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Some CVAS Historical Notes and Corrections - by G.W.Gliba

It seems like the older I get the more I realize that some of my long term memories of early CVAS historical events aren't as accurate as I thought that they were. For instance, I mentioned in an earlier article in the Valley Skywatcher, on the history of the CVAS starlight bumper sticker, that it was printed in late 1974, when it actually was printed as early as late 1973. I found this out by looking at an old photograph, distributed via email of a star party that occurred at my parents house on Cedar street in the Summer of 1974. You may be wondering how this photograph, that Tom Quesinberry scanned and distributed a couple of years ago, would clue me in on my recollection mistake. You may recall from my article mentioned above, that I knew the first printing of the CVAS starlight bumper sticker happened the summer I was cutting the brass hinges for my Norton's Star Atlas tripod, which I had assumed was in 1974. Well, that picture that Quiz circulated had to be from the Summer of 1974, as it showed Tom Muggleton's 5-inch F/5 Jaegers RFT mounted on the Norton's. Also, my 8-inch Celestron SCT was still on the old Springfield pier. So, I had a brain fart when I was recalling the time that the 1st printing of the CVAS starlight bumper sticker happened. The picture doesn't lie, and I clearly now remember that Tom Muggleton took that scope and mount to the Great Lakes Astronomy Symposium at the University of Toledo in the Spring of 1974. where our CVAS co-founder Tony Mallama was getting his Masters Degree in Astronomy.

By the way, this was also when I met the famous comet expert Armand H. Delsemme, who gave one of the talks, which was on comets. He also attended the small Telescope Fair, where Tom Muggleton and I had displayed the Norton's Star Atlas tripod, which had Tom's 5-inch F/5 Jaegers RFT mounted on it. When I proudly told Delsemme that I got the idea from Norton's Star Atlas, he quickly said that he too had built one like it from the directions in Norton's Star Atlas. At that point I had to eat some humble pie, but I was also intrigued by the thought of many Norton's Star Atlas tripods being built. Also, after leaving CVAS to go to California, Tom Muggleton later built a modified folding Norton's which won a merit award at the Riverside Telescope Makers Conference. Since then, in CVAS at least, Dan Rothstein, and Ian Cooper have built full sized Norton's, and Tom Quesinberry built a min-Norton's Tripod. By the way, this is a good time to say that without the skill of the master machinist and ATM Tom Muggleton, I would have never had a Norton's Tripod.

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So, with the little bit of detective work mentioned above it has become clear that the first batch of the CVAS anti-light pollution bumper stickers with the logo "Would You Rather See Street Lights or Starlight" was printed at the Mars Printing Company in the late summer of 1973. The first batch of 1000 stickers was delivered to me by Dan Galdun. It was Chris Stephan who arranged to get the job done. So, that was 37 years ago, and when the CVAS celebrates it's 50th Anniversary in 2013, the starlight bumper sticker will be 40 years old. Man, all this is making me feel old.

Besides having the first batch of anti-light pollution bumper stickers done by Mars Printing Company, the name Mars also played a role in another part of CVAS history, in the finishing of the 16-inch F/7 primary mirror for the Stokes Reflector, now at Indian Hill Observatory. That mirror was made by Norm Oberle and Jim Thomas of the Cuyahoga Astronomical Association in mid-60s. Most of the fine correcting and parabolizing was done by the late master glass pusher Norman Oberle. When they took the mirror to get a possible final figuring and aluminization, they took it over to Mars, Pennsylvania. That was the location of the 3B Optical Company. It turned out that when the optical experts at the 3B Optical Company looked at the Stokes primary mirror on a Foucault Tester, they decided it was excellent and needed no more work on it. That is also a testimonial to the results Norm achieved. He was truly a master optician. It came back from Mars, Pennsylvania, to the Stokes Observatory in Hudson, Ohio where Art Stokes did pioneer amateur photoelectric photometry on variable stars for AAVSO. Art was the chairman of the AAVSO Photoelectric Photometry Committee for many years, and was Also the president of the AAVSO for one term. So, Mars was important to CVAS in starting our anti-light pollution campaign back in 1973, and later when we got the Stokes Reflector for Indian Hill Observatory.

Report on Observatory Park by Dan Rothstein

This description was announced to the last meeting of the Observatory Park Technical Advisory Committee, for which I am the CVAS representative. As most of you probably know, construction of Phase 2 of the Geauga Park District's plan for Observatory Park will begin on May 1 and is expected to be finished in the fall. Phase 1 was the gravel base for the driveway and the parking lot. Phase 2 is the Observatory and the Nature Center. Phase 3, which will probably be started next year, is all the outdoor exhibits, which I will report on first.

Between the parking lot and the main plaza will be a large sundial. There will be a planetary walk, which will be an asphalt walkway which loops around the field west of the observatory, the total distance walked being proportional to the planet-sun distance (not a linear model). Each planet will have a sunken plaza with a plaque describing it. There will be a cut-off across the loop if one doesn't want to walk the full distance. The central plaza, which surrounds the two buildings, will have alignments toward the sun's rising and setting points on the solstices and equinoxes. Northeast of the plaza will be a Henge, which will consist of two large standing stones, to create an alignment toward the summer solstice sunrise. The Great Pyramid footprint will consist of four stones in the field within the planetary walk, which will be placed to indicate the corners (full-scale) of the Great Pyramid with its north-south alignment. A sculpture-like exhibit which displays the lunar phases will be located in the plaza, as well as one showing the constellations. These outdoor displays are still being designed. The plaza will have alternate rings of gravel aggregate and grass. Outside of the plaza on the grass will be space for temporary exhibits and powered telescope pads will be located just south of the observatory.

Current designs for the main building (called the public viewing building, since most of the time the output of the telescope will be shown on screen there) place it on the north side of the plaza. The north and south walls are circular sectors, with outside radii of 27'8" and 64'8" (making it 37 feet wide), the sectors being 84 and 196 feet in length). All the outside and inside connecting walls are either sectors of, or the radii of circles, requiring the building of lots of curved walls. Entering through the double doors in the center of the south wall, one comes into an entry corridor which will open straight ahead to the public meeting room and left to the rest rooms. The public meeting room will have an 18 foot fiberglass dome mounted in the ceiling which will be used with a portable planetarium projector. This room is 28 feet wide, the length of the circular sector being about 120 feet in the center of the room, and is being designed to seat 100 using portable chairs. There are other outside entrance doors- in the northeast corner, as well as into the bathroom area. The toilets will be the waterless type used at some of the other parks. This building will have a green roof, partly covered in solar panels, partly with vegetation, which slopes downward toward the south. There are also two storage rooms in the building.

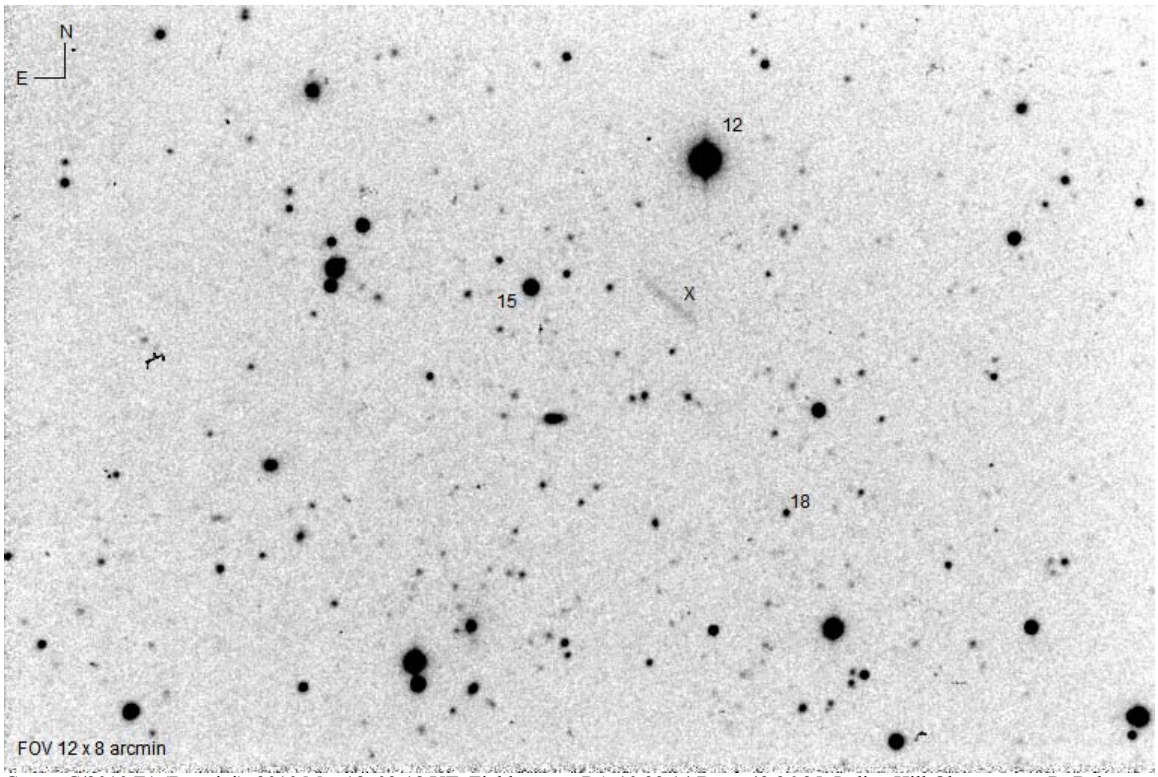
We hope that the some of the current design features for the observatory can be modified, but this is what was sent out for bidding, and the Park doesn't want to incur the expense of rebidding. The observatory sits on the south side of the plaza. The shape of the observatory is similar to that of the main building-sectors and radii of circles The part for the telescope on the west side of the building has radii of 27'8" north and 48' south, with a narrower section on the east side, connected by radial segments. There will be double doors at the center of the north wall facing the center of the plaza, one at the southwest corner, and one facing east on the south wall where the closed section of the rolling roof ends. All the doors in both buildings have sheltered overhangs. The section of the observatory building housing the telescope is 20'3" wide from north to south, with the north sector about 30 feet long and the southern sector about 52 feet. The eastern side is 15 feet wide. The control room, seismograph and weather stations will be housed in the eastern half of the narrow part of the building, which the open rolling roof will cover. The wall heights are the controversial points. The north sector is 10'10" and the south sector is 12'6" high, with the rolling roof mounted above that, sloping downward toward the center of the plaza. The rolling mechanism will open toward the east, the roof hanging from curved metal extrusions similar to what are used for horizontally-moving garage doors. To lower the angle to the top of the south wall, the pier will extend 3 feet above the floor, with the mounting on top of this. This places the center of the tube 88 inches off the floor in its horizontal, parked position, and putting the eyepiece at least 9 feet off the ground at its lowest observing position, and more than 13 feet at the zenith.

Comet C/2010 F1 (Boattini) By Ron Baker

A new comet was discovered by the Catalina Sky Survey (CSS) in February 2010. The object was recovered on March 17, also by the CSS. Throughout the next day, follow up observations were recorded by several observatories (including the Indian Hill Observatory), and were submitted to the Minor Planet Center (MPC). By March 18, the MPC had enough observations to make an initial determination of the object's orbital

elements. Revealed to be a long period comet, the provisional designation C/2010 F1 (Boattini) was assigned, and the results published in the Minor Planet Electronic Circular: http://www.minorplanetcenter.org/mpec/K10/K10F32.html

The comet can be seen in the following composite image, made by stacking 25 x 120-sec astrometric images. The images were recorded using an unfiltered ST-402ME CCD camera, and the 12" SCT in the North Observatory. At roughly 19th magnitude, the comet appears as a faint line moving from the NE to the SW, covering 40 arcsec during the 50 minute imaging session.



Comet C/2010 F1 (Boattini), 2010 Mar 18, 03:18 UT, Field center: RA 10 33 14 Dec +43 26 25, Indian Hill Observatory, R. Baker

Operating under the auspices of the International Astronomical Union, the Minor Planet Center's primary goal is to determine and maintain the orbital elements for asteroids and comets. These parameters are derived based on astrometric observations submitted by officially designated observatories throughout the world. Indian Hill Observatory received the official observatory code (H75) from the MPC in 2008.

Since the orbital elements of most minor planets are stable, the MPC concentrates on newly discovered objects. When observations containing new objects are submitted, the MPC assigns a Near Earth Object (NEO) identifier. Although the observations by the discovery observatory may have continued through the night, accurate orbital elements cannot be determined until the object is recovered one or more nights later. Once a sufficient number of follow up observations have been obtained, the MPC derives an initial set of orbital elements. A provisional designation is assigned to the object, and a Minor Planet Electronic Circular (MPEC) is published. The MPEC includes the object's

orbital elements, a list of the individual observations used in the calculation, and the names of the observatories that submitted the observations.

Hundreds of minor planets are discovered each year, mostly by large scale surveys like the Catalina Sky Survey and Linear. Many of these new objects are asteroids that cross the earth's orbit. Some can pass quite close to us, as indicated by their Minimum Orbital Intersection Distance (MOID) parameter. This value represents the smallest possible distance the object can come to the earth. Objects with very small MOID values are classified as Potentially Hazardous Asteroids (PHA). Very small (but still potentially dangerous) asteroids are frequently detected only a few days before closest approach, and sometimes pass the earth at less than 1 lunar distance.

A newly discovered object sometimes turns out to be a comet, which can be recognized by its eccentricity, inclination, and semi-major axis. Short period comets have orbital periods less than 200 years, and sometimes follow nearly circular orbits within the inner solar system. But others have more eccentric orbits with aphelion occurring out past the orbit of Neptune, up to 70 astronomical units (AU) from the sun. Long period comets, on the other hand, are thought by astronomers to originate in the hypothetical Oort cloud, a huge region defined by a spherical shell located 20 to 50 *thousand* AU (or roughly 1 light year) from the sun. One hypothesis suggests that long period comets were originally formed within the inner solar system, but later forced into extremely eccentric orbits through interaction with the larger planets. Numbering in the billions (perhaps trillions), these comets remain loosely associated with the solar system for immense periods of time. Some astronomers believe that gravity from the center of our galaxy influences these distant objects, much as our moon affects the ocean tides. Others have proposed that the gravity from passing stars sometimes causes the comets to drop back into the inner solar system for a fleeting visit.

The orbital elements of C/2010 F1 (Boattini) reveal some basic characteristics. For example, the orbit is inclined to the ecliptic by nearly 70 degrees. Combined with its large eccentricity and orbital period, it has the signature of a long period comet. An ephemeris, using the initial orbital elements, suggests that after a very long descent from its place of origin, the comet reached perihelion in November 2009 at a sun-distance of 3.6 AU (halfway between the orbits of Mars and Jupiter). Now, moving outbound through the solar system, it will cross the orbit of Neptune in 2025. By the end of this century the comet will be more than 100 AU distant, but only just beginning its long journey back into oblivion.

Constellation Quiz conducted by the editor

1. These are the two different Latin names for the same object, but they can never be seen in the sky at the same time. They are not actually part of any constellation, but another class of objects altogether. What are the two names and what do we call it now?
2. Which two naked eye stars are known as the guardians of the pole?
3. These three stars are known in England as the "Ell and Yard," known elsewhere as the Three Kings, or as Jacobs Rod.
4. Name the constellation which was called the Prince of the Zodiac, or the Prince of the Celestial Signs, or the Leader of the Hosts of the Zodiac.

Answers to the last issues' quiz questions:

1. The constellations who are mother and daughter are Ursa Major and Minor.
2. The old constellation between the feet of Virgo was Nocta the Owl
3. The two brothers who sailed on the voyage of the Argo were actually twins: Castor and Pollux
4. The two stars stolen from a zodiacal constellation are Zuben-el-genubi and Zuben-el-chamali, the northern and southern claws of Scorpio. Modern drawings of Scorpio show it with no claws. They were given to the constellation west of them, and are now known as α and β Librae, representing the ends of the beam of the scale of justice. This may have been done to make the width of Scorpio, and the time the sun stayed in it, more in line with the width of other zodiacal signs.