

NASS Conference Retrospective - 1999
Text by Hal Brandmaier Photographs by Ginny Brandmaier

This, the fifth annual NASS conference was held at the Hartford Hilton in Hartford, Connecticut. It was expertly organized and executed by Fred Sawyer. Each of the 50 or so attendees received a program containing abstracts of the major talks and a list of attendees, their ordinary and E-mail addresses, and latitudes and longitudes obtained from the MapBlast software at mapblast.com. The large number of gifts from both Fred and some of the presenters will be described in the appropriate paragraphs of this report.

In addition to the technical aspects, the presentations encompassed historic, artistic, educational and fabrication aspects of sundials.

As at previous conferences, registration began the night before the meeting. It was a chance to review the final program, renew acquaintances, and enjoy a light refreshment. As an incentive to attending this reception, there was a door prize - a model of the famous Glynne sundial - which was won by André Bouchard.



Fred Sawyer (l.) & André Bouchard (r.)

After a continental breakfast and Fred's opening remarks, Larry Jones showed slides of and described the local dials on the conference sundial tour, some of Albert Waugh's dial collection, and other dials in or near Connecticut. Included were an armillary dial by Paul Manship at the Phillips Exeter Academy in nearby Massachusetts; the only analemmatic dial in the Northeast in Tanglewood Park MA; and the Pomfret School dial which is a reproduction of the Turnbull dial in Oxford, England. Larry fully describes this dial in *The Compendium 2(1):2-5*.



John Redford & Elizabeth Longsworth admire a sculpture by Kate Pond. John's dial is to the left.

John Redford described his Cylindrical Fresnel Mirror Sundial and showed a model of this dial. Very briefly, sunlight is reflected from a series of plane mirror "slats" on the lower part of a cylindrical surface onto hour marks on the upper part of the surface. John presented a basic optical analysis of the dial performance. In the brief question and answer period following the talk, Fred referred the attendees to "Reflecting Sundials" by C.M. Lowne in the 98-1 BSS Bulletin for further information.

Mike Shaw, one of four attendees from England, provided the answers to a number of interesting questions, some from a British perspective, relating to his brief history of the calendar. For example:

The Latin prefix means "eight", so why is October the tenth month?; Why is it called a leap year?; Why does Easter keep moving around?; How did the days of the week get their names?; When should we celebrate the millenium?

Water color artist, sculptor and sundial designer Robert Adzema described his working methods and the design and aesthetic decisions needed to create the many public sundials he showed in his slide



Old friends Tony Moss (l.) and John Carmichael (r.) meet for the first time.

presentation. One - the 20' tall Sheng dial - was included on the sundial tour. This dial also appears on the cover of the *Compendium* (5)1 and is briefly described on pages 1-3 of that issue. Another of his interesting sundials uses overlapping parallelograms to show the change in response of the dial with season. Robert brought copies of his out-of-print book "The Great Sundial Cutout Book"; I think he sold all that he had. However, the German edition is still available.

Next, Fred Sawyer described a portable horizontal altitude sundial, known as the *Basho Hidokei* sundial, which was popular in Edo-era Japan (1603 to 1867). Each attendee received a very descriptive booklet containing this paper dial based on our time and date systems and designed for each attendee's specific latitude. In his talk, Fred described the traditional Japanese calendar where the year began on our February 4 and a time system wherein each time period - or toki - was equivalent to two temporal hours or 1/6 the time between sunrise and sunset on any day.

Allan Pratt then described a simple instrument, used in conjunction with the Sun's azimuth for the date, time and location, for determining the declination of a vertical wall. He noted the difficulty of finding a semi-circular protractor of the right size for his instrument base and his use of roll pins to attach the parts. A number of attendees suggested alternative methods for this measurement.

These six formal talks were followed by a number of shorter, informal presentations. Larry Bohlayer described the "Sun Vial" that he has invented and plans to market within a year. It is an altitude dial using a beam of sunlight incident on a hole in the top cover of the cylindrical dial and falling on a translucent sheet fastened to its internal surface containing hour and date marks. Larry provided the attendees with take-home samples of the many charts available from his company, Celestial Products.



Don Petrie admires Larry Bohlayer's Sun Vial



Fritz Stumpges and his Solar Flair dial

Fritz Stumpges described his "Solar Flair" universal equatorial sundial with adjustments for location, the Equation-of-Time and Daylight Saving Time. In response to my email request, Fritz explained that the base of each of the 24 triangular "flares" is aligned with Earth's axis and each triangle lies in one of the hour meridians. Time can be estimated to within one minute and the date can also be obtained. Fritz's sundial is aesthetically pleasing and would be the focal point of any garden in which it might be installed.

The morning session ended with Bob Terwilliger describing the *NASS Website* and its features. Bob is doing a great job as Webmaster. In particular, the writer likes the message board.

The Hilton Hotel provided a well prepared and served buffet lunch topped off with delicious cheese cake.

As at previous conferences, there were many exhibits demonstrating the sundial accomplishments of the speakers, attendees, and other NASS members. A few examples were Fritz Stumpges' "Solar Flair" dial, Tony Moss' meridian finder, André Bouchard's book of sundials, Kate Pond's "Skywatch" sundial sculpture, Larry Jones' collection of sundial cartoons, John Shultz's garden sundials, Sam Soares' rock clock and *Daniel Wenger's glass Earth sundial*. As always, these exhibits were focal points for many

discussions during "free-time". One novel addition to this conference was the number of interesting tee shirts and caps designed to promote sundials and NASS; a few of the tee shirts from last year's conference were for sale.

Mac Oglesby began the afternoon session with a discussion of the shadow plane dials developed jointly with Fer deVries and William Maddux. This type of sundial is the subject of an article in this issue of the *Compendium* and one in the *last issue*. Mac gave each attendee a beautifully made demonstration model and instruction booklet. He then demonstrated the principles and operation of this unique sundial. He also demonstrated variations of this approach, for example, the multiple straight and sloped gnomons, discussed in this issue of the *Compendium*, using slides and models.



Mac Oglesby with a shadow plane dial variation.

From a historic viewpoint, Sara Schechner discussed the interrelation of sundials, time and Christianity. She included the concepts of times of prayer and their inclusion on sundials, for example by small crosses on scratch dials. Her examples were mostly from the extensive portable sundial collection of the Adler Museum, the site of the third NASS conference. However, she noted that many European cathedrals served as giant sundials and solar observatories where, for example, a small aperture in a wall directed sunlight on a meridian line scribed many feet below it on the church floor. A recent web page contained photographs of the recent solar eclipse viewed this way. Questions raised after Sara's talk asked whether other religions, for example Jewish and Islamic, used the sundial. Another area of research for Sara?



Kate Pond (l.) and Judy Young (r.)

Next, Tom Kreyche described his computer program to update and expand NASS's Dialist's Companion software. It will include all presently conceivable dialist's interests including properties of the Sun, time systems, twilight and Equation-of-Time. Directions will be identified using the cardinal points of the compass rather than (+/-) which can be misleading. Tom assured the audience that even with all its capabilities, the system requirements for the new Dialist's Companion will be minimal.

Sculptor Kate Pond then led the attendees on a slide tour of her many monumental sundials - or sun aligned sculptures - throughout the world. Many are active only on the solstices or equinoxes. She included her beginnings with small horizontal dials and her interest in children and education. More about Kate appeared in the *Compendium* 1(2). She had "Skywatch" sculptures for sale that she makes for a number of different latitudes. Like André Bouchard, she sketched many of the sundials during the conference.



Susan Farricielli (l.) and Sara Schechner (r.)

Next, Claude Hartman described the **1998 Reutte (Switzerland) sundial competition**. Claude won second prize for his design of a stained glass skylight and window bus shelter. It is to be hoped that we will see many of the drab bus shelters replaced by Claude's unique, artistic design.

Susan Farricielli, a sculptor and industrial designer, described an equatorial dial built as a community project for a children's park called "Nature's Garden" in Branford, CT. The design is based on that shown on pages 32 - 35 of Robert Adzema's book. The time mark ring was fastened to the 13000 pound granite base using 1" anchor bolts and epoxy adhesive - a challenge for potential vandals! Susan provided large size postcards showing this sundial with directions to the sundial.



Bill Gottesman with his sundial

Bill Gottesman described a new equatorial type sundial that illuminates the time marks using a focused beam of light. This eliminates penumbra effects at large shadow caster to dial-face distances as with the large equatorial sundial in Jaipur, India. Bill's dial is readable to one minute and allows for latitude, longitude, daylight savings time and the Equation-of-Time adjustments. Bill talked about a number of mathematical principles involved and showed his full size development model. His circular wedge design to change latitude was unique. Bill provided attendees with a copy of his talk.

Roger Bailey discussed the basis for and characteristics of the sunrise/sunset equation. Included were the effects of latitude, specifically the equator and the poles, the effects of season, and details of the sunset phenomenon itself.

Judy Young, a professor of astronomy, described her "Sunwheel" stone circle being constructed at the University of Massachusetts in Amherst. It is 100' in diameter and presently has stones for the cardinal compass points, and sunrise and sunset on the solstices. It is a great educational tool with over 1000 visitors per year. Judy had a number of items - tee shirts, tote bags and greeting cards - for sale to help support this project. She also described the purposes of stone circles, and included a number of examples. She noted that equinox stones were generally not used since the Sun's declination changed very rapidly at the equinoxes compared to the solstices.

In his talk, artist and sundial creator John Carmichael encouraged the attendees to use stone as a sundial material. He uses sandstone sealed with polyurethane; a Foredom tool with diamond burrs for engraving; and a tile cutter to cut his basic shape. He then sands and polishes with successively finer grits to complete his dials. John made available a folder containing copies of his talk detailing his procedures, a brochure describing his "**Precision Sundial Sculptures**", and photographs of two of his dials.

Friday's final talk was by Fred Sawyer. He described the **NASS Angel**, a portable universal vertical direct East/West diametral sundial he designed for this conference. Each attendee received this dial plus an informative booklet on how to use it at the conference banquet later that day.



Ron Anthony & Len Berggren examine the Trinity dial.



Robert Adzema & André Bouchard with his sketch book

After dinner, banquet attendees were entertained with Larry Jones' gifts and descriptions of the hexaflexagon and a "guess the number" puzzle. He also managed to turn one puzzle into Fred's name. It was relaxing after a full day of wonderful talks on our favorite subject.

As with a number of previous conferences, it rained or was sunless for much of Saturday's sundial tour. The program contained brief descriptions of the sites visited.

At Trinity College in Hartford, we viewed a well patinaed semi-cylindrical equinoctial dial donated to the college by the Class of 1888, and a polyhedral (dodecahedron) pillar dial brought to the college from an English abbey. A few of the gnomons on the polyhedral dial appeared misoriented.

In Wethersfield, we saw a vertical slate sundial over the entrance to the First Church of Christ. It was designed and constructed by NASS member Roger Dignard with technical assistance from Fred Sawyer. The dedication plaque contains the Equation-of-Time graph with a longitude correction and a "+1" for the months for which Daylight Saving Time is in effect.

As an added

attraction, the town had many imaginative Halloween figures on display, apparently for an annual contest.

The base for the patinaed horizontal sundial at the Lucy Welles Memorial Library located in Newington was in the shape of crossed nautical anchors. The hour-lines optimistically extended from 4 am to 8 pm.



Examining the Lucy Robbins Welles Dial



The cube dial by R. Newton Mayall at CIGNA

One high point of the tour was a visit to Robert Adzema's 20' tall Sheng sundial at the Tan Art Center at the Central Connecticut State University in New Britain. Robert described this magnificent sundial sculpture, from an aesthetic, non-mathematical viewpoint, and some of the installation problems. As an example, while the aluminum dial column easily slid over its steel support at higher temperature, at the low installation temperature, in cold weather, the difference in the coefficient of thermal expansion of the two metals required brute strength and a heavy hammer for assembly.

On the ride to our next stop, Fred distributed brochures which describe centuries-old techniques for telling time using your hands and the shadow of a stick.



An equatorial with analemmonic dial at Loomis Chaffee

We next visited the magnificent grounds of the CIGNA Corporation, an insurance company, in Bloomfield. The poor weather had no effect on our appreciation of the massive cube dial designed by R. Newton Mayall in 1957. The gnomons were either vandalized or removed because of perceived danger to the user. While there, we also saw Canadian geese, wild turkeys, a blue heron, and a massive sculpture grouping that reminded us of Judy Young's Sunwheel.

At the Loomis Chaffee School in Windsor we saw an equinoctial sundial set on a granite base. It had an analemmonic gnomon to tell standard time; we checked the time and it was correct. This dial was fabricated from a network of tubes that, while appearing rigid, was actually very flexible.

We next had an enjoyable lunch at the Mill on the River, a former grist mill, in South Windsor. This restaurant was recommended in the New York Times article "What's Doing in Hartford" that appeared almost exactly one year ago. After lunch, the Sun appeared long enough for Fred to describe and demonstrate his Dipleidoscope that is a simple optical device for determining the meridian passage of the Sun.

Another high point of the tour was a visit to the [Albert Waugh Collection](#) of rare dialing books in the Thomas J. Dodd Research Center at the University of Connecticut, Storrs. After Fred showed the slides used by Albert Waugh in his talks, we were permitted to enter the library stacks to see and handle his books, some of which were from the seventeenth century. Tara Hurt, the Reader Services Coordinator for



The Albert Waugh pillar dial at UConn.





Tara Hurt leads us through the stacks.

Special Collections described the ultra modern system with user controlled moveable stacks. Sensors prevent complete closure if anyone is in a section of the stacks. Robert Adzema's sundial cutout book was on display and Robert autographed the library's copy. Attendees received a library information package containing a copy of Richard Schimmelpfeng's article on the Albert Waugh Collection. The entrance to the library is highlighted by a massive granite sculpture in the shape of a book.

While at the university we visited a four-sided pillar dial designed by Albert Waugh and built by Kenneth Lynch & Sons, Connecticut sundial designers and builders. This dial was offset from the cardinal points of the compass for the added interest of asymmetrical shapes.

After Sunday morning's annual General Meeting, summarized by Sara Schechner in this issue, Harold

Brandmaier described his experiences installing an interactive analemmatic sundial and teaching the campers at a summer camp. Practical problems involved inserting plastic time and date markers into sun baked soil at 90° F, and demonstrating the sundial to the 200 or so campers when there was no Sun-one instructor held a large paper Sun above a human gnomon while the camp director laid on the ground to simulate the shadow.

Next, based on the spreadsheet he developed, Roger Bailey showed the effects of gnomon height on the response of an interactive analemmatic sundial as the seasons change. This helps to determine the size of the sundial. His design for the Calgary Science Center was based on a human gnomon height of about 5' 7" corresponding to a young person with hands held above her/his head. Time markers were steel columns, painted yellow with an epoxy paint, inserted to near the frost line. Date markers were "feet" cast in aluminum with smaller sizes near the solstices where the distance between entrances to the Zodiac signs are smaller.

Continuing with teaching aspects of sundials, Sara Schechner described the sundials at the Smithsonian in Washington DC that are part of the traveling "Under the Sun" exhibit presented by Sara and me at last year's conference. She then described six workshops she led for underprivileged Washington DC children, adult - child pairs, and girl scouts at the Smithsonian.

Tony Moss next described his replacement of the gnomon of a nineteenth century dial. His scroll design for the gnomon is such that it can easily be adapted to different latitudes. His slides showed details of the manufacturing process and the tools Tony uses in his shop. The final step was to add a chemical patina to match the original sundial. A few comments from the audience dealt with other methods to accelerate this aging process.

Claude Hartman then discussed building a sundial for his flower bed using treated wood as hour-lines and stepping stones as time markers. He also discussed a skylight sundial, similar to his Reuter competition winner, which he made an integral part of a cover for his patio.

Mike Shaw described his "Dialist Companion" diagram, made one available to the attendees for 53° 22' North, and encouraged them to construct one for their latitudes. A little later in the morning, he described a unique plastic pipe sundial.

Mike was followed by Don Petrie who described his digital compass and his velcro attached flat surface to assist in measuring wall declination. Ken Clark then announced the availability of a kit for the Schmoyer



A gathering at Robert Adzema's Sheng (east/west) sundial sculpture.

sundial; while challenging, the completed dial whose gnomon corrects for the Equation-of-Time is a worthwhile addition to any dialist's collection. Ken exhibited the kit along with his design for a sundial tee shirt that he also described.

In the final talk of the conference, Bill Walton described a biaxial polar meantime sundial designed by his son. It is assembled from two flat pieces.

As always, the speakers are encouraged to share their achievements with those NASS members unable to attend the conference by submitting written versions of their talks to Fred Sawyer for publication in the *Compendium*.

Be sure to join us for next year's conference, which will be held in San Francisco, CA !!

