for eight. English has a similar, if obsolescent prefix, *ed-*, meaning *re-*, i.e. "again", but more significantly Irish still uses the prefix *ath-*, in particular in "athuair" meaning "another (and future) time". The significance of this prefix is that a Gaulish equivalent of it appears on the Coligny calendar in the word "atenoux", referring to the "return of the dark period" of the lunar month. So the Dutch "etmaal" is not as unique as Hagen thought.

11 *De bijzondere zonnepijzer van Martin Bernhardt.*

*T. Bron*

"The special Martin Bernhardt sundial"

The author describes how he purchased what would later prove to be the very last specimen (# 169) of this design to be built by the designer, Martin Bernhardt, himself. The work is now taken over by Werner Schreiner. -The dial itself is of the best workmanship, and was delivered with all the necessary tools for the installation. In the author's garden it sees a lot of shadow, unfortunately; but when in the sun, it tells time to within a minute, taking into account the Equation of Time automatically by virtue of its specially shaped shadow casting device. Several quotations (in German), including one of Bernhardt himself, describe how this is designed. Even the difference in sunlight brightness over the seasons is accounted for. -See the photos.

14 *Analematische zonnepijzer met vaste gnomon.*

*H. Sassenburg*

"Fixed gnomon analemmatic sundial"

The introduction is in English; see also the figures, which are very clear. The author continues, relating how he repeated the calculations to arrive at, first, the translated ellipses (obviating the need for a moving gnomon) and further, the scaled ellipses, touching at the midnight hour mark, so that readability is improved. The translation and multiplication formulae are given.

18 *Een merkwaardige zonnepijzer. (Puzzle)*

*H. Sassenburg*

"A remarkable sundial (puzzle)"

A one-meter gnomon casts a shadow on a one-meter radius circle. One particular spring morning in exactly the northwest direction, one particular summer afternoon in exactly the northeast direction. Given lat and lon, can we tell the dates and legal times when this happens?

19 *Het zonnepijzerdoosje.*

*J.A.F. de Rijk*

"The little sundial box"

Cut out and fold this little box, and cover the rectangular window with tracing paper. Placed in the windowsill it makes a very nice "meter"-like time indicator. The long slit in the south face is the gnomon; instead of a shadow, it casts a line of light.

20 *Staat de poolster onbeweeglijk aan de hemel?*

*J.T.H.C. Schepman*

"Is the Polar Star fixed in the sky?"

Some notes on this, and other stars. Polaris is 1.3 degrees from the celestial pole, and precession makes all star positions move about in a period of 26000 years. In 1967, Hawkins and Rosental drew up a catalogue with the positions of 88 stars over the period between 2500 BC and 2500 AD in 100 year intervals, and over the period between 10000 BC and 0 AD in 500 year intervals. Alpha Ursae Minoris is in tables 2 and 3 of this Smithsonian Institute catalogue (of which the Dutch Zealand Library has a copy). In the year 0 AD Polaris had a right ascension of 348.68 degrees and a declination of 78.24 degrees. In 1300, RA was zero. From 2500 BC to 2500 AD, Polaris will have wandered from 331.47 to 170.80 degrees.

The author asks whether anyone has ever actually oriented a sundial with the help of Polaris, and if so, how?

"More sundials with French Revolutionary hourlines"

The Spanish bulletin *Analema*, issue 20, mentions two more of these decimal hours sundials. One is a black marble horizontal dial with 28cm (11in) sides in a Belgian museum; the other is a vertical south dial with 57cm (22in) sides, dated 1794, on a house in France. Both carry ordinary hour lines as well.

24 *Brief aan een redacteur.*

*E.L.H. Roebroek*

"Letter to an editor"

This is an answer to an editor's (of a Groningen City information bulletin) question about the function of the Prinsenhof dial in relation to the introduction of Mean Time. The idea is that the Groningen citydwellers could regulate their clocks and watches themselves with the aid of the minute strip that was added around the beautiful sundial. This strip was probably put on around 1835, when Groningen introduced mean time.

25 *De boom van Sonius te Genk.*

*J. Kragten*

"The Sonius Tree dial of Genk"

During the year, the 3 o'clock (for example) shadow of a style always falls on the 3 o'clock hour line, because they are in a shared shadow surface that is fixed in space. Each hour has its own, fixed, surface in space. Any line contained in this plane will cast a shadow on that hour line. Several sundial designs exploit this principle. Sonius gave an original twist to the idea: he fixes the surfaces by means of slots in a thick, vertical board. This makes a style unnecessary. He then extends the shadow surfaces to far above where the style was. The construction now looks like a tree. The hour and half-hour slots converge, like branches, towards the top of the tree-trunk. Towards the North the slots are covered with translucent material.

Every whole hour one line lights up, readable over a wide angle. Towards the next hour the lighted line thins, and the next hourline gradually takes over the light.

26 *21 zonnewijzers in museum te München.*

*Secretariaat*

"Twenty-one sundials in a Munich museum"

The Deutsches Museum in Munich has a permanent open-air exhibit of 21 sundials. All except two have been calculated by Yves Opizo of Haigerloch, and executed by the sculptor Christian Tobin of Diessen. At the time of writing it was still unknown what kinds of dials would be on display, except for one; see the photo.

26 *Nog een zonnewijzer met vaste gnomon.*

*F.J. de Vries*

"Another fixed-gnomon sundial"

Elsewhere in this Bulletin Mr. Sassenburg describes a fixed gnomon analemmatic sundial. Yvon Masse describes another dial like that, but this time with circular date lines. The hour lines are again straight.

This dial is based upon the Foster-Lambert principle (likewise an equatorial projection dial), with the style angle between polar and vertical, so that the projection of the equator is again circular. Page 27 shows a Masse dial for 52 degrees latitude. The gnomon angle is  $(90+52)/2 = 71$  degrees.

28 *Zonnewijzers in Nederland.*

*W. Coenen*

"Sundials in The Netherlands"

Leens 3: Borg (estate) Verhildersum, the unveiling of the sphere dial, formerly Groningen 1, that was returned there in 1997 (see Bulletin 98.1.35). E. Roebroek restored this sundial.

Oosterbeek 2b: Unveiling of an unusual dial in the garden of member Boudewijn Mijwaard. This dial lacks all the parts that usually make one recognise a sundial at first glance. Remaining are contours in an assembly of synthetic sheets suggesting a half cylinder. There are no numerals. The date lines are not labelled. This dial has two shadow casters fixed in the outer two sheets, casting shadow on the sheets within.

Ledeacker: "Book" sundial by Baltussen of Westerbeek, unveiled by mayor Verbeeten, formerly of Ootmarsum. Iron, 35x70cm, bronze colour, bronze numerals riveted on. The hour lines are quite strange; with the Sun in the meridian plane, the dial indicates one o'clock. Some sort of "apparent dst"?

Missing dials in The Hague: Herman van der Wijck dug up his 1983 notes about four dials from the 15..17th centuries that are no longer in existence.

32 *Literatuur 1299 t/m 1314.*

*D. Verschuuren*

Very many references. 1308: Tidal clocks by Mr. Venker of St. Anthonis. His pieces indicate the time of high and low tides. Four are now in use. Two of them are computer controlled and use as many as 90 factors in determining the tides.

**Garden fair in Ede** - Seven of our members were at this large fair to inform visitors about Sundials. The society wishes to thank them for their effort.