

Conference Retrospective: Victoria BC 2015

Roger Bailey

The NASS Conference was held on Vancouver Island in Victoria BC at the Harbour Towers Hotel June 19-21. Local hosts were Roger and Chris Bailey.

Forty-nine people attended the conference, with thirty-six being full registrants attending the technical presentations. Participants included 30 Americans, 8 Canadians, 6 British, 4 from Japan and 1 from Brazil.

Registration and Reception on Thursday afternoon provided an opportunity to greet old friends and meet new people who share our interest in sundials.

Door prizes were won on the basis of each person voting with tickets for the prizes of most value to them. The twenty prizes available this year provided excellent chances to win. The winners of the prizes, books and sundials, are listed below.

1. Frank W. Cousins, *Sundials – The Art & Science of Gnomonics* won by Frank Chesworth.
2. Hendrik Hollander's Acrylic Block Sundial won by Claude Hartman
3. - 4. Mark Lennox-Boyd, *Sundials: History, Art, People*, won by Jeff Kretsch and Richard Thiessen.
5. - 6. Dave Scott's CD Sundial won by Steve Luecking and Len Berggren.
7. Analemmatic Sundial Geocoin won by Mark Montgomery.
8. Arnie Gould's Wood Diptych Sundial won by Allan Pratt.
9. RetroWorks Metal Ring Sundial won by Jorlene Thiessen.
10. Hester Higton, *Sundials: An Illustrated History of Portable Dials* won by Roger Bailey.
11. Mike Cowham, *A Study of the Quadrant*. (Book and CD) won by Pat O'Hearn.
12. A.P. Herbert, *Sundials Old and New* won by Jack Aubert.
13. Peter I. Drinkwater, *The Art of Sundial Construction* won by Art Paque.
14. Chris Daniel, *The Sundial Page*, won by Phyllis Montgomery.
15. - 20. Battle Point Sundial T-Shirt won by Emi Duell, Will Grant, Rob Stephenson, Tish Grant, David Dahl, and James Stegenga

Victoria Sundial Tour Day was Friday 19 June August starting as a walking tour from the hotel at 8:30 am. The first sundial was 400 m away, a 7 min walk. Chris Bailey drove those choosing not to walk.

1. BC Legislature Rose Garden Sundial: 48° 25.165' N, 123° 22.274' W

In the rose garden behind the BC Legislature is a typical garden variety horizontal sundial. The dial is bronze, about 12" in diameter and correct for the latitude. It was built by Victoria Art Stone Company. There are at least seven sundials with this same cast bronze dial plate in public gardens in the Victoria area. The dials are serviceable and correct for the locations.

The next sundial was a 700 m. 10 min walk past the BC Museum and Empress Hotel. Along the way, Frank King described the details of the bells of the Dutch carillon at the BC Museum.



2. St. Ann's Academy Sundial: 48° 25.183' N, 123° 21.850' W



At St. Ann's Academy is a 12-inch bronze horizontal dial on a three foot high limestone plinth. This dial is a memorial for Marjorie Napier, a twelve-year-old St. Ann's student who died on 31 May, 1922. Engraved in the plinth are the following: A motto, "IL PISISTE ERIT VOBIS TESTEMONIUM", a cross, a name and date "Marjorie, 31 May 1922." and a small plaque reading "The shaft of this dial is built with stone taken from the ruins of the basilica of Ste Anne de Beaupre, Quebec, destroyed by fire, AD MCMXXII." Actually this dial is a reproduction. When the school closed, the original sundial was relocated to the nuns' retirement home at Queenswood.

The walk continued past the WW I dreadnought fountain and uphill for 500 m, 8 minutes. Frank King, Bell ringer for Cambridge University, described the bells at Christ Church Cathedral.



3. Christ Church Cathedral Sundial: 48° 25.323' N, 123° 21.573' W

On the south facing wall to the right of the door is a vertical sundial. The 30x20 inch dial declines 7° 33' W and is made of granite, inset in a stone wall. This memorial dial for Betty Whitlow was commissioned by Dean Brian Whitlow and designed by Alan Batten. The dial is inscribed: "TEMPUS FUGIT MANET DEVS""IN MEMORIAM BETTY WHITLOW, UXOR MATER DELECTISSIMA, MCMXCVI." Information on EOT and longitude corrections are available just inside the door of the cathedral. In the churchyard nearby was a labyrinth. Here the walking tour ended as we met the bus at the cathedral to continue our sundial tour.



4. BC Government House 48 25.127' N, 123° 20.598' W

Government House is the official residence of the Lt Governor of BC, currently Judith Guican. Just inside the main gate is the Orca sundial. The dial itself is a typical garden variety horizontal sundial but the plinth is unique. This is a totem carved by Coast Salish native sculptor, Aubrey La Fortune. It represents the "Orca" or "Killer Whale" that frequents the waters around Vancouver Island. This dial was donated by the Rotary Club in Oct 2001.

5. Dominion Astrophysical Observatory We diverted from the planned tour route to include a visit to the observatory at NRC Herzberg Astrophysical Institute. The 1.8 meter (71") telescope there was the largest telescope in the world when it was commissioned in 1918. Our bus driver, Kent White, suggested this visit as his father ran the shop grinding the 3.6 m (142") mirror for the Canada-France-Hawaii telescope operational in 1979. At one time there was a sundial near the path to the observatory. This was recycled for brass munitions during WW II and never replaced. The views from observatory hill were panoramic.



6. Butchart Gardens Sundial: N 48° 33.917, W 123° 28.175

Butchart Gardens was included in the sundial tour as a convenient lunch stop and they have a garden variety sundial in the rose garden. Butchart Gardens is one of the world's premier floral show gardens. "Jennie Butchart began to shape this magnificent landscape in 1904. She established, in the style of the grand estates of the period, several distinct gardens to evoke a range of aesthetic experiences. An abandoned limestone quarry was transformed into the dramatic Sunken Garden, a reflection of the early 20th-century beautification movement and an exceptional achievement in Canadian gardening history. Through successive generations of the Butchart family, the Garden has retained much of its original design, and continues the Victorian tradition of seasonally changing the outstanding floral displays. "



7. Windsor Park Sundial: 48° 25.349' N, 123° 18.333' W

At Windsor Park, Oak Bay a horizontal sundial is located in a corner of the municipal rose garden at the intersection of Newport Rd and Currie St. The weathered brass dial plate is a 12" square with engraved hour lines and scroll patterns.

8. Ogden Point Analemmatic Sundial: $48^{\circ} 24.909' N$ $123^{\circ} 23.045'$

At Ogden Point in the Victoria waterfront we met Andrei Golovkine who created this analemmatic sundial. He described the project from the design concept through proposals, fund raising and construction. The opening ceremony was 31 July 2009 to mark British Columbia's 150 year celebration. The dial is a red concrete ellipse with brass hour marks and numbers. The Zodiac table with longitude and EoT corrections and the commemorative plaque are laser engraved in granite. The dial has a 16 ft. major axis.



NASS Group with Andrei Golovkine at the Ogden Point Analemmatic Sundial

After breakfast in the Lookout Room, the technical talks started at 8:30 Sat 20 June.

An Equatorial Sundial with Analemma Gnomon:

Len Berggren described the design and fabrication of a sundial that could show both solar and mean time. He proposed the project as a complement to the observatory at Simon Fraser University. NASS agreed to support the project with a \$1000 grant. Len worked with Brian Albinson on the design concept for a 30" diameter equatorial sundial. The gnomon has an analemma shaped aperture for mean time and a slot for



solar time with a gnomon. British Columbia Institute of Technology (BCIT) met the cost (\$5500) and took on the design and manufacturing project by students Blanco Lam and Jacob Maloney.

Putting the Sun to Work: the Heliotrope and the Heliograph:

John Schilke introduced us to the Heliotrope, not the flower but a surveying instrument invented by Gauss. The name derives from the Greek *ἥλιος* (light) and *τρόπος* (turn). The heliotrope consists of a mirror to turn sunlight through a set of guides to shine on a distant reflector. The telescope aligned to the guide rings allowed viewing of the reflected spot of light over great distances to mark the positions for surveys. The heliotrope was extensively used for trigonometric surveys including the survey in Germany in 1822 and George Everest's Great Trigonometric Survey of India starting in 1831. The heliograph used the same principles of directed mirrors to send coded messages with flashes of reflected sunlight.

Class of 1916 Sundial – Off and On Focal Point of Campus Life:

Barry Duell outlined the history of a sundial at Willamette University, Salem, Oregon, presented by the class of 1916. The dial is a simple bronze horizontal dial on a pedestal of gray California granite. The dial is dedicated to Prof Matthews and is engraved with his motto for the students "Sagacity, Audacity, Holiness, Charity". Barry searched online records of the campus newspaper "Collegian" to determine the ongoing role of the sundial through its history. His summary states "Since 1916, many fashions have come and gone. Yet, Class of 1916 sundial gift (is) still noticed... (it) has been used more as a metaphor, campus focal point, or platform than for telling time"

Self-Orientation:

Fred Sawyer began with the classic example of a self orienting sundial, the combination of analemmatic and gnomonic sundials. These are generally self-orienting but he showed this is not quite true. The general criterion of self-orientation with two sundials based on different principles is also not quite true and often misunderstood. He outlined other self-aligning sundials including Foster Lambert dials and equatorial dials with declination scales to develop the sufficient criteria for self-aligning sundials. Such dials need both time and solar declination as outputs. If proper orientation of the meridian(s) gives the correct time and correct declination, then the correct solar declination gives the proper orientation and the correct time.

Three New Public Sundials:

After the morning break Woody Sullivan described three of his recent sundial projects. The first two by Rebecca Cummings are at the Exploratorium now at Pier 15 in San Francisco. The following descriptions are from the Exploratorium website. The first exhibit was an Oculus table completed in 2013. This is described as "a contemporary twist to a common ancient Greek sundial, the scaphe (σκάφη or "bowl"). With sunlight streaming through the oculus—the hole in the ceiling of the Observatory—the movable table can be visually aligned with landmarks on the skyline (Coit Tower, Transamerica Pyramid, *etc.*) to discover the sun's position in the sky and the current time and date."

The second exhibit was "the Solar Hour Benches, a set of six oval benches, each with a slit aperture aligned with the sun for one particular hour: 10 a.m., 11 a.m., Noon, 1 p.m., 2 p.m. or 3 p.m. solar time. Throughout the year, for only twenty minutes before and after the corresponding hour, sunlight travels through the aperture and projects onto inscriptions on the ground. Scientific and cultural aspects of time and sundials are also depicted on each bench".

The third project as described on the Stanford website is the world's first and only radio sundial. This has been erected in memory of Ron Bracewell, a professor of electrical engineering and a pioneer in radio

astronomy. The sundial was unveiled at the Very Large Array (VLA) Radio Telescope Observatory in New Mexico. It was constructed using pieces of a famous radio telescope that Bracewell built near the Stanford campus.



Exploratorium Oculus Table:



Bracewell Radio Sundial:

Lunacy II: An Analemmatic Sundial, Pierre Georges' Technique:

Roger Bailey spoke at last year's conference on the challenge of using an analemmatic sundial as a moondial. Gnomonic sundials can function as moondials, as they are independent of declination. Analemmatic dials are totally dependant on declination so the challenge becomes determining the declination of the moon. The moon goes through its declination cycle in a month, independent of the sun and 12 times faster. Roger reviewed the three proposed methods for declination determination: Full moon alignment, Moonrise with seasonal markers, and Shadow length at culmination. All were deemed impractical, even lunacy, for public dials.

Fred Sawyer spoke at last year's conference on the remarkable Elliptical Magnetic sundial developed by Cannon Pierre Georges. In his "Rediscovering Pierre Georges" presentation, Fred explained Pierre Georges' sundial including the technique to use it as a moondial. The technique was based on the fact that the declination of the sun and moon were approximately equal at the new moon and the lunar declination changes 12 times faster than the solar. A proxy for the lunar declination is solar declination on a date determined by the age of the moon. Multiply the number of days since the new moon by 0.4 for months or 12 for days to determine the proxy date. Set the dial declination for the proxy date solar declination and read the time. Apply the standard correction of 0.8 hours or 48 minutes for the age of the moon, the days since the new moon. Roger's presentation was based on multiple simulations of this technique to determine the validity through lunar cycles from maximum to minimum standstills. This analysis showed that the technique generally gives a fair indication of the time by moonlight. But the moon's dynamics are complex and the error significant, averaging 20 minutes but often 60 to 90 minutes off. An analemmatic moondial remains lunacy.

Making Sundials from Everyday and Found Objects:

After lunch Sasch Stephens entertained us with his sundials created from ordinary objects, interesting shapes and surfaces that can show a defined shadow. His interest in sundials developed while in Germany in the 1980s. Here he cataloged a display entitled "Zeit und Sonne: Sonnenuhren astroarchaologische und astronomische Kunst" (Time and Sun: Sundials Astro-archaeological and Astronomical Art). The exhibition brought together objects and pictures from prehistory through to the current date including many intriguing and innovative works of art which reflect the use of the sun to determine time, seasons and our place in the universe. Sasch's everyday and found objects included translucent plastic and glass objects such as lamp fixture diffusers, globes and cylinders, plastic pads, cutting boards, pipes hoops barrels etc. His final challenge is a blank wall in Bellingham WA, an ideal surface and location for a large innovative sundial.

A Large Noon-Dial on Glass with Analemma and Dates:

Doug Bateman described the background to the design, construction and installation of the Farnborough dial. This is a specialised dial designed to be seen from inside the building showing local apparent time when the sun is due south (vertical line), mean time (analemma) and the date. The dial, engraved on frosted glass, was mounted in a window above the south facing entrance of Defence Evaluation & Research Agency (DERA) Farnborough, England in 1996.

A Reflecting Ceiling Sundial:

Jackie Jones described her interesting home decorating project, a reflecting ceiling sundial at their Sundial House in Brighton UK. A one-inch square mirror on the frame of a southerly facing window projected a spot of light on the ceiling and upper walls of the room. Jackie tracked the center of the spot with tags for every half hour each sunny day for over a year. The row of tags formed analemma shaped patterns. These were painted dark blue and the declination lines for the solstices and equinoxes painted red. The broad autumn (16:25) and winter (-14:12) lobes of the half hour analemmas overlap by as much as 37 seconds. There were remarkably few gaps in the lines considering the weather, tree and building obstructions and the time constraints.



Jackie Jones Ceiling Sundial



Claude Hartman's Reflecting Crow Sundial

Reflecting Sundials: Advantages and Limitations:

Claude Hartman pointed to the prime advantages of reflection sundials, to bring the sundial inside or onto a wall in shadow. Other advantages include a larger dial, an alternate view, different mirror styles, a window and extended hours. The challenge with extending the hour is using one set of markings for both the direct and reflected point of shadow or light. The rules are the mirror must be in the sun and in a plane of symmetry. For the meridian plane the east reflects the west. For the equatorial plane, spring/summer reflects the fall/winter. For the east west plane, north reflects the south. The reversal of the motion with the reflection requires the numbers be reversed. Claude's example was a sundial on the awning over a deck that could show both a direct shadow and a reflected light spot. His style is the silhouette of a crow mounted in the meridian plane. The head is the gnomon providing a spot of shadow on the hour lines in the morning and a mirror on the head gives the spot of light for the afternoon hours. He recommended "Orologi Solari" by Gian Casalegno as the design program.

Ancient Egyptian Shadow Clocks:

As a sundial interpreter at the Adler Planetarium, Mark Montgomery is often asked about "the oldest sundial." The oldest in existence is an Egyptian shadow clock from 3500 BC. Three of these artifacts have been found and are displayed in a museum in Berlin. The sundial is an L shaped bar 23 cm long with a 2.5 cm raised section at one end. Holes mark the hour points along the bar in the proportion 3, 6, 9,

12. To better understand and demonstrate the dial Mark made a wooden model. The dial is generally interpreted as a horizontal altitude dial oriented with the raised end towards the sun. The length of the shadow varies not only with the time of day but the seasonal change in declination. Many researchers have added bars, gnomon extensions, cords or tilts to the dial to better show consistent hours through the day and year but Mark concludes the simple interpretation is best. The hours may vary but the dial is consistent and reproducible.

A New Digital Gnomon Sundial:

Bob Kellogg was unable to attend the conference but he provided a video of his presentation. He reviewed the history starting with the Thewes dial, an equatorial band with hour numerals cut out every 15°. This was originally developed in France by Bizot and published by de Lalande in 1758. Bob's true digital sundial design is based on parallel slit masks and thin vertical slits to pass light to form digits. He demonstrated a prototype at the NASS conference in 1995 and published details in *The Compendium* in Sept 1995. Scharstein in Germany developed similar concepts. Both received US patents, Scharstein on 31 Dec 1996 and Kellogg on 21 Jan 1997. In 2014 Voshart demonstrated a digital cube sundial that used a matrix that allowed light to pass through channels to project hour numbers. This dial was a birthday gift for his father and only worked within 100 miles of his father's home and within two weeks of his birthday. Bob mentioned a digital gnomon design by Morales shown on instructables.com. This design is similar to the Thewes dial but the hour numbers cutouts were displaced along a polar gnomon. The next advance was demonstrated in Bilbao - a series of digital boxes containing slots between sheets in an equatorial arch. Bob used the concept of slots allowing light to pass through over a limited arc, +/- 7° to project hour numbers. He designed the slots to be 3D printed and arranged the printed slots along a polar oriented half pipe gnomon. This design is a true digital gnomon sundial.

Sawyer Dialing Prize:

NASS presented the 2015 Sawyer Dialing Prize to Ing. Gianni Ferrari "for his long career educating the dialing community about the nearly forgotten heritage of ancient Islamic gnomonics and the wide variety of modern analytically developed sundials." His recently published books "Le Meridiane Dell'Antico Islam" (Sundials of Ancient Islam) and "Formule e metodi per lo studio delle meridiane piane" (Formulae and methods for the study of flat sundials - Characteristics, descriptions and calculation of common and less known sundials).

Some Forgotten Formulas:

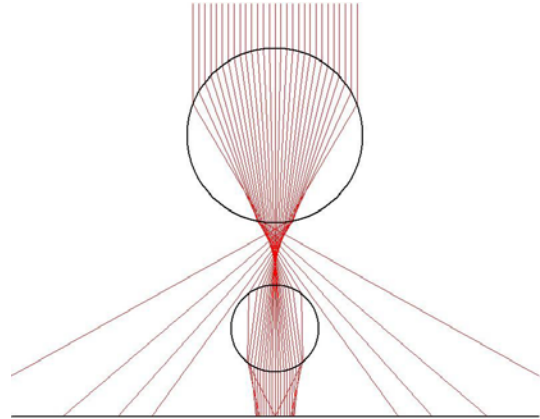
As Gianni was not able to attend the conference, Fred Sawyer presented his talk on the use of versines, a useful trig function, where $\text{versin } \alpha = 1 - \cos \alpha$. This function is particularly useful to solve for time (ω) without knowing latitude and declination. Instead you need to know the meridian altitude of the sun (h_m) and the time of sunset (ω_s). The formula is $\text{versin } \omega / \text{versin } \omega_s = (\sin h_m - \sin h) / \sin h_m$. A similar forgotten formula solves for the azimuth Az of the sun knowing the latitude ϕ and altitude h. This formula is: $\text{versin } Az = (\text{versin } (h_m + \phi) - \text{versin } (h + \phi)) / \cos \phi \cdot \cos h$. These formulas were used by Islamic mathematicians in the tenth century before spherical trigonometry and the cosine formula were known and remained in use until about 1700 when declination tables came into common use and more latitudes were known.

The meeting then adjourned and dinner was served at 7:30

On Sunday June 21 the meeting reconvened after breakfast in the Lookout Room at 8:30. Technical talks started at 8:30 Sat 20 June with the Annual General Meeting.

A Ray-Tracing Exercise:

Fred Sawyer used ray tracing to look into “Solar Eyes” received by participants at dinner. When the glass spheres are in line with the sun, the rays are refracted in the upper sphere to a soft central focus, more or less due to spherical aberration. These rays then refocus through the colored second sphere to project sunlight as a colored spot. The circumference and the center of the spot are noticeably brighter due to the concentration of rays. Fred used Fresnel equations to determine transmittance with lower intensity but higher concentration of rays at the periphery and higher intensity at the center.



Wire-Reinforced Glass Turns Darkness Into Light:

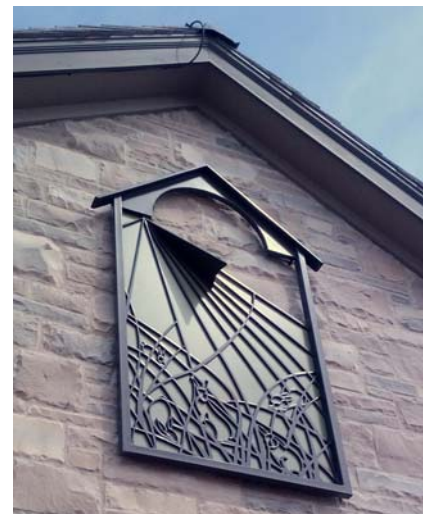
Frank King was up next to explain the observation that the shadow of wires in a reinforced glass window can appear to be brighter than the glass squares between the wires. This illusion is due to the sun being a disc of light, about 0.5° in diameter and not a point source. The specific geometry of the wire diameter, the size of the grid and the diameter of the solar disc create the illusion of a grid of bright wires. What looked like brighter wires is the brightness of the glass when the solar disc is unobstructed by wires. This is clearly observed when the light passes through the leaves of a tree to become a series of point sources. Then the wire shadows are darker as expected.

Practical Layout of Spherical Gnomons & Other Surfaces of Revolution:

By practical geometry Steve Luecking meant geometry as practiced by draftsmen with instruments rather than analytical geometry practiced by mathematicians with equations. He showed practical geometry techniques to draw hour lines and day lines for a spherical gnomon sundial like the one installed at Columbia University in 1914. The first step is to draw an ellipse of radiation based on two circles with diameters equal to the hypotenuse and the height for a conventional triangular gnomon. These circles are divided into 24 segments and lines drawn through the termini of the radial lines at the inner and outer circle. Intersections of these lines determine the hour points forming the ellipse of radiation. Hour lines for the spherical gnomon are parallel to the conventional hour lines and tangent to the ellipse. Such techniques were extended to day lines and applied to other surfaces of revolution.

Hilltop Sundial:

Roger Bailey provided an example of how NASS can help people to design and construct sundials. Frank King forwarded to Roger a request for help he received on the BSS help line from Victoria Carley, a landscape architect in Toronto. She had used a standard sundial design program to define the hour lines and gnomon for a vertical declining sundial. The lines just didn't look right. Roger responded and worked with her through a series of emails and sketches. The key problem was the determination of the wall declination. Several methods were used to estimate the declination including a smart phone compass, Google Earth pictures, site plot plans and Bill Gottesman's carpenter's square method. The range varied from 59° to 67° west of south. The design was based on mid-range value of 62° . Roger provided a design showing what the hour lines should look like and Victoria then proceeded with her specific design for the site. The dial was constructed in January and installed on 6 April after the snow had melted at the site. The dial looks great, and tells the correct zone time



NASS Flash edition 8: One of the benefits received by participants of NASS Conferences is a flash drive. This contains almost all of the conference presentations and a wealth of other information including sundial design programs, ebooks on sundials, and a useful collection of utilities, all designed to run from the flash drive. You can plug this into any Windows based PC and do what you want with the installed programs without affecting the host computer. On the drive there is generally lots of storage space for adding your own files, perhaps pictures you took at the conference. Thank you Fred for this conference bonus.

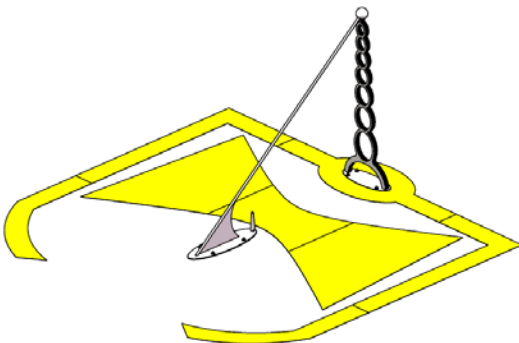
Geometry of Elliptical and Ellipsoid Gnomons:

Steve Luecking’s second presentation extended the concepts of spherical gnomons to elliptical gnomons. The added step is the technique to construct a tangent in a given direction to a given ellipse. The tangent points are then dropped to a circle circumscribing the ellipse. The hour lines are then drawn as tangents from the points on the circle. Steve used this technique to design a sundial with an elliptical gnomon with symbolic native art for Victoria.



Ottoman Sundial: Konya Science Center:

Roger Bailey presented a second example of NASS helping sundial designers, in this case Dan Matarazzo at the Liberty Science Center in New Jersey. Dan’s concept was to install an Ottoman sundial like the one at Topkapi Palace Istanbul and the Missouri Botanical Gardens in St Louis. He provided the concept drawings for detailed design and fabrication in Europe for installation at the new Konya Science Center in Turkey. Dan requested help after the mockup of the dial failed tests by the client in Konya. There they could not match the prayer lines and hour lines and assumed the scale was wrong. The problems included the definition of the Zuhr prayer time and the different scale for the vertical peg gnomon and the polar gnomon.



Dan met with the fabricators and was able to resolve most of the issues. Based on one tourist’s photo posted on the internet, the dial has been fabricated and installed outside the Konya Science Center but I am unable to confirm that the design for the complex hour lines and prayer times is correct.

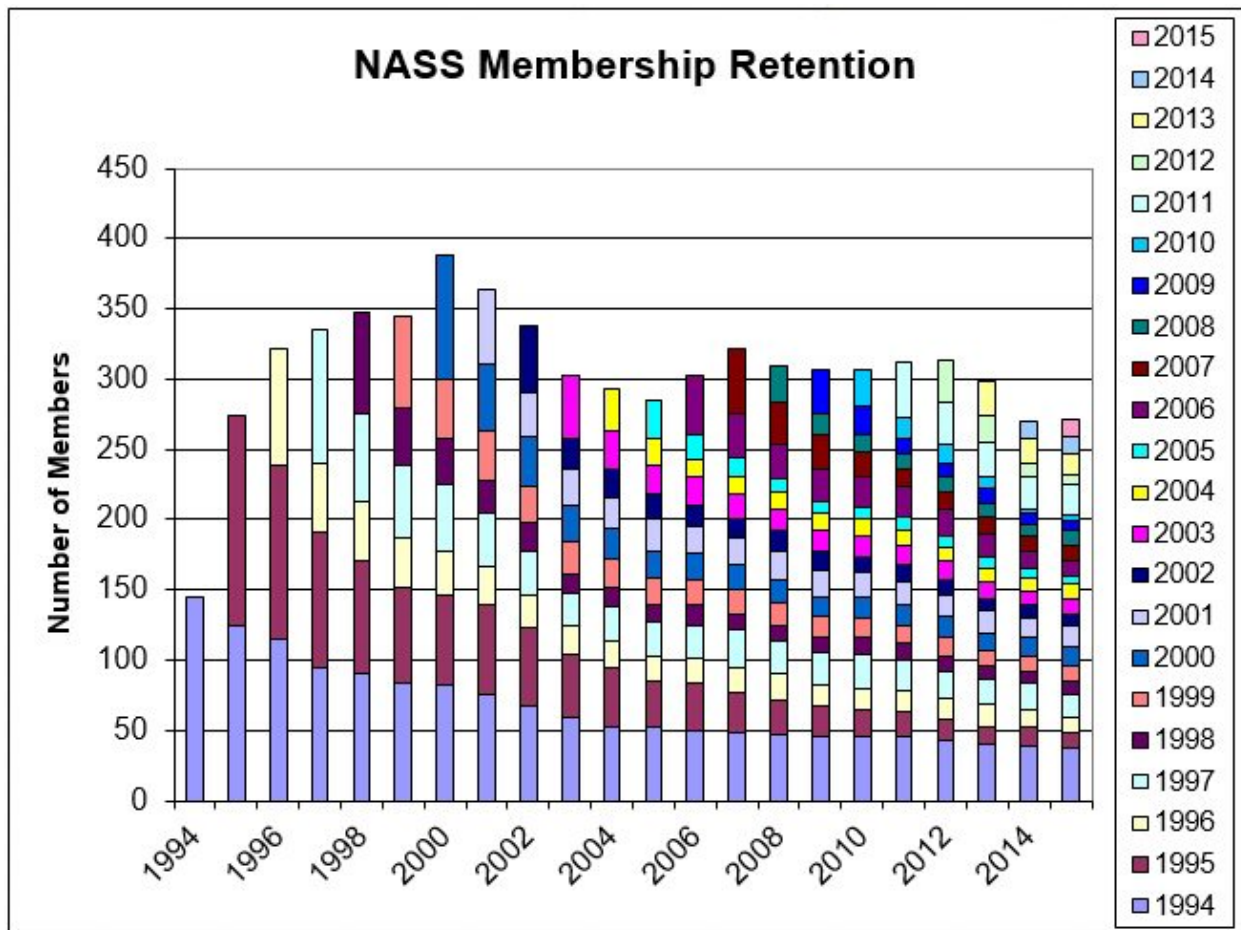
First Measurement of an Analemma on Another Planet: Woody Sullivan reviewed the sundial on the Curiosity Mars rover in the ‘Two Worlds, One Sun’ project with Bill Nye. He went on to describe the measurement of the Martian analemma. The Opportunity Mars rover has been able to take 219 pictures showing the sun’s position in the Martian sky at 11:02 local Martian time for more than a Martian year (687 days). The mosaic of these photos confirm the pear shaped analemma calculated based on the relationship between the tilt of the axis (25.19°) and the eccentricity of the orbit (0.0934).

Lumen in Septemtrionalibus: John Schilke’s title in Latin translates as “Light in the North” or Aurora Borealis. The Schilkes went on a tour in Iceland to see the aurora borealis. His talk described the

tour and he showed pictures taken by those on the tour. Some were spectacular showing the green and red waves of aurora. He ended with a professional video “Under the Lights” by Stephane Vetter showing the glory of the aurora.

The conference adjourned at about 12:45.

Concluding Comments: Many participants commented on the success of the Victoria conference. Attendance exceeded expectations. The presentations were varied and interesting. The location in the heart of Victoria’s downtown tourist area was great. The hotel facilities and services suited us well. The bus driver provided a great commentary along the tour and added interesting options like the observatory. The lunch and tour at Butchart Gardens was another highlight. Costs were lower for most participants due to the favorable exchange rate compared to the Canadian dollar. Based on this year’s success, many participants are now looking forward for the conference next year in Portland, Maine.



Minutes of the NASS Annual General Meeting, June 2015

Roger Bailey, Secretary

President Fred Sawyer called the Annual General Meeting to order at 8:30am, June 20th at NASS Conference in Victoria. Directors and Officers Present: Fred Sawyer (President and Editor), Art Paque (Vice-President), Mark Montgomery (Treasurer), and Roger Bailey (Secretary).

Roger Bailey was the recorder of the previous annual meeting (August 2014). The minutes were accepted as distributed in the conference package and with *The Compendium* in Dec 2014.

Mark Montgomery reviewed the financial statements to May 31, 2015. The Statement of Financial Position shows cash and bank assets as \$59,733.63, prepaid conference expenses of \$4648.18 and \$527.00 as fixed assets for total assets of \$64,908.81. Liabilities included \$12,755.65 for the conference and \$10,296.83 as unearned Compendium subscriptions. Net Equity includes \$32,425.19 unrestricted, \$7,000 for Adler Project and \$2430.94 for the Sawyer Dialing Prize for a Total Net Equity of \$41,856.13

Art Paque, Vice President and Membership Committee Chairman presented the membership report. Although the retention rate remains high, the total number is now 271, a net gain of 1 from last year, with 12 new members and 11 not renewing. The attached bar chart showing the retention is based on the numbers Art presented at the meeting. The electronic download format is now the most popular with 102 electronic and 46 electronic and print for a total of 148. Print also remains quite popular. A total of 135 members receive the print format, 59 print only 32 print and electronic and 44 print and CD.

Fred Sawyer presented Larry McDavid's brief report on the NASS Sundial Registry. The current number of sundials registered is 796 with 13 new dials and 8 updates in the past year. Notable dials included #796 an analemmatic with reflectors marking the solstices and equinoxes in Shoreline WA and #794 a large (26 ft. diameter) bowstring equatorial in St Petersburg Florida. A complete listing of all registered sundials is now available at the NASS website with links to pictures and descriptions. Registry PDF Reports are also available to download by geographical area. These can be displayed on tablet computers or even smart phones.

Jack Aubert presented Bob Kellogg's webmaster report as Bob was unable to attend the conference. The website now has a new format based the Joomla! content management system. The homepage shows Bob's sundial blog now containing over 240 articles. The website now lists all 796 dials in the NASS registry. Included on the website are pages on organization, bylaws, policies, *etc.* The website continues to get about 25,000 hits per month or 850 per day with typically 100 guests from around the world online.

There was no final report from the nominating committee, since nominations remain open until July 1. The terms for the Vice President and Secretary expire this year. The current incumbents Art Paque and Roger Bailey are willing to stand for re-election.

The NASS Board met to reassess the tasks of each board member to better share the load. The role of president needs to be reduced with ongoing tasks delegated. The role of the vice president, responsible for memberships, will be increased to take in membership dues and maintain the official membership list. Mark Montgomery agreed to provide help with conference planning. Fred Sawyer will continue as editor but needs help identifying and editing articles for *The Compendium*.

The conference for 2016 is proposed for Portland Maine with Jack Aubert volunteering as the local host. The timing was discussed and June was preferred to the traditional August dates by those in attendance (at a west coast conference held in June) and expressing a preference. As discussed last year, the 2017 conference is proposed for St Louis to coincide with the total solar eclipse on 21 August.