Reported by Steve Lelievre using photographs provided by Evan Boxer-Cook, Steve Johnson, Frank King, Steve Lelievre, Vickie Lessoway, Bob Manning, Mark Montgomery, and Bryan Preas.

Thursday June 8 – Registration and Reception

The conference's opening reception offered light refreshments and an opportunity to chat with fiends and acquaintences, new and old. Winners of door prizes were:

Item	Winner
Reproduction Colonial American Sundial	Lizzy Longsworth
Equation of Time Ball Cap	Peggy Gunnerson
Equation of Time Ball Cap	Marc Boone
Mark Lennox-Boyd's *Sundials: History, Art, People*	Len Berggren
A.P. Herbert's *Sundials Old and New*	Roger Bailey
Hester Higton's *Sundials: An Illustrated History of Portable Dials*	David Dahl
Mug decorated with Kircher's *Sciathericum Seleniacum*, with flash drive for Fred Sawyer's PowerPoint about this design	Bob Manning
Wooden Polar Sundial, made by Martins Gills	Bryan Preas
Launcelot Cross' *A Book of Old Sundials & Their Mottoes*	Steve Lelievre
Barry Perlus' *Celestial Mirror – The Astronomical Observatories of Jai Singh II*	Sasch Stevens
Kevin Karney's *The Equation of Time – Æequātiō Diērum*	Fred Gunnerson
Sara Schechner's *Time of Our Lives: Sundials of the Adler Planetarium*	Marvin Taylor
Frank Cousins' *Sundials – The Art & Science of Gnomonics*	Steve Johnson
Jesse Simmons' *Plans For Your Sundial* & Jane Walker's *Make A Sundial*	Tasoula Berggren
Regiomontanus Sundial, reproduction by Vsevolod Buravchenko	James Evans
Davis Rooney's Ruth Belville: The Greenwich Time Lady	TBA

Friday June 21 – Bus Tour

Our tour started at Highlands Elementary School in North Vancouver, which has a Split Analemmatic Dial by Brian Albinson, one of very few dials of this type in the world. NASS #926.

Highlands Elementary School. Fred Sawyer outlines the principle of the Split Analemmatic design.

The next scheduled stop was to have been Parkview Towers (NASS #648) but this dial was dropped from the schedule due to last-minute access issues. Instead, we proceeded to VanDusen Gardens to see Gerhard Class' Equatorial Dial (NASS #931), with enough extra time available to allow a visit to a maze and Medicine Wheel.[1]

A group discussing the layout of the VanDusen Medicine Wheel.

[1]An astronomically-aligned feature constructed in the past by the indigenous peoples of the Northern Great Plains, reproduced in the Gardens as a representative feature for the prairie section. Post-conference investigation by Steve Lelievre suggests the layout and alignment of this example deviates from traditional forms.

Equatorial Dial at VanDusen Gardens (NASS #931). The dial is a twin of a dial at English Bay, Vancouver (NASS #645.)

Delegates shelter from the sun as they wait for a few stragglers to emerge from the maze.

Our lunch stop was a pub-restaurant in the South Main neighbourhood. Unfortunately, lack of parking / stopping places meant our driver was unable to pull up at the restaurant to collect us after lunch. After some delay, the tour resumed with a visit to Steve Lelievre's Hours To Sunset dial at the Cambie Park Community Garden (NASS #919.)

The dial at Cambie Park Community Garden uses the tip of a 3D-printed carrot for its nodus. (NASS #919.)

The dial is a west-facing vertical Italian hours dial, numbering reversed to indicate the hours remaining to sunset.

Leaving Cambie Park, we made our way through exceptionally heavy traffic to our penultimate stop at Simon Fraser University, where we viewed an unusual equatorial dial designed by Brian Albinson in collaboration with Len Berggren, and constructed by apprentice machinists Blanco Lam and Jacob Maloney (NASS #930.)

This dial is unusual in having a gnomon plate that is free to turn on the polar axis. The plate is cut through with an aperture in the shape of the familiar figure-of-eight analemma. With the plate square to sun, reading from where the appropriate edge of the analemma outline is seen on the equatorial band, shows the

NASS #930 at Simon Fraser University. In this illustration, the gnomon is turned sideways to the sun so that rays passing through a central slot shows zonal solar time.

time adjusted for Equation of Time (time zone adjustment is incorporated into the scale of hours.) Further, turning the plate sideways to the sun allows light to pass through a narrow slot to provide Zonal Solar Time.

West Dial; Stained-glass Dial; Len Berggen discusses one of the other dials in his collection with Martha Villegas and José Montes.

The final stop of the tour was the home of Len and Tasoula Berggren, who provided us with a fantastic selection of treats and refreshments.

Len had on display a large number of sundials and related models, including a newly completed vertical west dial.

Sadly, the late start to the afternoon part of the tour and the heavy traffic that we encountered meant that our visit to the Berggren residence had to be cut short before we had a chance to make the most of Len and Tasoula's generous hospitality or explore all of the dials on display.

Conference Presentations – Saturday June 22

Fred Sawyer distributed Slide Bingo sheets with random selections of images that would appear in the presentations. As the conference progressed, participants could match the slides to their Bingo sheets. Peggy Gunnerson and Mark Montgomery were the first to achieve the required line of five matches, winning copies of Dennis Cowan's *The Ancient Sundials of Scotland.*

Burt's Solar Compass – Mark Montgomery

A review of William Burt's Solar Compass covering its development in the first half of the 19th century as a tool to improve (considerably) the accuracy of land surveys, its significance for the westward expansion of the United States, and how proportionate profit from it evaded the inventor.

Realizing a Dream – Mike Moghadam

The story of one person's first significant sundial design and construction project, the slew of decisions involved (positioning, aesthetic considerations, delineation, materials and fabrication techniques, design verification, etc.), and lessons from the exercise.

A visit to Santa Maria degli Angeli – Tom Kreyche

An amusing account of the speaker's visit to Santa Maria degli Angeli in Rome to observe the meridian line, and how the strange behavior of another visitor almost overshadowed the experience.

During a break between talks, delegates take in some of the exhibits.

An Azimuthal Volvelle Sundial – Fred Sawyer

Analemmatic and 'Spider' dials are the generally-known type of azimuthal sundial. In this presentation, a new type in the form of a volvelle was introduced. With some innovative manipulation, the cumbersome relationship between hour angle and azimuth (for given latitude and solar declination) was rendered manageable as the sum of two angular terms. The resulting volvelle has two rotating elements which act together to convert azimuth to hour angle.

Sundials as an Art Form – Frank King

A discussion of how the expertise of artists and sculptors can transform the technical delineation of a sundial into an object of great beauty. Using his collaboration with The Cardozo Kindersley Workshop and other examples, Dr. King described how the contributions of dialist and artist combine as production of a sundial proceeds.

Finishing the application of gilding to a memorial sundial.

Sciatheric Spirals – Peggy Gunnerson

Peggy Gunnerson started her talk by showing some wonderful examples of her sculptures relating to the concept of Time. She then went on to describe a beautiful new piece named *Sciatheric Spirals,* outlining the steps involved in its creation, from the cutting, shaping, welding, and grinding of sheet metal, through to the patinated finish.

Canmore Sundial – Roger Bailey

Roger Bailey collaborated with artisan Ernst Saltzgeber to create a prominently-located new sundial in Canmore, Alberta. The visual design is based on the spectacular local mountain scenery. A full-scale prototype was constructed and tested prior to manufacture of the powder-coated aluminum final product.

The Life and Times of the Connecticut College Sundial – Tom Kreyche

A sundial with glass and flowing water elements, designed by faculty member David Smalley, was installed in 2000 at Connecticut College in New London, Connecticut. It is in poor condition, generally degraded with additional damage from vandalism, and the gnomon is now kept in storage (except for special events). Tom Kreyche's assessment revealed flaws, or perhaps artistic license, in the design. The future of the dial is unclear but for now it remains and offers symbolic value.

The Oronce Fine Quadrant – Some Additional Thoughts – Frank King

The BSS Bulletin of June 2023 carried a detailed report by Davis Coffeen on a quadrant attributed to Oronce Fine, the design of which incorporated straight hour lines – an unusual feature. In this talk, Frank King explained how Fine obtained these straight lines, but then revealed that the layout is not quite correct (although in practice the deviations were likely insignificant.)

Retrograde – Fred Sawyer

Over the years, all kinds of bizarre explanations have been offered for the biblical account of the Sundial of Ahaz. Recent scholarship suggests that the story may have arisen from a translation error, with the original Hebrew wording describing retrograde movement of a shadow on a stairway, rather than time going backwards on a sundial. Nonetheless, there are various kinds of sundial, surveyed in this presentation, that exhibit retrograde motion of the shadow. Samuel Foster's Diametral Sundial can be constructed in a way that provides choice of the time of the daily reversal. Fred provided each attendee with templates for two diametral sundials for their particular latitude.

Two Kinds of Time: Repurposing an Atlas Dial Found at Tor Paterno – James Evans

Jim presented a fascinating account of a sundial found in Tor Paterno (Italy) in the late 18th century which ended up at the Sir John Soane Museum in London. At some point, a wedge was added which causes the dial to indicate equal hours, replacing the seasonal hours of the original configuration.

Finding Time: Developing BC Gnomonics – Evan Boxer-Cook

BC Gnomonics is Evan's web site dedicated to providing high quality information relating to gnomonics and dial-makers, illustrated by examples of the finest designs. In his talk, Evan Boxer-Cook explained the site design, his motivation for developing it, and plans for its future.

Sawyer Dialing Prize

Scotland's Ancient Sundials: Stories Behind the Photos – Dennis Cowan

Dennis Cowan has been awarded the Sawyer Dialing Prize for 2024, in recognition of his decade-long project "In the Footsteps of Thomas Ross", tracking and documenting Scotland's wealth of ancient sundials as originally recorded over a century earlier by Thomas Ross.

Dennis was unable to attend the NASS conference so arrangements were made for the prize to be presented at the BSS conference, with a recording of the acceptance speech used at the NASS conference. In it, Dennis recounted some anecdotes from visits made to various sundials as part of his investigations.

Dennis Cowan (l) accepting the prize from Fred Sawyer. As has been the case in recent years, the award includes the gift of an elegant Spectra dial made for NASS by Jim Tallman.

Conference Dinner – Saturday June 22.

A thoroughly enjoyable Conference Dinner took place in the evening after the first day of conference presentations. An excellent quality meal was followed by our traditional distribution of gift bags to attendees. For part-time delegates, the gifts included a decorative bookmark by a local artist, and a small porcelain bowl with decoration by local First Nations artists based on traditional designs. Full-timers received a 3D-printed Universal Ring Dial made by Bob Kellogg and a small 3D-printed Sawyer Equant sundial made by Steve Lelievre, along with small card-based dials donated by Roger Harris (altitude dial) and by Erwin Wechsler (solar compass.) Additionally, the conference packs included cutout sundials delineated for Vancouver by Heinrich Stocker.

Conference Presentations – Sunday June 23

The first item on Sunday's agenda was the NASS AGM (recorded separately.)

<u>Two Commemorative Analemmatic Sundials: 2024 Solar Eclipse & Agronomic University – José Montes</u>

In 2023 a commemorative analemmatic dial was installed in Torreón, Mexico, marking the centenary of a local university, UAAAN. In 2024, another analemmatic dial was created to mark the 2024 Total Solar Eclipse. Conference attendees Martha Villegas and José Montes collaborated on these satisfying designs. José described the projects, explained the design elements, and discussed the choice of materials.

3D Printing Complex Sundials – Bob Kellogg

After providing some background about the historical development of ring dials, Bob described the steps involved in creating the Universal Ring Dial that he made as conference gifts. There being no suitable computer models available, this implementation was developed from scratch.

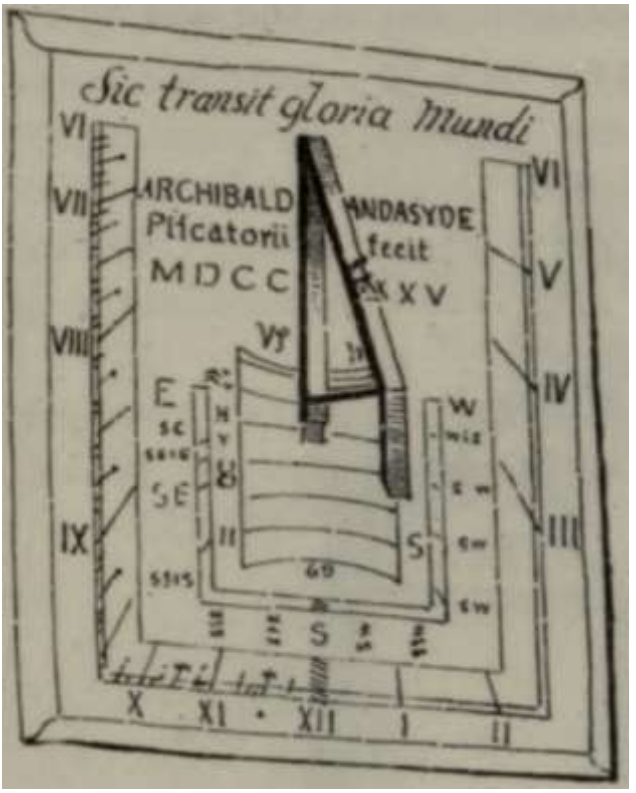
As Bob was unable to attend the conference for health reasons, his presentation was given as a video-recording.

A NASS Gallimaufry – NASS Officers

Fred Sawyer and Mark Montgomery outlined two items contained on the conference flash drive (in addition to the PowerPoint files for the talks). Fred described a joint digital publication of BSS and NASS that comprises Dennis Cowan's 40 articles on Scottish sundials and Thomas Ross' original publication with links between the two. Mark described the work he and Evan Boxer-Cook have done on the first version of a new NASS glossary of dialing terms. Steve Lelievre then review the publications and model sundials offered for sale by NASS.

The South-Facing Inveresk Dial: A Thomas Ross Conundrum – Frank King

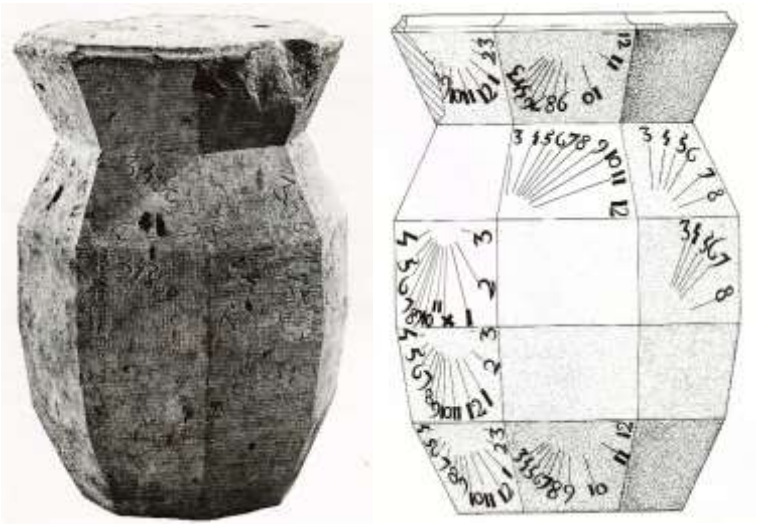
One of the two dials at Inveresk, Scotland, was summed up by Thomas Ross as "scientifically speaking, of complicated construction" with a w-notch on the gnomon described only as "an artistic touch." However, the w-notch acts as a nodus which indicates declination on a set of near-horizontal curves in the center of the dial face, and solar azimuth (labelled as compass directions) by a set of vertical lines. The edges of the gnomon are stiles used for time indication. These features mimic the Queens College Dial, Cambridge.



Thomas Ross' sketch of one of the dials at Inveresk.

Comments on the Fort Prince of Wales Sundial – Fred Sawyer

At a former Hudson's Bay Company Fort, near Churchill, Manitoba, sometime in the late 18th century, an unknown person set about carving a vase-shaped polyhedral sundial but it was not completed. HBC records suggest that there were only a few people stationed there at that time who had the education required to design the dial. Various arguments have been developed in support of the idea that the maker was William Wales, sent to Churchill by the Royal Society and who played a significant role in observing the Transit of Venus in 1769. However, assumptions and incorrect information abound, and the true identity of the maker remains unknown. Fred reviewed some of the published errors and wishful thinking surrounding this case.



Fort Prince of Wales Sundial

Group Photo, 2024 NASS Conference. Photo: Deb Wanner.