

Fourth Annual NASS Conference - Seattle 1998

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For the second year in a row, the Sun shone brightly on the annual NASS conference. It was held on September 11 to 13 in the Physics & Astronomy Building (latitude 47°39.16'N, longitude 122°18.7'W) at the University of Washington in Seattle, WA. This is the first meeting that was completely planned and executed by a group of local NASS members, in this case headed by Woody Sullivan, Professor of Astronomy at the university. The results were magnificent.



Board members: Fred, Claude, Sara, Hal

Registration took place on Friday evening; about 40 members attended the conference. The artistic name tags, made by Woody's daughters, contained the attendee's name, home location, latitude, longitude, the annual percentage of clear skies, and a decorative symbol. Afterwards, as arranged by the host group, most attendees went to a pub in the heart of Seattle, for food and an opportunity to sample some of Seattle's microbrews. We all had a good time!

The meeting format consisted of a number of 15 to 45 minute talks and briefer less formal "Show-and-Tell" presentations. A large number of sundial related displays, outdoor demonstrations, and the local sundials on the tour provided the attendees with the necessary "hands-on" experience. Of course, the most interesting aspects were the live contacts between NASS members.

Each attendee received a detailed program schedule, Fred Sawyer's Hectemoros sundial with a copy of his article "Ptolemaic Coordinate Sundials" which appears in the Compendium V5-

N3, and abstracts of each talk - which was a first for a NASS conference. During the conference, Fred gave an unscheduled talk on his Hectemoros and Ptolemaic sundials in general. Copies of a number of talks, training aids, special diagrams, and sundial designs were available during the conference. Peter Abrahams even gave away the models he assembled for his display.



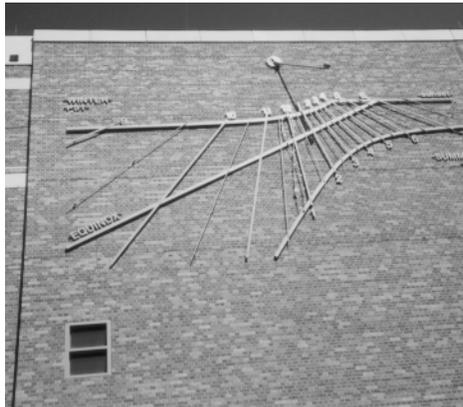
Bill Nye "The Science Guy" with Al Pratt, Jim Lattis and Sara Schechner Genuth

Following introductory remarks by Woody and Fred Sawyer, Len Berggren was our first speaker. Len presented some of the history of gnomonics in medieval Islam, pointing out that the time of afternoon prayer is defined in terms of gnomon shadow length, and that medieval Islamic gnomonicists used tabular rather than geometric dial design methods and had developed coordinate system transformations (equatorial to horizontal to dial).



Woody Sullivan then described the design and construction of the large vertical sundial on the southwest wall of the Physics & Astronomy

building. This project required ½ man years of effort spread over two years. His talk included design criteria, hour-line and day-line layout, gnomon and nodus design, dial furniture, material and finish selection, part fabrication, and assembly and installation.



The University of Washington Dial

Woody Sullivan and Bill Nye, who has an internationally distributed TV science program, described a sundial to be onboard a probe scheduled to land on Mars in 2002. Some differences between a sundial on Mars and one on Earth were discussed. NASS members were encouraged to provide input to the design of this truly unique sundial.



The remainder of Saturday morning was occupied by "Show-and-Tell" presentations. These included a pillar dial using an octagonal rather than a circular cylinder by John Harding (who also arrived at the conference on a unicycle), Alan Pratt's improvement of his terella (sundial on the convex side of a spherical Earth model) by the addition of an ultraviolet coating suggested by Ron Anthony, the services offered

by Sara Schechner Genuth and Jim Lattis in their "Outreach Professionals" organization, Roger Bailey's T-shirt displaying the equation for sunrise and sunset (Ken Clark also displayed his version of this T-shirt), and Mike Shaw's custom Horologium shown by Hal Brandmaier. In the "Gnomon Research" display, Sara had a copy of the new book "Western Astrolabes" that includes her extensive essay "Astrolabes: A Cross-Cultural and Social Perspective".



Ellen Kemp pacing for a horologium experiment

During the informal buffet lunch of sandwiches, salad and cookies, the conferees wandered through the display area, and the sundial demonstrations outdoors. The highlight for many was the firing of the noon cannon at 1:05:27 PDT (noon solar time). Unfortunately, the cannon fired about 10 minutes prematurely, due – it was later determined – to the finite sizes of the focused spot of sunlight and the cavity containing the gunpowder. One of the dials demonstrated was Peter Hirtle's heliochronometer. Peter also manufactured the aluminum analemmas used as prizes for the many spot quizzes related to dialing and baseball that Woody injected at various times during the conference. Peter provided a sheet of manufacturing details to interested attendees.

The afternoon sundial tour included eight dials. These dials, along with six others not visited, were briefly described in a tour guide and shown on a map. The first dial was the large (about 20' x 30') vertical declining wall on the Physics and Astronomy Building described by Woody earlier in the day. It has the interesting motto:

I thrive in the Sun
Can't work in the rain
So if I'm beclouded
Please come back again

The second dial on campus is the usual horizontal dial donated by the graduating class of 1912. The plinth was a large rock.

We then bussed to the Sam Hill mansion to view the vertical dial there. The house is perched on a cliff with a marvelous view of Puget Sound.

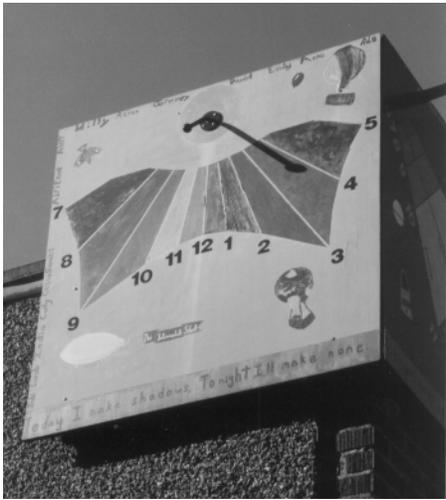
At the Pacific Science Center, in addition to many hands-on exhibits, we saw a vertical glass sundial by Ron Karzmar at the edge of a pond in the central courtyard. Ron has a smaller version of this dial in acrylic for sale.

One of the tour dials, whose design is still in progress by Woody, at the architectural offices of George Suyama, is based on the path of a spot of light from a circular window falling on the interior walls and stairway of the architect's barnlike office. It also shows the progress of the spot of light down the stairs.

At the Billings Middle School, we saw two vertical dials on the Southeast corner designed and built by Woody, some friends, and grade 3-6 students that included one of his daughters. One bears the motto "Today I'll make shadows. Tonight I'll make none.", the other "Like you I must sleep, Til morning rays come."



Accompanying the light as it descends the stairs at the architectural offices of George Suyama



Dials at Billings Middle School

At “Gasworks Park” (developed when the gasworks became obsolete), we viewed a large, highly decorated, interactive analemmatic sundial on top of “Kite Hill”, the former slag heap.



At The Analemmatic Sundial in Gasworks Park

Local NASS member Chuck Nafziger, helped by Woody and Peter Hirtle, was responsible for the 30" diameter equatorial sundial in Webster Park which is the result of an eight - year effort by park neighbors. One of the desired motifs of the park that influenced the dial design was "circularity". The shadow of the 8" diameter globe at the end of the gnomon corresponds to night on Earth while the shadow of the edge of the dial plate on the calibrated gnomon indicates the month. The motto is "We do not inherit this land from our parents, we borrow it from our children".



The Webster Park Equatorial Sundial

We ended the day with the traditional banquet at Charlie's at Shilshole on Puget Sound located near Webster Park. Highlights were a toast with Prüm Wehlener Sonnenuhr Auslese wine, so rare and expensive that the bottle labels were used as contest prizes; a talk by Bill Nye on growing up with a father who was deeply involved with sundials; and a concert by the Tielman Susato Krummhorn Gesselleschaft - an ensemble with interests in wind music of the Renaissance and twentieth century performed on ancient instruments.



The concert pieces were all sundial-related and the banquet attendees joined in singing "This Bottle's the Sun of our Table". Other recognizably related pieces were "Dial-Song", "L' Ombre", and "The Diall". Larry Stark, the group's leader, is also the fabrication expert for the University of Washington Sundial. He presented each attendee with a brochure describing the music played.



The Tielman Susato Krummhorn Gesselleschaft

Woody and staff provided a T-shirt for sale to conferees showing the University of Washington sundial. A bit of black humor, Len Berggren was wearing his NASS T - shirt when a passenger in the same elevator stared at it aghast. Len offered the fact that there was a conference on the subject at the university. The passenger was very agitated at this. He had misread the shirt and thought it was the North American Suicide Society.

Sunday's meeting schedule started with the annual general meeting. Each member of the Board of Directors made brief remarks. Fred stated that he expects that the March 1999 Compendium will contain a five year index of Compendium articles. The 1999 conference will

be in Hartford, CT; highlights will be a tour of several interesting dials and a visit to the Waugh collection of sundial books at the University of Connecticut.

Fred announced the results of the recent election. Fred Sawyer will remain as President and Bob Kellogg will be the new Treasurer, as of January 1, 1999; both will serve for two years. Fred encouraged attendees to do something for NASS - such as write articles for the Compendium, prepare conference talks and volunteer when requested, for example, to be on the nominating committee.

Claude distributed a form allowing attendees to become more active participants, particularly in encouraging potential new members and in serving their communities by providing sundial information and support. Sara commented on NASS' attainment of 501(C)(3) status as a 501(C)(3) non-profit corporation and, Hal presented the financial status as of 8/31/98.

Roger Bailey started the day with "The most important thing for sundial design are location, location, location: Scientific, cultural, and personal design factors for sundials". He discussed and showed slides of many dials in North America and Europe, three of which he designed, to illustrate his subject.



Pete Swanstrom described and showed his large Universal Equatorial Sundial with an analemmatic pierced plate gnomon. One version was constructed of wood, the other of brass. These indicate the time to the nearest minute, the date, and incorporate a quick adjustment for daylight savings time. He also discussed a similar stainless steel sundial for the Anne Morrison Park in Boise, Idaho. His talk and the very detailed written description of the design, fabrication, and

installation available to interested attendees illustrate advances in design and fabrication methodologies directed toward greater sundial accuracy. One of his graphs showed changes to the analemma every 2000 years from 2000 BC to 6000 AD.

Fred Sawyer provided a description and analysis of M. Eble's US patent No. 39,860 for a solar horoscope. He showed that this is a universal altitude sundial that uses an interesting graphical algorithm. He then made a comparison between this dial and the 16th century Rojas astrolabe that determines time from the Sun's altitude and is based on an orthographic projection of the sky onto the meridional plane. Fred provided attendees with a stiff paper model of this astrolabe.

Allan Pratt described and showed three versions of a simple to design and construct bi-gnomonial sundial based on H. Robert Mills "Practical Astronomy: A User - friendly Handbook for Sky Watchers". Allan's dials and Pete's dials are at opposite ends of the spectrum in terms of design and fabrication, the former requiring little or no computer expertise and simple sheet metal construction while the latter employed a version of the sophisticated Autocad computer aided drafting program and numerically controlled machining equipment.

Carl Trost's talk "The historical, monumental, and sometimes quirky sundials and sun sculptures of the San Francisco Bay Area" was a well photographed and analyzed tour of San Francisco sundials. One dial is so large that an amphitheater is located within its time ring. It is to be hoped that Carl will document these dials for NASS' dial register and for an article in the Compendium; a mathematical background is not needed to appreciate his accomplishment.

The impact of advanced software techniques was much in evidence at this conference. Bob Kellogg demonstrated creating a three - dimensional sundial and locating it within a realistic model of its environment. He showed a short video that included animation of the shadow. This was followed by Tom Kreyche who demonstrated the combination of Visual Basic and Autocad to design and display dial performance. Tom's presentation was a hard act to follow for the writer who demonstrated the use of the MATLAB software for sundial design based on his beginning study and showed its application to the

design of one of the Cooper-Hewitt Museum's sundials discussed later in the program.

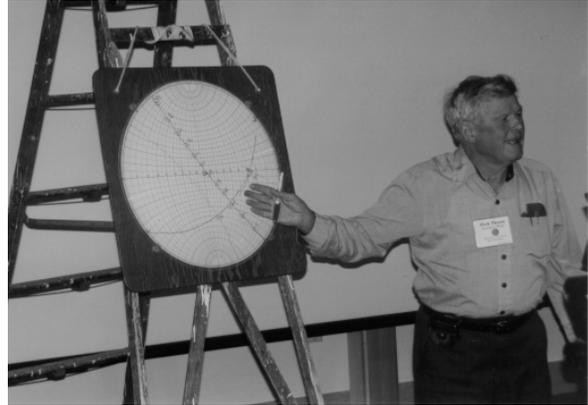
Mark Gingrich's "Improving sundial accuracy while you 'weight'" showed how to improve the average yearly accuracy of a sundial by adjusting the hour-lines using a complex weighting factor based on statistical analysis. It is to be hoped that Mark will prepare an article for the Compendium so NASS members may incorporate his results into their designs.

The pasta and salad lunch left time for displays and demonstrations that included a brief description by Woody of the Foucault pendulum suspended fifty feet above the floor of the building in which the conference was held.

Woody and staff provided a tape measure to allow conferees to measure the length of ten of their steps and their height to determine whether the Horologium ratio of 6 (height to foot length) is applicable. Most were close. Woody promised to publish the results.

The Sunday afternoon session started with Sara Schechner Genuth and the writer's description of two sundials they designed for the Cooper-Hewitt National Design Museum in New York City. One was an interactive analemmatic sundial using the museum visitor as the gnomon. The other used the peak of a tentlike structure as the gnomon point for an azimuthal sundial. The talk emphasized the interaction between the authors and the mostly non-technical museum staff, and the detection and solution of installation problems.

Richard Threet's talk "Solar Aperture by Stereonet" showed how to evaluate the effects of local terrain and obstructions on the performance of a sundial as installed using the stereonet projection (see also Richard's article in The Compendium, V4 - N2). Richard gave each attendee a nice training package that even included a pencil, thumbtack, and tracing paper to follow his discussion. 1° and 5° nets were included for further use.



Richard Threet's Stereonet

Richard Pauli then described his US patent No. 5,760,739 for using a calibrated adjustable gnomon to help align a satellite dish antenna.



Richard Pauli's patent gnomon and antenna

The final talk by NASS Vice President Claude Hartmann showed the use of double and slotted gnomons to create a beam of light rather than a shadow to tell time. Application to skylights and windows, particularly those using leaded-glass, is effective. Since the double gnomon resembles a large "M", Claude refers to one design incorporating it as a "Millennium Sundial". Claude demonstrated his concepts during the outdoor demonstration periods.

In conclusion, the conference was a success and the attendees brought away much useful information to prepare them for next year's conference in Hartford, CT. Woody and his staff are again to be congratulated.



Claude Hartmann discusses his sundial with Phil Sawyer

NASS' Fifth Annual Conference and AGM Will Be Held In

Hartford, Connecticut in September 1999.

Final dates and location will be announced in the next *Compendium*. The conference will include several talks and demonstrations as well as a bus tour of area sundials. Two of the dials we will see have been designed by NASS members, whom we hope to have with us to discuss their work. The tour will include a visit to the pillar dial designed by the well-known dialist/author Albert Waugh. In addition to seeing a number of dials that were in Waugh's personal collection, we will also have an opportunity to see the collection of dialing books his widow has donated to the library at the University of Connecticut. This collection includes 162 titles covering 423 years of dialing practice.

Join in the camaraderie, catch the spirit, and be there!