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On the video, Hans Behrendt occasionally goes beyond his script. These (translated) transcriptions are marked in italics.

My own remarks have my initials RH.

English is not my mother tongue. This translation will look odd in places.

Having said that, have fun with it; I had fun with the DVD.

7 November 2004

Translation follows -----

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October 1990

Film III: Modern glass sundials of the 20th Century

Documentation 1990 - Amateur film

Glass paintings always fascinated humans. From the colour play in the radiating sunlight the life rises. Thus comes most clearly to expression what the artist inserted into his work. From the Middle Ages such works of art remained preserved in churches, city halls and on chateaus. *Here once more the historical glass sundial from the Ulm city hall, from the year 1540.*

In our century, too, artists are at work to create colourful panes, not always as decorative as in former times but rather unpretentious, according to today's time.

1. The German Clockmakers' Journal of 1899 already described a glass sundial under the heading "Decorated windowpane for a sundial". Author Willy Triebold, Berlin. In this draft, the dial is read from the outside, as with vertical walls. It shows the year 1894. There is no report of an execution of this draft. The idea alone to copy old models is interesting.

2. The Clockmakers' Journal of 1903 reported a "diaphanie" sundial. Diaphanie means translucent picture. With this suggestion, it concerns a so-called eye sundial. The dial is part of a hemisphere. Towards the window, the hemisphere is closed with a round glass plate, in which a central hole passes the light rays. Fitted in a framework, this sundial can be hung on a cord in a window. The number ring of the dial can be shifted according to the direction of the window. The glass parts are dark, so that the ray of light can show a bright point to read. The advantage of this design is in the fact that no gnomon needs to be attached to the window. A gnomon in front of a free-hanging sundial pane is very inconvenient. This suggestion, too, seems to have remained only a draft.

3. This slide from the court summerhouse in the old city hall of Freiburg in Breisgau took Mr. Professor Schumacher. It is a donation of the vocational school I Freiburg. Its subject is "Education" (here: Lady Grammatica). The painter H. Reichle, Freiburg, manufactured the window in 1979. The diameter of this southeast dial is 45 cm.

4. Mrs. Marianne Schoder, glass painter of the Stuttgart Glass Art Studio, manufactured this pane. She sent the picture to me in response to my call in the publication "Glass sundials in Württemberg" in the magazine "Swabian homeland" from April 1975.

This southwest dial is in a brass holder and has an overall height of 34 cm.

*The dial is calculated for a latitude of 48.8 degrees and a west declination of 7 degrees.*

According to the artist, it concerns a tender-reddish flashed glass, into which the representation is etched. Unfortunately, a colour photo is not available. The inscription reads "ultima latet" (the last is hidden; 'hour' is implied).

(from *Ultima latet ut observentur omnes*, The last [hour] is hidden so we must watch them all - RH)

5a. Glass sundials are manufactured in the USA as well. This pane is a gift of Professor Waugh from Connecticut in 1979. He visited the international congress for Chronometry in Stuttgart in 1974 and gave me a reproduction of the historical window sundial (around 1646) from Nailsea Court, in county Avon, England. It was a product of the Glass Masters company in New York. Thus, one is engaged in this art there too. Under the south dial, a winged hourglass is depicted. The inscription above reads "I count only the sunny hours". The 23 x 15 cm pane is set in a wooden pedestal. A plug-on gnomon is provided.

5b. A close-up of the south dial, which is calculated for a latitude of 35 degrees.

5c. The manufacturer, York Craft from Pennsylvania, included a quadripartite manual. The title page shows a family idyll.

5d. The second page of the manual explains the functioning of the sundial.

5e. Then follows a table for the equation of time, and a sketch of North America with latitudes.

5f. Figure 3 shows the style height of the gnomon for different latitudes.

6. Also from England a modern glass sundial is known. This pane is with Gay Ogg of Dulwich, southeast London, and dates from 1981. This picture is a reproduction from the publication by Mr. Daniel of 26 February 1987, "Shedding A Glorious Light", in Country Life magazine.

*A pretty glass painting with marguerites (ox-eye daisies) on a blue ground surrounds the dial.*

7. In our "Sundials" workgroup of the German Society for Chronometry, specialty "Friends of old clocks", Mr. Bernhard Franz of Quierschied near Saarbruecken is also making glass sundials.

We could first admire this pane with the Madonna at our conference in Salem in 1981. It is a reflecting sundial on a marble slab. However, the hour numbers still are missing.

8a. I once received as a gift a table sundial with a marble base from this artist. Here too, the numerals are still missing.

8b. *The application of the hour numerals* was left to me. The brass gnomon triangle is made for the latitude of Stuttgart, my former residence.

8c. The pane shows the image of a face, possibly the head of the god of Time, Chronos?

9a. Another glass sundial with a picture of an insect.

9b. The same pane, set in the window, seen from the outside.

10. Still another pane in a stand.

11. A further work of art, likewise in a frame. Under the dial at the bottom left hand corner the curve of the equation of time is drawn.

12. Mr. Iwan Kahn from Bruettisellen by Zurich, likewise member of our workgroup, developed a completely new idea in order to avoid the difficulties with the attachment of the gnomon. New is here the manner in which the sunrays arrive at the time indicator.

13. This picture shows a principle sketch on the functioning.

In the top of the glass sundial is a cylindrical lens. Sunrays incident parallel to this lens appear as a bright line on the coaxially arranged half ring, the light conductor. In this half ring, the ends of a multiplicity of light-conducting fibres are embedded over the whole length. These optical waveguide cables lead the light to the indicator ring on the windowpane, where the bright point indicates the time. Since the light conductors are flexible, the lens can be adjusted into the correct direction at any window, so that with incident sunbeams the light spot of the time pointer indicates the time correctly on the dial.

Particulars about the attachment of the glass sundial are in the detailed instructions, which also contain a table with the longitudes of numerous cities of Europe.

14. Here are *for example* the two panes that Mr. Kahn first showed on the 1976 Murten conference of our workgroup. Over the pane, the lens is visible. *Here is the lens... and there is the lens.*

15. This close-up of the left sundial shows the particulars of the artistic composition. Above near the radiating sun are the names of the months for the year calendar *in order to make the pane into a solar calendar*. In the area of the noon line, the equation of time loop is visible, with the months in Roman numerals, and under it the values in + - 5 and 10 minutes. Below, we read the inscription "meridies media" (mean noon). The hour numerals are in anticlockwise sequence, as with the usual vertical sundials. The dimensions amount to 40 x 50 cm. For decoration the symbols for the signs of the zodiac are added.

16. The second pane is constructed in the same manner. An inscription in the middle refers to the 'clock wisdom': "time goes, death comes". In addition, a star with a tail as block sundial, and a burning oil lamp as source of light.

17. Some more glass sundials in pretty, artistic shapes. Here is one in a circle, decorated with lions and a coat of arms.

18a. Another circular execution with symbols of the signs of the zodiac. The inscription reads "Horologium gnomon" (hour indicator of the sundial). *Here in the middle the lens is visible.*

18b. This close-up of the lens shows the connection of the glass fibres with the light conductor ring. *On the lens holder, one can see the equation-of-time loop.*

19. Further a dance macabre representation with the inscription "tempus vincit omnia" (time conquers all). *The dial... and the edge inscription... below, the lens.*

20. Another simple arrangement, titled "Solar time". The hour numbers are hardly visible in the sunlight.

21. "The time, a river without banks or end" is the subject of this pane. Above, the numerals band. *To the right and left is the inscription, and here is the dial face... over it, the lens.*

22. This pane with lions and coats of arms suggests a spatial shape.

23. A similar shape with the sub caption "Horologium".

24. A versatile artistic composition, like the first pane. The inscription reads "ut hora sic fugit vita" (as the hour, so life flies). The symbols for the signs of the zodiac have Latin designations.

*On top, near the sun, the names of the months again; and under those the figure-of-eight loop of the equation of time.*

25. This execution shows the dial in a glass ball. A small glass ball on the inside acts as a lens leading the sunrays to the dial on the inside of the outer glass ball. Here, figure-of-eight loops for the equation of time are drawn by the hour numerals.

Let us hear what the artist says about his work:

[I think this does not apply to nr. 25 but to the other ones – RH]

"These sundials, implemented in the old art of stained glass in lead, combine harmoniously old time measuring technique and old handicraft art. New however is the manner in which the sunbeams arrive at the time indicator. A light-conducting cable leads the light, bundled by an attached lens, to the indicator ring of the glass painting, where it appears as a bright spot, which moves with time.

Contrary to the old glass painting sundials, the ones described here can indicate the time correctly at any sunlight-flooded window."

26. Another glass artist in our workgroup is Mr. Harald Hindrichs from Danzig (Gdansk - *RH*), now a Wuppertal resident. He likes to make glass sundials with coats of arms.

In 1982, he made me a pane with the coat of arms of the Free State Danzig, and sent it - by special courier because of the fragility of the pane - to Badenweiler, my previous domicile. A gift from a Danziger to a Danzig admirer.

For lack of an exact south window, the glass sundial is suspended by means of a chain on a stand. At about 3 m from the sundial, a beautiful optical illusion appears. Due to the cam shape of the edge of the coat of arms, the hour lines within the lower area appear curved, although they are in fact straight. Pane size 28 x 34 cm.

27. The south dial is computed for Badenweiler. In the centre, the coat of arms with the two white crosses on red ground, and over it, the yellow crown. Above, the motto of the Danzigers: "nec temere nec timide" (neither rashly nor timidly). Short lines at the edge mark the hours for the pre-Copernican evenly-divided sundial.

28. In the lower left corner the sign of the artist "H.H.", Harald Hindrichs, is visible.
29. In the other corner the year "82". Below is stamped in the frame: 31. SU H. Hindrichs (thirty-first Sundial, H.Hindrichs).

The artist says this about the construction:

A welding wire (V2A) was kinked according to a template, so that from it, two gnomons were formed: one horizontal and one parallel to the axis of the earth. A Pfennig coin serves as carrier for the shadow rods. It was glued on the pane in such a way that the axle centres of the staffs came together in the centre of the geometrical construction, on the inside. On the back, the gnomons are visible only vaguely. They were kept short on purpose, since the depth of the window parapet was unknown. With attached extensions, the rods can function. The stand must be aligned on location, after time comparison, with the front foot exactly to the south.

30. Now Mr. Hindrichs is about to create glass sundials with the coats of arms of the Lands of the Federal Republic. Eleven panes of the old Lands are already finished.

This is the coat of arms of the Free State of Bavaria.

31. The Land (Baden -) Wuerttemberg.  
32. Berlin, with the bear.  
33. Hanseatic city Bremen, with the key.  
33a. Hanseatic city Hamburg, with the Gate to the World.  
34b. The back of this pane shows the gnomon and its magnetic attachment.  
35. The coat of arms of Hessen.  
36a. The coat of arms of Lower Saxony, with the Ross (horse),  
36b. and the back.  
37. The coat of arms of North Rhine - Westphalia.  
38. The coat of arms of Rheinland Pfalz.  
39. Finally, the Saarland.  
40a. At last Schleswig Holstein,  
40b. and the back.

*We wish the artist success in the creation of glass sundials with the coats of arms of the new Lands [former East Germany – RH]*

41. In the Eagle hotel in Schwenningen, this glass sundial is built into a hall window. The gnomon is painted on, together with normal vertical sundial numerals, in anti-clockwise sequence. On the right we see a home working clock maker as he goes on his journey, with his works in the pannier for sale.

*The sundial... and the clock salesman in traditional Black Forest dress.*

Photo Dr. Stroebel  
Local history museum

E. Information and logo of the DGC

38 minutes