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ISSUE NO.41 | JULY 2009

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AAVSO Newsletter



LISTEN UP!
RESTLESS UNIVERSE
THE NEW AAVSO PODCAST
FOR IYA. 5

FROM THE DIRECTOR'S DESK

ARNE A. HENDEN

I'm finally back in my office, after a solid month of travels. I didn't originally plan to be gone so long, but meetings kept coming up and they were all in the southwestern U.S. It didn't seem economical to keep flying back and forth, so I just stayed and found ways to connect between venues. It worked, but I was very tired by the time the last meeting ended and I actually headed towards home. It is "interesting" to live out of a carry-on suitcase for that many days.

The first meeting was the joint SAS/AAVSO conference, with an amazing number of people showing up. There were many "double-dippers" who had joint membership, but even so, I saw many new faces. To me, at least half of the value of such meetings is learning about people and finding out what they are doing. There was a Council meeting preceding the regular meeting, plus two workshops chock-full of material. After the meeting, I attended the Riverside Telescope Maker's Conference (better known as RTMC). This was my first visit there—it is held near Big Bear every year, but previously I always found an excuse to head home rather than sticking around. I spent most of that weekend talking with people like Peter Ceravolo and Oliver Thizy about telescopes and instruments. Fun time!

I then spent a week visiting with Tom Smith (Dark Ridge Observatory) in New Mexico. Tom is

working on finishing the roll-off building for the Morgan 24-inch telescope. Once that is complete, he can get back to the actual refurbishment of the telescope. We also visited with Tom Krajci, Tom Harrison at NMSU, Michael Rice at New Mexico Skies, Andy Saulietis of Star's End, and Michael Hernandez of Sacramento Mountain Astronomy Park. Josch Hamsch, who is helping to outfit one of the AAVSONet telescopes, was visiting Tom Krajci during part of that time and was able to stop by Dark Ridge one day. Tom Smith and I visited the 24-inch telescope site on A-Mountain at NMSU, where there is the potential of helping to refurbish a nice Boller & Chivens telescope. I have to admit that I was very impressed by New Mexico Skies—it seems like a well-run organization. I have never seen so many telescopes in such a short period of time!

Next on tap was a pulsation conference held in Santa Fe, NM. Matt Templeton joined me there, where we spent a week listening to the latest theories of the Blazhko effect, looked at observations from the MOST satellite, marveled at the great data from OGLE-III, and met with lots of interesting people. Santa Fe is a neat place to visit if you have never been there before. The pulsation conference is held every two years (about the right length of time between meetings to see definite advances), and the next one is scheduled for Granada, Spain.

CONTINUED ON NEXT PAGE

THE INTERNATIONAL YEAR OF ASTRONOMY...

The United Nations officially declared 2009 to be the International Year of Astronomy. The AAVSO is proud to be taking part by leading a capstone project: the monitoring of the rare and mysterious 2009–2010 eclipse of Epsilon Aurigae. In the summer of IYA 2009, third-magnitude Eps Aur will experience its next eclipse, which occurs every 27.1 years and lasts 714 days, nearly two years! Projects are being developed to include three audiences: amateurs, the general public, and educators, in this exciting observing campaign. For more info on the IYA check out www.astronomy2009.org.



PRESIDENT'S MESSAGE

PAULA SZKODY

With the start of summer, we can look forward to observing on warm nights, with the downside that they are shorter for us northern hemisphere types (it's only dark from 11 to 3 in Seattle). After the big CV meeting in Tucson in March, Arne and Mike Simonsen and I have a lot of objects and ideas we want to pursue. The successful HST repair mission has given new life and instruments to Hubble and will provide AAVSO with several new requests for ground coverage along with upcoming UV or IR observations. My own project on the pulsating, accreting white dwarfs in GW Lib and V455 And are among those approved for the current cycle, and I am looking forward to the increased sensitivity that the new UV spectrograph COS will provide.

The joint SAS/AAVSO meeting last month was a resounding success. There was a record attendance due to the combination of the two groups and a nice mix of overlapping and individual interests. It is worth thinking about joining with SAS again in the future. The venue was idyllic even

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FROM THE DIRECTOR'S DESK CONTINUED...

Finally, I went west to Pasadena for the AAS summer meeting. This was preceded by a two-day weekend workshop on small-aperture telescopes, where I presented two of my dozen PowerPoint presentations. I also printed my AAS poster that weekend, just in time to hang it up on Monday when the main meeting began. I enjoyed the AAS meeting a lot. It was much smaller than even the typical low-turnout summer meeting, but had a larger contingent of experts present, as they were holding the Decadal Survey panels at the same time. Rebecca joined me at the end of the meeting

PRESIDENT'S MESSAGE CONTINUED...

though we did not have a chance to see the Big Bear Observatory due to repairs being done (only Carol Beaman found a way in). With several new members on board (Ed Guinan, Kate Hutton, and Michael Koppelman), there were lively discussions at the Council meeting on the right balance between preservation of endowments and progress toward AAVSO goals. Within a constrained budget, progress toward a robotic network is continuing and IYA plans for Eps Aur work are in place. The workshop on data mining exceeded our expectations for attendance and we responded by exceeding our time allotment with a firehose of information. Catch the powerpoints on the AAVSO web site.

Progress is continuing on changing the structure of the AAVSO Committees to allow for more communication with members as to the best methods of observation and best targets in terms of continuity of the database and needs of

THE 98TH AAVSO SPRING MEETING

Access the full archive and highlights of the AAVSO's 98th Spring Meeting, held with the Society for Astronomical Sciences at Big Bear, California, now online at: <http://www.aavso.org/aavso/meetings/spring09.shtml>. Included are selected presentations from the scientific paper session by Arne Henden, Paula Szkody, and James Hoffman.

to give an oral presentation on the IYA2009 activities of the AAVSO.

Was the travel worth it? Yes and no. I think the AAVSO was well represented, with many professionals expressing an interest in future collaborations. I was able to get commitments from several vendors to support our projects. I now have a much better handle on what amateur astronomy and telescope farms are like in New Mexico. I learned a great deal about the direction professional astronomy is likely to take in the near future. At the same time, I felt I needed to take care of things at HQ, and the AAVSO Photometric

researchers. The contact people for the current Sections (replacing Committees) are: Cataclysmic Variables/Transients (Mike Simonsen), Long Period Variables (Kate Hutton), IT/Databases/Surveys (Michael Koppelman), Education (Pamela Gay), Short Period Variables (Gerry Samolyk, Dave Hurdis), Eclipsing Binaries/Exoplanets (Gerry Samolyk). If you want to get more involved with any of these areas, please contact one of these individuals. In particular, one or more co-chairs for EBs/Exoplanets are needed. Web pages for each section are/will be appearing soon and will be linked through the AAVSO new home page. Gary Billings will be taking over the Treasurer position from Dave Hurdis before the Annual meeting in the Fall. And if you have suggestions for nominees for the Council in the fall election, please contact the chair of the Nominations Committee David Williams soon.

Enjoy the summer (winter) skies (depending on your hemisphere)! ★

All-Sky Survey (APASS) delivery was slipping daily. Hopefully next time the meetings will be more cleanly separated!

I'm heading next to China, for a real vacation (and potential view of the solar eclipse), and then to Chicago for the first of the Citizen Science workshops for epsilon Aurigae. We have lots of neat things on tap for the AAVSO, so I hope you pay attention and get involved in one or more of the volunteer efforts or campaigns that will start soon. Clear skies, everyone! ★

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS

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The *AAVSO Newsletter* is published in January, April, July, and October. Items of general interest to be considered for the *Newsletter* should be sent to gamze@aaavso.org. Additional photos in this issue courtesy of William Dillon, Haldun Menali, Alan Plummer, Chris Stephan, and Nikolai Samus.

Membership in the AAVSO is open to anyone who is interested in variable stars and in contributing to the support of valuable research. Members include professional astronomers, amateur astronomers, researchers, educators, students, and those who love variable star astronomy.

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THE 2009 AAVSO CALENDAR

Still available! The official 13-month 8.5" by 11" wall calendar featuring images contributed by AAVSO members and observers. Julian dates are listed for each day of the year.

The calendars are shipped sealed in plastic. Limited supplies are available so [order now!](#) \$11.99 plus postage.



ASTRONOMY DAY!

The AAVSO shows its stuff...

On Saturday, May 9th, AAVSO staff members Sara Beck and Gamze Menali participated in the annual Clay Center Astronomy Day held at the Clay Center for Science and Technology of Dexter and Southfield Schools, in Brookline, Massachusetts. AAVSO member John Briggs, a teacher at the Clay Center, invited the AAVSO to set up a table and introduce themselves to all attending. This was a free event open to the public. Outdoor events included rocketry, kite flying, observing the sun through telescopes, and Segway rides. Indoors there were displays and activities sponsored by various local and national amateur astronomy groups as well as educational organizations including the Amateur Telescope Makers of Boston (ATMoB), NASA/JPL Ambassadors, the Planetary Society, and the International Dark Sky Association.

There were demonstrations, planetarium shows, LASER light shows, and hands-on educational activities for all ages. Even Galileo was there! (Performed by a professional actor.)

The “Children’s Table” attracted much deserved attention from the kids as well as their parents. Projects included making sundials, star finders, star clocks, and solar energy bracelets, all using kits donated by *Sky & Telescope* magazine. It was much fun for all ages!

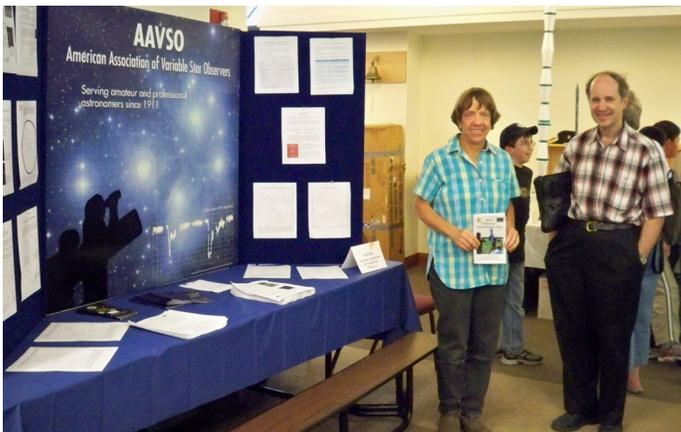
Against the backdrop of the attractive AAVSO display, Gamze and Sara distributed handouts highlighting the International Year of Astronomy activities, the epsilon Aurigae project, and the Ten-Star Tutorial, all of which were very well-received. ★



John Briggs (on right), an AAVSO member and physics teacher at the Dexter and Southfield Schools, explains the workings of a telescope to students.



David Siegrist of ATMoB (right), with Haldun Menali of ATMoB and AAVSO (center), demonstrates the art and science of mirror-grinding to interested parents and students.



Sara Beck of the AAVSO staff stands ready to answer any and all questions. Visiting AAVSO'er Ed Los stops by for a chat. AAVSO staffer Gamze Menali was also on hand to assist Sara.



IMPRESSIONS FROM THE 98TH AAVSO SPRING MEETING

BILL DILLON (DIL)

This year's Spring Meeting was held in the scenic resort town of Big Bear, California—a world away from crowds, freeways, and smog of the LA basin, and just an hour or two away by car.

Our meeting was also held in conjunction with the Society for Astronomical Sciences (SAS), a descendent of the IAPPP (International Amateur-Professional Photoelectric Photometry) Western Wing organization. With their photometric heritage, the SAS and AAVSO are natural partners.

One of the first things that impressed me was the large attendance. The meeting room was huge and packed with people; there were dual projectors and screens for every talk. I did a quick estimate of the number of attendees by counting the rows and columns of tables, multiplying to get the number of tables, times the number of people per table to get about 140 people. I count about 130 in the group photo, and I'd overheard that 180+ people had registered for the event. Impressive!

The papers and posters were outstanding in quality, presentation, and originality. Several stood out for me. One was a paper by James Edwards entitled "Thinking Out Loud: An Optical SETI Campaign Well-suited for Amateur Astronomers." He conjectured that an alien civilization not so much advanced from ours could use transits of their system's planets to establish a time for transmitting a simple message via lasers tuned to the H-alpha frequency. He reckoned a 14-inch scope recording an exoplanet transit in white light and H-alpha could pick up and decode such a signal tens to hundreds of light-years out. Seen anything odd in your transit light curves?

Spectroscopy is an emerging field for amateurs. I found it awesome that amateurs have been able to measure spectral line shifts down to 50 m/sec for eclipsing binary (EB) systems, and are using this in conjunction with the light curves to extract physical parameters for these systems. The first exoplanet discovered about a solar-type star, 51 Peg, showed a periodic line shift of 15 m/sec.

Speaking of exoplanets, Thomas Kaye and David Healy in their talk, "The Spectrashift Exoplanet Transit Search Project," spoke about their work in

finding transiting exoplanets, which they believe is the first serious "non-professional" transit search program. To date, they have examined 40,000 light curves and are following up on promising candidates. Amazing that amateurs are advancing from follow-up work on professional detections to making their own discoveries!

During breaks between paper sessions, at lunch, and at the end of the day, participants could stroll about the vendor room, and drool over Plane Wave's composite 17-inch optical tube assembly weighing a mere 95 pounds, talk to CCD camera vendors (Apogee and SBIG), discuss the latest software offerings by DC3-Dreams and Software Bisque, or examine Shelyak Instruments spectroscopes. I was awed by a small, visual solar spectroscope being demo'ed outside during lunch breaks. It floored me to see several spectral lines between the famous sodium doublet, which as I recall from my college physics lab days are only six angstroms apart (and barely resolved with the spectroscope we had then).

The evening workshops were very well attended. The AAVSO (Paula Szkody and Arne Henden) presented a Data Mining Workshop focused on the AAVSO's own database and the Sloan Digital Sky Survey. Data Mining is another emerging field that amateurs can get involved in, where the computer becomes your "telescope." Note that updated versions of their presentations are available on the AAVSO website.

SAS members Jerry Foote and Brian Warner hosted the workshop on photometry essentials. Brian provided a "lite" version of his Canopus software to participants to try out, along with spreadsheets for doing basic transformations. There was a lively exchange between participants and presenters, showing that there's still an art component to photometry, and room for more science.



The AAVSO meeting proper was held on the last afternoon of the conference. I was again pleased to see high attendance. It wouldn't surprise me if non-members outnumbered the members, and I hope we pull some of the non-members into the member category.

Some standouts from Arne's presentation: the AAVSO will be engaged in an all-sky photometric survey for the next several years called APASS (AAVSO Photometric All-Sky Survey), to correct the annoying and embarrassing lack of a good, all-sky photometric catalogue in our magnitude range of interest (mag. 10 to 17 in *B*, *V*, and some Sloan colors). What a gift to the astronomical community this will be! No more lazy use of magnitudes from astrometric surveys!

The AAVSO's own robo-scope network continues to expand with four scopes lined up, and four more coming (including a 20" at Sonoita this fall). 40 observers are now taking part in this 21st century program. Think of it: no expensive equipment to buy (and maintain), your data come from high-altitude, clear sky sites, no more "fainter than" observations (well, hardly any), and it's free with your membership. Arne also announced that Photometrica, the web-based photometric analysis tool enjoyed by members of the Global Rent-a-Scope community, will be available to AAVSONet users.

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AAVSO President Paula Szkody speaks at an evening workshop.

CITIZEN SKY: HELP TO SOLVE A 175 YEAR-OLD MYSTERY!

REBECCA TURNER AAVSO HEADQUARTERS

Citizen Sky is a three-year citizen science project organized by the AAVSO focusing on the bright variable, epsilon Aurigae. Epsilon Aurigae (eps Aur) is a third magnitude eclipsing binary located in the constellation Auriga, the charioteer. The star is bright enough to be seen with the unaided eye even in the most light polluted cities. It is well placed for observing in the fall, winter, and spring skies.

Every 27.1 years the star goes into an eclipse that lasts approximately one and a half years. Even after over 175 years of scrutiny, these eclipses are not well understood. The next eclipse of eps Aur is predicted to begin in August 2009. We need you to help us collect data so that we can better understand this star. We hope that this will be one of the largest citizen science projects in modern history that involves real, active research.

Website: The Citizen Sky web page launched in early June, 2009. Additional pages and features will be added over the next two months. This site will serve as the “home base” for anyone interested in participating in this project. The Citizen Sky website will include blogs, discussion forums, chat rooms, a place to submit and view data, a new data analysis package, training materials, plus much more, so come visit us at www.CitizenSky.org!

Workshop: A three-day workshop, focused on observing and education/public outreach, will be held at the Adler Planetarium in Chicago, August 5–7, 2009. A second workshop focusing on data analysis and scientific paper writing is scheduled for Spring 2010 at the California Academy of Sciences in San Francisco. Video of talks at the workshops will be available via the Citizen Sky website, so even if you can't attend the workshop you can benefit from these talks. Visit the Citizen Sky website to view workshop schedules or to apply for a workshop.

Observations/Analysis: Epsilon Aurigae is an ideal target for those interested in learning how to observe variable stars. By following the “Ten Star Tutorial” available on our website, a new observer

will be trained in the technique needed to make and report a visual variable star estimate. Information on honing bright star photometry techniques will be presented at the August workshop and posted on the website as well.

The AAVSO is developing data analysis software, which will come with tutorials to help train participants in the basics of astronomical data analysis. A special edition of the peer-reviewed *Journal of the AAVSO* will be dedicated to papers written by project participants.

Education and Public Outreach: The brightness of the star provides a rare opportunity to engage the general public in citizen science. Participants are needed to help write newsletter and newspaper articles, prepare talks and slide shows, develop artwork, give talks, and participate in other forms of community outreach. Teams of interested participants with complementary skill sets are being assembled right now (for example: teaming up a science writer with an illustrator) and will continue to be assembled throughout the project. Everyone can play a role in the Citizen Sky Project! Get involved and discover yours. ★

THE AAVSO AND 365 DAYS OF ASTRONOMY



A reminder that you can subscribe to both the 365 Days of Astronomy podcast and blog using the [available RSS feed](#) or via Apple's iTunes. 365 Days of Astronomy, that's what IYA 2009 is all about. We hope you'll tune in! ★

2009 ANNUAL MEETING

The 2009 Annual Meeting will be held November 4–7, 2009, at the Newton Crowne Plaza (formerly the Sheraton Newton Hotel) in Newton, Massachusetts. ★

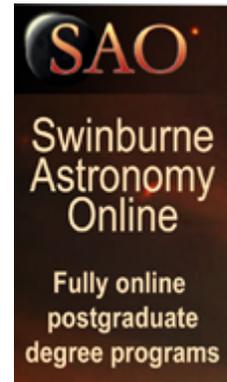
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THE STARS, LIKE DUST...

DOC KINNE (KQR) AAVSO HEADQUARTERS

Today we live in an age of fast and vast information. As I write this I'm planning a major upgrade to the AAVSO's data storage capacity in numbers that, if I had told my undergraduate professors about, I would have been laughed out of school. Today, with the technology that is in the hands of almost any interested observer, we can do time-series CCD observations and batch-upload hundreds or even thousands of such observations at a time to the AAVSO International Database. It has taken us a century to gather as many observations into the database as we have up to this point, however, we expect to double or triple that number in the next five years.

Many of us, especially our newer and younger observers, may wonder at times if the old glass plate archives so lovingly preserved at such places as the Harvard College Observatory have any practical use in such an electronic and fast-paced environment as today. Late last year I got a chance to answer that question.

On 20 November, just before Thanksgiving, we got an email from Klaus Wenzel, a researcher in Germany. He was searching for information on RS Psc. It turns out that there was only one known observation of this star: Carl Reinmuth at the Heidelberg Observatory imaged it on a plate taken on 24 September 1916 just west of the nucleus of NGC 251. Was this star a supernova? With a single observation we couldn't tell, so Klaus was interested to see if anyone else, including Harvard College Observatory (HCO), had plates from this section of the sky within the same period.

Arne set me to work. The first step in this project actually had an electronic component to it. First we had to see if Harvard did indeed have any plates from this time and place in the sky. HCO is working on digitizing the plate archives for both preservation and remote access. Their first step in this was to catalogue what they had and this catalogue is online at <http://hea-www.harvard.edu/DASCH/>. Doing a plate database search for the month of September 1916 at the coordinates for NGC 251 listed five possible plates HCO had that might have Klaus's star.

The next step was to arrange an actual visit to the Observatory with Alison Doane, the Harvard Plate Stacks Curator. My request

couldn't have been more ill-timed. Harvard, like some other major universities, basically shuts down for the winter holidays and so my visit to HCO had to wait until January.

However, January came and an appointment was made. With this in the bag Arne took a bit of time out of his busy schedule and created a modern sequence for me to do photometry against in case anything was found on the plates. Armed with this, I walked to the Observatory.

Alison greeted me. Her office and the Plate Stacks are just to the left of the door of Building D as you come in. I'd been in the building before—my very first AAVSO function had been in Phillips Auditorium (to the right of the door and across from the plate stacks), where a Mira Symposium had been held in memory of Janet Mattei. Alison and I talked for a few minutes and then got down to business. She looked at the list of plates I'd made from the online catalogue and we went to find them.

The plate stacks at Harvard reminded me somewhat of a cave—a nice cave, but a cave. Virtually every space that is available is used for storage and equipment. Going between floors is accomplished via small, curving metal stairs.

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IN MEMORIAM

MEMBERS, OBSERVERS, COLLEAGUES, AND FRIENDS OF THE AAVSO

HUGH RUMBALL-PETRE (RPH), AAVSO member and observer since 1973, passed away May 10, 2009, at the age of 86. Hugh was a science teacher, telescope maker, and astronomy mentor—when he applied for membership he included “the astronomy class at Mulholland Jr. High.” He fostered students' interest in astronomy in many ways, including helping them build astronomy-related equipment and hosting many observing sessions. Hugh was a persistent variable star observer, if not one of large numbers—each month he contributed one or two or a few observations, accumulating 785 observations in the AAVSO International Database. As well as observing variables, he searched for novae using a blink comparator. He was also very active in the Los Angeles Astronomical Society.

WILLIAM B. ALBRECHT (AB), longtime AAVSO member and observer, passed away April 25, 2009, at the age of 91. Bill joined the AAVSO in 1940, although his earliest AAVSO observations were contributed in 1935 when he was 18. A World War II U.S. Navy veteran, he was an avid amateur astronomer and was a founding member of the Milwaukee Astronomical Society, where in addition to participating in many activities he mentored many new observers. Bill attended several AAVSO meetings, often accompanied by his lovely wife, Anne. In later years Bill and Anne moved to Hawaii, choosing their home at least partly with observing in mind. While there he continued his mentoring work, this time as a founding member of the Mauna Kea Astronomical Society. Bill continued to be an active variable star observer through 1999, and contributed over 80,000 variable star observations to the AAVSO International Database. In recent years Bill moved back to the mainland to be near his family in Oconomowoc, WI.

PAUL FREEMAN WRIGHT (WPF), AAVSO member and observer, passed away in November 2008 at the age of 68. A member since 2000, Paul was an enthusiastic amateur astronomer and wanted “to give back to astronomy by making variable star observations,” as he said in his AAVSO application. He contributed over 750 variable star observations. He was very active in the Minnesota Astronomical Society, raising his family in Rosemount, MN.

CHARLES L. RICKER (RQ), AAVSO member and observer since 1954, passed away in October 2008 at the age of 78. He contributed over 1,800 variable star observations to the AAVSO International Database. In addition to the AAVSO, Charles was a contributor to ALPO and was a member of the Marquette Astronomical Society in Marquette, Michigan. ★

TWO INTERVIEWS

CONDUCTED BY MIKE SIMONSEN (SXN) IMLAY CITY, MICHIGAN

ARTO OKSANEN—FINNISH AMATEUR ASTRONOMER EXTRAORDINAIRE

The following interview was conducted by Mike Simonsen on Saturday, May 23, 2009, and is published in his blog "Simostronomy."

Arto Oksanen (OAR) is a Finnish amateur astronomer interested in observing transient objects like gamma-ray burst afterglows, supernovae, novae, and cataclysmic variables. He also observes exoplanet transits, and was the first amateur to observe the transit of HD 209458b.

In 2004, Oksanen received the AAVSO Director's Award for his work in variable star research. In October 2007, Oksanen was the first to find optical afterglow of GRB 071010B, which had been detected by the Swift satellite only 17 minutes earlier.

He has also discovered two minor planets (22978 Nyröla and 103422 Laurisiren).

Arto Oksanen is an Internet technology consultant by profession. He lives in Muurame, Finland, with his wife Minna and their son Atte.

Recently, Arto has been observing a very interesting eclipsing polar (a highly magnetic cataclysmic variable). We had a chance to talk about just what it is that is so interesting about this star and what his observations may contribute to the knowledge of this system and magnetic CVs in general.

Mike Simonsen: Hi, Arto. In recent weeks you have been following the very interesting eclipsing polar CSS 081231:071126+440405. How many eclipse timings over how many nights have you now amassed?

Arto: Yes, I have been following it practically every clear night since the outburst, or brightening, was discovered by the Catalina Real-time Transient Survey on the last day of 2008. Since then I have observed a total of 48 eclipses during 19 nights.

Mike: What telescope or telescopes are you using to obtain the data?

Arto: Mostly the 40-cm RCOS telescope of Hankasalmi Observatory. It is a very nice telescope on Paramount ME and with a SBIG STL-1001E CCD. Luckily I have got enough observing time for this project. I used the 40-cm Meade LX200 of the Nyrölä Observatory for one night, observing simultaneously with the Hankasalmi telescope. Both telescopes are owned by the local astronomy club. I am the president so that helps a bit.

Mike: Are you manning the telescopes in real time, observing remotely, or scripting the runs and then going to bed?

Arto: For the Hankasalmi telescope I have been observing remotely. Basically starting the same script every night and the observatory automation has taken care of observing and parking the telescope and closing the dome the following morning. Photometry is also performed remotely, by a self-written script, and the result is written in the new AAVSO format that can be uploaded by a few clicks. Observing the same object night after night is very effortless. At Nyrölä the dome is manual, so the observer has to stay there to keep the dome slit aligned with the telescope.

Mike: Can you give us an update? Is the outburst over, have you been clouded out, or are you still collecting data?

Arto: I had to stop observing at the beginning of May. Our skies got too bright for observing then. The outburst seems to continue, so I hope other observers with more southern locations will follow it. OT_J0711+44 [another name for the same object] will be in conjunction in July so the observing season is soon over for everyone, but hopefully it will remain active in the fall when it will be in the morning sky.

Mike: From your location in Finland, how many hours of darkness do you get this time of year? When do you lose nighttime completely, and when does it return for you?

Arto: At this time of year (mid May) we here at



Arto Oksanen (OAR)

62N latitude don't get any dark hours, just a short twilight that allows us to observe bright targets in the southern half of the sky. The observing season starts again in the beginning of August or so.

Mike: Are you collaborating with other astronomers to do a paper on this star? If so, who?

Arto: Yes, there has been lots of interest from professional astronomers. I am collaborating with three astronomers: Pasi Hakala from Finland, Boris Gänsicke from England, and Ivan Andronov from Ukraine. Each of them is preparing a paper on this star.

Mike: Can you explain how the light curve gives clues to the geometry of this system?

Arto: OK, I will try. It is obvious that this is an eclipsing system so there are two stars and that the orbit is aligned so that the stars eclipse each other. The eclipse is very deep and very fast so the eclipsed body is much brighter and very small

CONTINUED ON NEXT PAGE

**SIMONSEN: ARTO OKSANEN
CONTINUED...**

in size. It was found very soon that the system is a polar variable, a cataclysmic variable with a very magnetic white dwarf. The strong magnetic field does not allow the accretion disk to form but directs the accretion stream to the magnetic poles of the white dwarf. The eclipse ingress and egress are extremely fast, too fast to resolve even with 5-second exposures so the light-emitting region on the white dwarf is very tiny.

Mike: What do you think is happening to the accretion stream as the outburst evolves?

Arto: The stream is like a light switch for the system: when the stream is on the system is bright (high state), and when the stream is off the system is several magnitudes fainter (low state). The star seems to be around magnitude 18 in low state and magnitude 15 in high state. The light curve shows a curious dip just before the main eclipse. This is caused by the accretion stream that eclipses the white dwarf. The pre-eclipse dip varies a lot

from eclipse to eclipse and is not visible at all when the system is in low state. The bright stream shows itself also in the main eclipses as the eclipse bottom is not flat but fades two more magnitudes after the sudden 2-magnitude drop during the 7-minute eclipse. I think the accretion is still increasing; the pre-eclipse dips are getting deeper and wider.

Mike: What new science do you think may come from exploring the characteristics of this outburst?

Arto: Probably the most interesting feature is the pre-eclipse dip that gives the (first ever?) opportunity to directly probe the accretion stream. But it needs more observations to model the system properly and make sure of the geometry. The new science is of the accretion stream for sure and probably some more knowledge of polars, as there are not too many eclipsing systems out there.

Mike: Are there any new ideas or conclusions you can share with us, or do we have to wait for the paper?

Arto: From my observations the orbital period is 117 min 10.9 sec and the main eclipse lasts 7 min 15 sec. The eclipse is 4 magnitudes deep. The ingress and egress are shorter than 5 seconds. The eclipse bottom is V-shaped (or semi-V-shaped?) when the star is in high state and flat-bottomed in low state. The pre-eclipse dip varies a lot from eclipse to eclipse and is visible only when the system is in high state. More detailed analysis will be in the upcoming papers.

Mike: What other objects are you observing right now?

Arto: During this spring I concentrated on this star, but managed to observe some other cataclysmic variables (AM CVn, QZ Vir, CP Dra), a blazar (0716+714), a few Gamma-ray bursts, and confirmed a supernova.

Mike: Thanks again for taking the time to share with us.

Arto: You're welcome; it was a pleasure. ★

AN INTERVIEW WITH MARGARET DOLEMAN

Dorrit Hoffleit is one of the most beloved figures in the history of the AAVSO. As Director of the Maria Mitchell Observatory for decades she influenced many of the lives of AAVSO members, including Janet Mattei, whom she recommended as an assistant to then AAVSO Director, Margaret Mayall. Janet, who later became Director of the AAVSO, always considered Dorrit a role model, mentor, and very special friend.

Dorrit was close to the AAVSO for over 70 years (that story is included in her memoirs, *Misfortunes as Blessings in Disguise*, available through the AAVSO). She served on the council of AAVSO and as AAVSO President, and was an extremely generous benefactor. Upon Dorrit's death in 2007, settling her estate and honoring her final wishes fell to her niece, Margaret Hoffleit Doleman. I had the chance to interview Margaret recently, to get the rest of the story.

Mike Simonsen: Hi, Margaret, and thank you again for agreeing to this interview. Let's start out with your memories of Dorrit. What is your

earliest memory of her? How often did you get to see her as you grew up?

Margaret: I don't really have an official first memory. As you know, I grew up in Los Angeles, and Dorrit always lived in New England. But she would come every November to visit my grandmother, and stay in L.A. for most of the month. So her visits were just part of family life, for as long as I can remember. Dorrit loved all kinds of natural landscapes, and my parents loved road trips, so sometimes we'd drive down to the desert or somewhere. In place of a first memory, I'll share a story that I read in a letter my mother wrote Dorrit when I was maybe 3 years old. I found it while cleaning out Dorrit's apartment. My mother said she was pushing me on the swing at the playground, and I said, "I want Aunt Dawt to watch me swing!" I like that story, because I know now how much Dorrit appreciated little children, and that she would have paid attention. I must have known that then, too.

Mike: What are some of your fondest memories of Dorrit? Do you have an anecdote or story you

could share that reveals something of her special character?

Margaret: Probably my fondest memories of Dorrit are from her last 11 years, after my mother passed away. She was my last link to my birth family, and I was able to visit with her at some length several times. She actually helped me clean out my parents' house. Every morning we'd get up, share a pot of coffee, and then get to work. Boy, did she work. I had my kids, then 10 and 12, and a friend of theirs, with me, and so I had to take an occasional day to take them to Disneyland or something. Dorrit stayed at the house, and just kept working. I remember coming back from Disneyland very late and finding a small pile of papers with a note, explaining that she wasn't sure what to do with these, in the entry hall. During that time, we also found some things from her and my father's childhood, and she told me stories that I'd never heard before. But I think the most telling story about her is that she lived to be 100 years old, and she died surrounded by friends. In her last couple of years, I had several occasions to thank people for helping her with various things.

CONTINUED ON NEXT PAGE

SIMONSEN: MARGARET DOLEMAN CONTINUED...

The response was always the same: don't thank me, I'm glad to do it for Dorrit, she's given me so much. I was just thinking recently about how, when I think of helping people, I think of cooking them food, or driving them places. Dorrit didn't cook or drive, and yet her friends all felt she did more for them than they did for her.

Mike: When Dorrit died, she wished to leave a portion of her estate to the AAVSO. How did you come to know of her wishes? Was it as simple as a line in her will, or was it more complicated than that?

Margaret: It was very clear in her will how she wanted her estate to be divided. Unfortunately, the will wasn't properly witnessed and we couldn't find the original signed document. So, it's been a long process to carry out her wishes.

Mike: What can you tell us about what you have had to do to insure that Dorrit's bequest finds its way to the AAVSO?

Margaret: Because the will wasn't valid, and I was her nearest living relative, I inherited her entire estate, but of course there was a lot of legal process to go through, and because I'm now giving the money out of my own pocket, I have to do it in a way that works for me, tax-wise.

Mike: Did Dorrit make any specific requests or suggestions as to how the money should be spent? Do you have any request or suggestion?

Margaret: She didn't. I know that the AAVSO was very close to her heart, and I think she wanted her money to help the organization in whatever way was most appropriate to their needs and mission.

Mike: Do you have any advice for others who may be considering leaving a bequest to the AAVSO or other non-profit organization in the future?

Margaret: See an attorney! It's tempting to save some money by doing your own will, but if you

make a mistake, it leaves somebody with a mess, especially if there are multiple potential heirs. And if your will isn't valid, you can't be sure that your estate will be distributed exactly as you wish it to be.

Mike: Thank you for taking the time to share this story with us. I'm sure it puts a smile on many faces to know that Dorrit is still contributing to the AAVSO's mission even after she is gone.

Margaret: Thank you, Mike. I'm always glad to talk about Dorrit! ★

GUESTS AT THE AAVSO WALTER A. FEIBELMAN SUITE

AAVSO HEADQUARTERS

The AAVSO Walter A. Feibelman Suite at Headquarters was opened in July 2008 (see *AAVSO Newsletter* No. 38 for a history of the suite and its purpose). Since then, we have been delighted to host a number of visitors using the suite:

Tom and Anna Fay Williams—July 2008
John Menke—September 2008
Leonid Berdnikov—September–October 2008
Tom Williams—October 2008
Jordan Raddick—November 2008
Mike Simonsen—November 2008

Gary Walker—December 2008
Gary and Kathy Walker—February 2009
Elizabeth Griffith—February 2009
Adrian Ormsby—March 2009
Nikolai Samus—April 2009

NOTEWORTHY



A view of the Feibelman Suite

As a reminder, the Feibelman Suite is available to guests who are in the Boston/Cambridge area to perform an AAVSO-related task, that is, the purpose of their visit is to do something for or related to the AAVSO. For details about the suite or making a reservation, please visit <http://www.aavso.org/news/feibelman.shtml>. ★

OBSERVING CAMPAIGNS UPDATE

MATTHEW TEMPLETON AAVSO CAMPAIGN COORDINATOR

It's been a busy season for the observing campaigns of the AAVSO, with some campaigns concluding and others taking off. Both visual and instrumental observers have played a part in many AAVSO campaigns, and we're always looking for new ways to involve AAVSO observers in cutting-edge research programs.

There are two major campaign stories to relate. First is one where the big news is "no news" (yet)—the predicted outburst of the recurrent nova U Scorpii. Dr. Bradley Schaefer approached us in 2008 with a campaign making amateur observers the early warning system for this very fast nova. Schaefer has used historical data from the AAVSO and other sources to predict that U Sco will go into outburst some time during the next year (2009.3 ± 1.0 to be precise). They need *all* observations, from nightly visual observations, to deep CCD monitoring in quiescence, to intensive time-series during the eventual outburst. Both visual and CCD observers are needed to provide monitoring for outburst and (very, very!) rapid notification when it goes up. If you see it brighter than the comp star at 16.1, log your observation to WebObs right away! Once it goes into outburst, follow U Sco as much as you can until it fades below your detection limit. The visual and CCD light curve of U Sco (and all other novae) made by amateur observers has been a vital part of the studies of these objects, and your observations can make a huge contribution to the science of these

stars. We'll be issuing a News Note on U Sco soon, and it will also be one of our Variable Stars of the Season for mid-2009. Look for that article soon, too!

Second is an important long-term campaign with recent activity—the radio program by Dr. Elmar Koerding and collaborators. They've been hoping to catch another dwarf nova in the early stages of outburst, and make observations at radio wavelengths in hopes of seeing the formation of a radio jet. Two years ago, Koerding *et al.* announced the first detection of a transient radio jet in SS Cygni, the brightest of the dwarf novae. Although they've tried to catch them a few times since in other stars (including U Gem, YZ Cnc, and Z Cam), they haven't detected them. The suspicion is that the jets are there, but the radio telescopes being used to detect them (originally MERLIN in the UK and the VLA in New Mexico, and now the VLA alone) aren't quite sensitive enough to catch them.

Dr. Koerding has asked that the campaign go on "hiatus" for the remainder of 2009, because the VLA is soon to be upgraded with newer and more sensitive equipment in a project dubbed the "Expanded Very Large Array" or EVLA. The sensitivity of the VLA will increase by up to a factor of 20, and that might be enough to enable the detection of these jets. Although the non-detections in these other sources isn't as exciting,

they're still good science since they put limits on how bright these jets are. Stay tuned for more on this project as the EVLA comes online in late 2009 and into 2010!

The AAVSO has many other observing campaigns running right now, including several that involve precision photometry. If you're an observer looking for a challenge, we've got several for you to try on our campaigns page:

<http://www.aavso.org/news/campaigns.shtml>

Many of the projects listed there require instrumental photometry. But if you're a visual observer, we have a few campaigns for you as well, including one on behalf of AAVSO Councilor Dr. Arlo Landolt to uncover the nature of the suspected deep eclipsing binary V1412 Aql, and the long-term monitoring of blazars for Dr. Markus Boettcher. (Both are great CCD projects, too!) And visual observers: don't forget about all the program stars with long-term light curves! Even though many bright stars have been well observed in the past, it doesn't mean they are now (omi Cet is an example), and they need observations, too! Even though they're not listed on the campaigns page, they're an important part of the AAVSO's purpose—creating a legacy of observations for researchers of today and the future.

Whether you're a visual or CCD observer, there's lots to observe right now. Here's hoping you have many nights of clear skies this season to enjoy it! ★

PHOTOELECTRIC PHOTOMETRY UPDATE

MATTHEW TEMPLETON AAVSO PEP COORDINATOR

The Photoelectric Photometry (PEP) program of the AAVSO continues, and we've been receiving lots of high-precision observations of the bright stars in our program. The AAVSO has received 1,072 PEP observations from 12 observers since October 1, 2008. Approximately half that total is V-band observations submitted through our PEPObs data processing system. Also among that total are over 270 near-infrared (J- and H-band) observations, along with 201 observations of epsilon Aurigae.

Recently, PEPObs underwent a major behind-the-scenes upgrade to work more seamlessly with the AAVSO's web and database servers. This upgrade

was transparent to the observers, but makes a huge difference in maintenance for AAVSO staff. Later this summer and into the fall, we hope to revise some of the PEP star sequences, and perhaps even add a few more stars to the PEP program.

The AAVSO is also always looking for new PEP observers. Photoelectric photometry is very demanding and intensive work, but the rewards are enormous. PEP data are fully transformed, and have very high precision—often better than 10 millimagnitudes—and produce light curves of extremely high quality. More importantly, PEP observations concentrate on bright stars, which paradoxically have often been neglected in recent years as smaller professional telescopes

are decommissioned in favor of larger and larger telescopes.

There is a lot of astrophysics still to be done at the bright end, and we need observers like those of the AAVSO to continue monitoring these bright stars. If you're interested in learning more about the AAVSO Photoelectric Photometry program, please visit our (newly updated) website:

<http://www.aavso.org/observing/programs/pep/>

And for more information on the Infrared Photometry group, please visit

<http://www.aavso.org/observing/programs/pep/ir.shtml>

Clear skies, and good observing! ★



EYEPIECE VIEWS

CONDUCTED BY GAMZE MENALI (MGQ) AAVSO HEADQUARTERS

Yet another season is here! While we are enjoying summer in the northern hemisphere, we hope that our observers in the southern hemisphere are enjoying another beautiful season, winter. Here's another event that makes you think about the speed with which the Earth makes one complete revolution around the Sun: an anniversary—it was July 2001 when we published our first issue of "Eyepiece Views!" Time flies! It has been the most joyous journey. We've had a variety of articles from personal stories to observer tips, from highly scientific articles to the most heart-warming memories from an observer's log, and more. Thank you for your never-ending support, your contributions, and all the positive feedback you've been providing, as well as the most constructive criticism, for which we are always grateful. Your support is essential to our existence—without it we wouldn't be here. It is because of your willingness to share your experiences, your hard work, and your unyielding love for astronomy and the night sky that we have the privilege to publish all these wonderful stories.

Our gratitude to our readers and observers around the world!

Best wishes for a wonderful summer/winter ahead!

Gamze Menali

APERTURE FEVER WITH BINOCULARS

**CHRIS STEPHAN (SET)
ROBERT CLYDE OBSERVATORY,
SEBRING, FLORIDA**

I have always enjoyed observing variable stars with binoculars. I currently use 10×50 binoculars to observe a number of stars, both LPVs and eclipsing binaries. I also have a pair of 15×70 binoculars that I use from time to time, but I need to hand-hold them, making them quite unsteady. I must be getting shaky as I get older. However, I still have found that I have the craving for even larger binoculars, but until now had held off purchasing a pair because I had no mount for them.

Recently, I purchased a pair of Apogee 25×100 binoculars through a private party via AstroMart. They are lovely binoculars. Once they arrived, I immediately began searching the Internet for plans on parallelogram binocular mounts. I also placed a notice on the AAVSO Discussion Group asking if anyone had plans or knew of sources. I received some nice replies, of which I am appreciative.

My final plans were actually a combination of two different plans that I received from people.

So I went to work in my observatory/workshop. I actually tried to build my own tripod, but I was not having success—no matter what I did, it was very unstable. Then a wonderful thing happened: Germaine Surveyors of Sebring gave me a professional surveyor's tripod. It was used and in storage, since they had purchased new ones, and it was in good shape. I just took it to a local machine shop and had them do some minimal work on the head, so the parallelogram mount could attach. Finally, I gave the tripod a nice coat of green paint. It turned out great and is very steady.



The schematic and bill of materials (shown on the next page) courtesy of Rick Miseroy, shows the plans for the mount, including the several modifications I made for the part that mounts the binoculars. The 25×100s mount from the bottom, so I had to make something a bit different. I also had to take into account the extra weight so I would have the correct amount of counterweights.

I purchased red oak and all the hardware locally. I also purchased four 2½-pound weights for counterweights. I cut all the wood precisely. Once finished, I put three coats of exterior polyurethane on the wood. It actually came out very nice.

Below are photographs of the binoculars and the mount. I am 6 feet, 6 inches tall, so I often have to raise the tripod up to a high setting. The surveyor tripod extends quite high and is still steady. I have practiced with these, and there will be a bit of a learning curve with the motions of the parallelogram mount. I have a 6×30 finder coming that I am going to attach to the right side next to the binoculars.

I am going to print charts from VSP with orientation for binoculars but with dimmer comparison stars. I can probably get down to magnitude 9.5 to 10.0 with these binoculars. I especially plan on using them for eclipsing binary stars such as W UMa, YY Eri, SW Lac, SV Cam, Y Cyg, R CMa, and many others.

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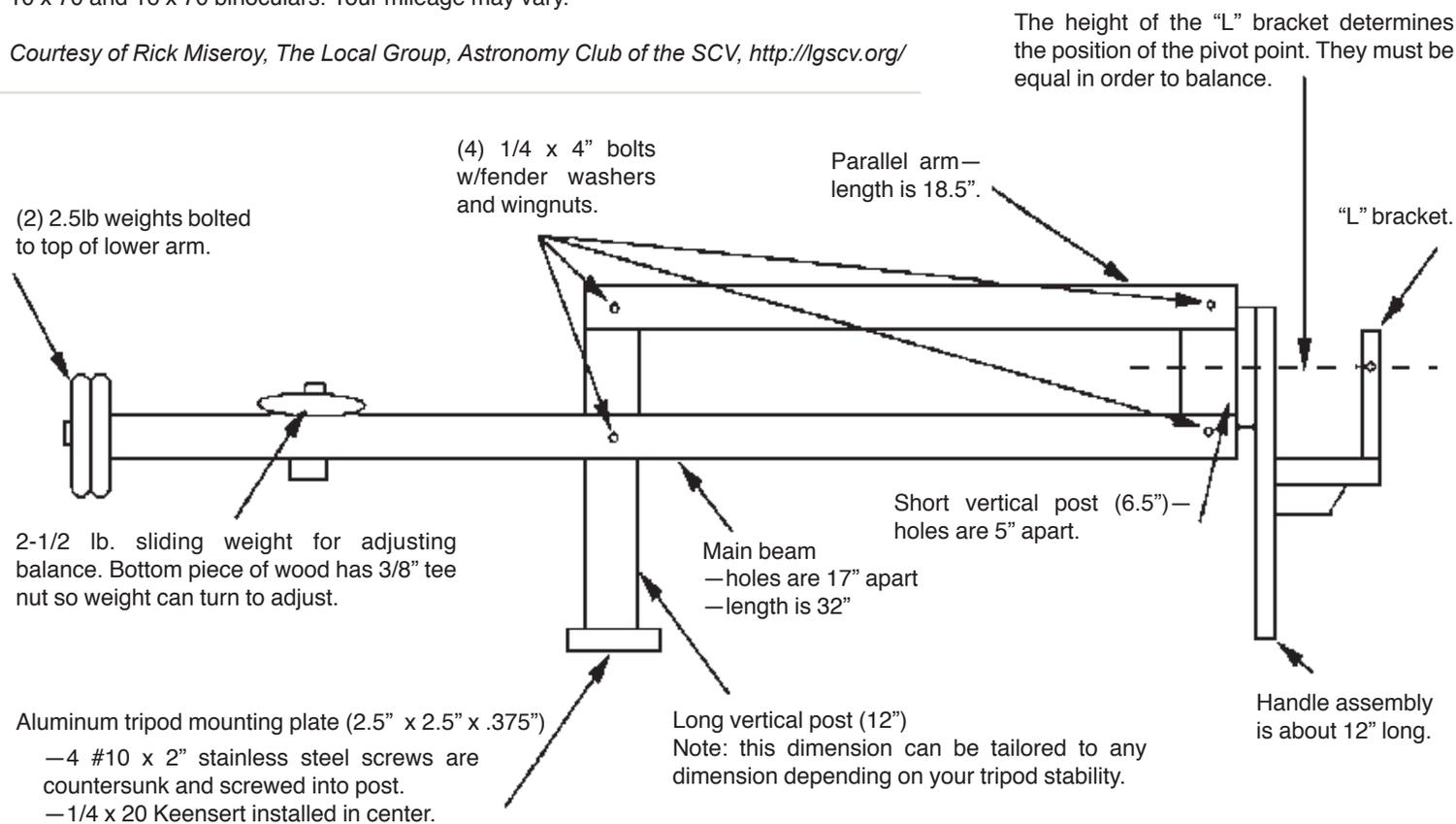


STEPHAN: APERTURE FEVER
CONTINUED...

SIDE VIEW—Schematic of plan for mount for 25 x 100 bottom-mounted binoculars.

Note: the 5 lbs. of counterweight and 2.5 lbs. of adjustable weight work for the Fujinon 10 x 70 and 16 x 70 binoculars. Your mileage may vary.

Courtesy of Rick Miseroy, The Local Group, Astronomy Club of the SCV, <http://lgscv.org/>

STEPHAN: APERTURE FEVER
CONTINUED FROM PREVIOUS PAGE...

I also look forward to deep-sky observing with these binoculars. The Milky Way should be a spectacular site to see. I have already been wowed over by the Pleiades. The Scutum Star Cloud around R Sct should be amazing.

I just hope this pair of giant binoculars doesn't distract me from using my telescopes. I have enjoyed working on this ATM project. I took time away from observing during March of 2009, but it was sure fun and rewarding. ★

Parallelogram Bill of Materials

Item	Part	Description/function	Quantity
1	1 1/2 x 3/4" red oak	Main beam, arms, handle assembly, and adjustable weight control	13
2	1 5/8 x 6 1/2" square furniture leg	Vertical post that holds handle assembly	1
3	1 5/8 x 12" square furniture leg	Vertical arm/tripod mount	1
4	1/4" fender washer		10
5	1/4 x 20 x 4" bolt	Bolts for the parallelogram and handle assembly	5
6	1/4 x 20 wing nut	Nuts for the parallelogram bolts	4
7	1/4 x 20 locknut	For handle assembly—keeps tension	1
8	3/8 x 3 1/5" bolt—all threaded	Holds weights	2
9	3/8 tee nuts—flush mount	For weights	2
10	#10 x 2" stainless steel wood screws	Secures tripod mounting plate to wood post	4
11	#8 x 1 1/5 countersunk wood screws	Misc. assembly of wood handle and counterbalance end	6
12	1/4 x 20 Keensert	Threaded insert for tripod mounting plate	1
13	Sheet of teflon	Cut out washers for handle assembly and arms	1
14	2 1/5" x 2 1/2" x 3/8 aluminum plate	Tripod mounting plate that holds keensert	1
15	2 1/2 lb. weights	Counterbalance and adjustable weight	3
16	L-Bracket	Mounts binocular to handle assembly	1

Courtesy of Rick Miseroy, The Local Group, Astronomy Club of the SCV <http://lgscv.org/>

THE TWO-WAY STREET

ALAN PLUMMER (PAW)
LINDEN OBSERVATORY, LINDEN, NEW
SOUTH WALES, AUSTRALIA

Question: Who patiently gather observations over days, years, even centuries, give the data to agencies for world wide distribution and study, are mostly non-professional but often work with those that are, are indispensable to those professionals, and do it for love of it? Answer: birdwatchers. Twitchers, they're often called. VSOers are not unique.

A great deal of public email discussion was generated recently by an article posted on the AAVSO website titled "Is Amateur Astronomy Well, Amateurish?" (Bowler 2009). The discussion topic was sidetracked almost immediately without much attention to the answer; which is, by the way, "sometimes yes and sometimes no." Look at it from the other side: professionalism—meaning maintaining a proper standard. The article made the point well that many amateurs are very professional indeed. Like twitchers, however, ultimately we do it for love, not money or kudos. Most of us anyway; sadly, I've heard "publish or perish" from more than one amateur; and even for a professional, it's unhelpful.

Some forget that professionals love the pastime too, as much or more than amateurs. I can't count the times I've heard the generalization that professional astronomers are so detached from the night sky that they can't find way their way around the stars—nor even know the constellations.

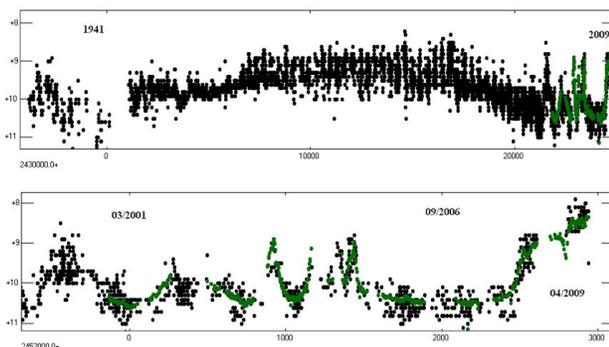
My experience is otherwise—from the two pro's in my club, the Sydney City SkyWatchers, who are perfectly at home at the eyepiece, to one professor at the University of Sydney doing binocular variables from the roof of the physics building, to another who spends his weekends taking volunteers on a 200-km round trip to a dark sky site for viewing. Then there's the Leiden University professor who flew to New Zealand just to observe a rare occurrence with Albert Jones (I heard it was cloudy), and another from the University of Capetown who's out of touch for weeks because he's staying up every night at a telescope.

The young stellar object Z Canis Majoris is to VSOers what the Superb Fairy Wren is to twitchers; easy to find, beautiful to look at, and

with very interesting habits (be amazed—look them up). And professional astronomers have well used our very professional "amateur" data.

According to Antonucci et al. (2009) and Stelzer et al. (2009), Z CMa is a close binary (0.1") system whose $\sim 16M_{\odot}$ primary is an optically-obscured but IR-bright Herbig Be star, with a secondary component of $\sim 3M_{\odot}$ dominating the visual and UV. The latter is a "FUor-like" star (FU Orionis-like) surrounded by an accretion disc and is also recognized as the driving source of a molecular outflow and a compact jet. The system is associated with the Herbig-Haro object HH 160.

The light curve in Figure 1 shows that the system has been active in recent years, and especially so since late 2008. At the time of writing (April 09), it is brighter than ever previously recorded, and it's the FUor-like secondary that is believed to be responsible for the accretion driven visual outburst (Stelzer et al. 2009). In passing, if the star is beginning a FUor outburst now, with typically a 3–6 magnitude rise, there will be a new naked-eye star in Canis Major in a year or so.



The visual/V light curve of Z CMa from the AAVSO International Database, including the observations of the VSS RASNZ, and ASAS (Pojmański 2002). ASAS data are shown in green.

Linden Observatory, with Western Sydney Amateur Astronomical Group, and Linden Observatory resident (son of PAW) prepare for the evening.



EYEPIECE VIEWS

Amateur and professional astronomers need each other, and we all work best on a two-way street. The Stelzer paper (and most other publications) on Z CMa used AAVSO data, and reading this you are using professional research to understand more about what we observe. And possibly we can do more. As for IR observations of Z CMa, very little has ever been done. What has been done shows fluctuations of up to 1 magnitude in K band. Hint; can amateurs do anything there?

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THE GENERAL CATALOGUE OF VARIABLE STARS

NIKOLAI N. SAMUS, INSTITUTE OF ASTRONOMY, MOSCOW

The team of the *General Catalogue of Variable Stars* (GCVS) and the AAVSO has a many-year history of fruitful collaboration. The late Janet Mattei was a personal friend of Moscow astronomers. In 1998, I had the honor to present a talk on the GCVS at the AAVSO headquarters on Birch Street. Two years later I visited the AAVSO again; the photo I took during that short visit shows Janet Mattei and Martha Hazen.

GCVS and AAVSO

Currently, the AAVSO maintains a very important Internet resource on variable stars, the International Variable Star Index (VSX). In many aspects, this work is parallel to what the GCVS team is doing. The current flow of information on variable star discoveries and studies is so strong that both teams encounter serious difficulties trying to manage all this information. The future of the variable star catalogues is a matter of concern for the International Astronomical Union (IAU) Division V (Variable Stars), Commissions 27 (Variable Stars) and 42 (Close Binary Systems). At the Prague IAU General Assembly in 2006, they created a working group on the future of variable star catalogues, to work on suggestions regarding the classification system and other aspects of the problem. This working group is headed by me, and Arne Henden is a member of the group. Arne invited me to visit the new AAVSO headquarters on Bay State Road and to discuss the state of affairs. This visit took place on April 12–19, 2009. We discussed many important



Martha Hazen (l) with Janet Mattei

things and found quite a number of directions for our future cooperation, to the benefit of the world variable star community. I enjoyed my stay immensely and would like to thank Arne and all the AAVSO staff for excellent hospitality. I had a chance to see Janet Mattei's grave at Mt. Auburn cemetery; it was one of the most important impressions of my visit.

In this article, I am going to briefly describe the history of variable star catalogues from old times to the present and to outline the problems we encounter.

Old Variable Star Catalogues

In my opinion, the science of variable star astronomy began in 1595–1609, with the discovery of Mira Ceti by David Fabricius. In 1595, he thought he had discovered a nova, but in 1609, saw the same star again. Of course novae are genuine variable stars, but being transient phenomena—"guest stars"—they did not lead medieval astronomers to the philosophical conclusion that there could be noticeable changes in the world of "fixed" stars. It is remarkable that, between the two sightings of Mira Ceti by Fabricius, the star was mapped by Bayer as Omicron Ceti; apparently Bayer did not notice the star's variability.

Towards the end of the 18th century, astronomers already knew a dozen variable stars. Edward Pigott compiled the first list of such stars in 1786, with twelve objects in it, including pulsating stars, eclipsing binaries, and novae. Astronomers' opinions on what list can be called a catalogue differ; some people prefer to call catalogues only those lists that contain at least one hundred objects. I do not see any need for such a restriction of the term and think that Pigott was the author of the world's first catalogue of variable stars.

In the 19th century, the great astronomer Friedrich Wilhelm August Argelander somehow guessed that professional astronomers would need the help of amateur astronomers in the field of variable star observations. It is really amazing that he made this guess: the number of variable stars had not increased too much by that time. In his appeal to amateur astronomers published in 1844 to observe variable stars, he included a catalogue of variable stars with only eighteen objects in it. The number of known variable stars began to increase quickly

rather soon at that time, also as a side result of the large-scale Bonner Duchmusterung project initiated by Argelander.

The next great increase of the rate of variable star discoveries is due to the advent of the era of astronomical photography. Harvard Observatory became the most successful astronomical institution in this field, thanks to the activity of its director, Edward Pickering. In quite a short time, thousands of variable stars were known. Until recently, the statement that most variable stars had been discovered photographically remained true.

Before World War I, the German "Astronomische Gesellschaft" was the society that united astronomers of the world and coordinated international projects. The International Astronomical Union was established in 1918 to replace the "Astronomische Gesellschaft" in this role. At this time after World War I, German astronomers could not even become individual IAU members for a certain period. The "Astronomische Gesellschaft" looked for projects important to the world astronomical community it could continue to coordinate. Catalogues of variable stars became one of such projects. Between 1926 and 1942, new catalogues, with updated ephemerides, appeared every year. The great variable star researcher Richard Prager started with a catalogue of 2,906 variable stars. His successor Heribert Schneller, who continued the work after Prager's emigration from Nazi Germany, finished with almost 9,500 stars; it could not continue because of worsening war situation.

GCVS

The IAU was the international organization that had to decide the future of several German-based astronomical projects. In 1946, the Executive Committee of the IAU decided to make the USSR responsible for two projects necessary to the community. Ephemerides of minor planets became the responsibility of the Institute of Theoretical Astronomy in Leningrad (the St. Petersburg Institute of Applied Astronomy continues the job now). Two research groups working together in Moscow were given the responsibility for variable star catalogues.

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**SAMUS: GCVS AND AAVSO
CONTINUED...**

The joint Moscow team was based at Moscow University (Sternberg Astronomical Institute) and at the Academy of Sciences. The leader of the project at the University was Pavel Parenago and at the Academy, Boris Kukarkin. Many reorganizations and political changes influenced the administrative situation; currently the Academy team is affiliated with the Institute of Astronomy of the Russian Academy of Sciences. Both sub-teams have their offices in the University's Sternberg Institute.

The Moscow researchers did not even try to keep the yearly schedule of the German catalogues. They began to publish "supplements" containing only newly added variables or those with significant changes in the listed information. Complete new editions, replacing earlier ones, appeared once in about fifteen years. The fourth GCVS edition (1985–1995), with almost 28,500 galactic variable stars and some 10,000 extragalactic variables (the only attempt to cover extragalactic variables in the GCVS history), is the last one published as paper books (five volumes). The leader of the GCVS IV project, Pavel Kholopov, died in 1988. We on the author team had to rearrange our work after this sorrowful loss, causing a delay in the publication completion.

Traditionally, only confirmed variables, sufficiently well-studied at least for provisional classification, are included in the GCVS (and were included in German catalogues). Thus, it is necessary to compile special catalogues of stars not meeting these criteria, called "suspected" variable stars. The *New Catalogue of Suspected Variable Stars* (the NSV catalogue, 1981, about 14,800 stars) is a part of the GCVS IV; it replaced earlier catalogues of this kind. In 1998, Elena Kazarovets and other members of our team published a supplement to the NSV catalogue with more than 11,000 stars.

Stars meeting the GCVS criteria are added to the GCVS via the so-called "Name Lists of Variable Stars," published regularly in the *Information Bulletin on Variable Stars* (IBVS).

GCVS in the Electronic Era

The most useful star catalogues are obviously electronic catalogues. The current versions of our catalogues are available at <http://www.sai.msu.su/gcvs/>

The main recent improvement of our catalogues was the complete revision of variable star coordinates. Old catalogues presented coordinates rounded to 0.1 arcminute—and even worse for some stars. Now the coordinates are presented to 0.1 arcsecond and they are actually correct to 1 or 2 seconds of arc in most cases. Accurate coordinates are our primary concern.

The very strong flow of new studies and especially of new discoveries of variable stars in automatic CCD sky surveys makes it almost impossible to manage all this information in our traditional, star-by-star manner. It is also impossible simply to incorporate lengthy lists of discoveries from automatic surveys, like ASAS, into the GCVS. The most important problem with the new discovery lists is that of the coordinates. In many cases, variable star coordinates in automatic surveys made with short-focal-length cameras contain errors up to dozens of arcseconds. Fortunately, automatic surveys often provide catalogues of their own, supplementing the GCVS. The VSX registry, supported by the AAVSO, attempts to put together all available sources of information on confirmed variable stars.

The GCVS team is planning to improve the catalogued astrophysical information for many stars. The possibilities to do it are now much better than before, mainly thanks to observations from automatic surveys open to Internet access. This work is, however, rather effort-consuming, and we have finished it only for the first several constellations (in alphabetical order). We add each constellation to the online GCVS version as soon as it is ready.

GCVS and AAVSO help each other

During my visit to Cambridge, I discussed with Arne Henden ways to use each other's resources to reduce the effort needed to keep the GCVS and the VSX in the best shape. Ideally, the GCVS, VSX, and SIMBAD should provide non-contradictory information on variable stars. Arne provided me with a list of differences between the GCVS and VSX. Upon my return home, we immediately studied all cases of stars with considerably conflicting coordinates. In my opinion, the results were useful for both teams; a number of mistakes were detected and corrected. Both teams will inform each other of the changes we introduce into our databases. We asked SIMBAD to do the

same and received a positive answer. Already, in just one month, the Strasbourg team has discussed with us about 10 cases of discrepant coordinates, resulting in corrections both in the GCVS and in SIMBAD. I have become one of the VSX moderators and now regularly receive information on VSX additions and corrections. The AAVSO is considering possibilities to help the GCVS locate the few "old" variables that remain "lost" because of erroneous coordinates and no finding charts. Also, poorly studied variable stars, lacking types and/or light elements in the GCVS, can be successfully studied by AAVSO observers.

I hope the excellent tradition of cooperation between the AAVSO and the GCVS team will be continued. ★

**KINNE: STARS, LIKE DUST
CONTINUED...**

I still have no idea how they got the shelves they used to house the glass plates into the rooms! My small stature here was a benefit in navigation.

We found the plates. Harvard's plates are stored by various color modes and depths, and then by RA. They are, unsurprisingly, in the form of glass plates. The size of the plates we were using was about 9cm × 15cm and covered perhaps 15° sq. They were, frankly, beautiful—clear glass with a dusting of black stars. Really, if you know of any observatory that is making the mistake of getting rid of their glass plates, grab them and frame them around your house!

Although Arne had warned me, the difference in scale between a normal AAVSO Chart field of view and the field of view of the glass plates was far greater than I was expecting. Much of my time was spent searching for and finding the needed field in the plates we were looking at. Once that was done, then we could look for RS Psc.

What happened? What did we find? Well, in science we always have to realize that "a negative result is still a result." Alison and I ended up finding no trace of RS Psc on the plates we searched. Alison checked my findings on each plate, which I appreciated because with her experience she had a far better eye than I did. In the end the depths of the Harvard plates may have defeated us. Reinmuth had detected RS Psc at B =

CONTINUED ON PAGE 17

GREEK LETTERS AND STAR NAMES

ELIZABETH O. WAAGEN (WEO)
AAVSO HEADQUARTERS

Most variable star names are relatively straightforward—SS Cyg, OY Car, V4330 Sgr, even VSX J142733.3+003415—or at least unambiguous. However, there is one small group that is ambiguous. This group consists of those variables that have the Greek letter μ (mu) or ν (nu) or the letters MU or NU as part of their name.

If we could always use the Greek letters themselves, there would be no confusion— μ CEN versus MU CEN is very clear. However, that is often not possible, so the Greek letter must be spelled out. In English, μ becomes mu and ν becomes nu. Now we have MU CEN versus MU CEN—which is which? Same for NU PUP versus NU PUP—who is who?

Since most computer-search algorithms (at least, those used by the AAVSO) are case-independent,

using lowercase mu or nu isn't a solution. The GCVS uses a period (.) after the Greek letter, as in "mu. CEP". VSX uses "* mu Cep". Both of these are awkward, and sometimes are not compatible with software interpretation, and are not intuitive to observers unfamiliar with the convention.

The *General Catalogue of Variable Stars* (GCVS) is the official reference publication on variable star names, and it uses the Russian spelling of Greek letters. However, in Russian, μ and ν are spelled mu and nu, so that is not a solution for those letters.

Following the GCVS convention, the AAVSO has decided to use the Russian spelling of all Greek letters in the AAVSO International Database. After discussion with Nikolai Samus of the GCVS team, it was decided that for μ and ν the spellings "miu" and "niu" would be used.

The data in the AAVSO International Database for all stars with m-u or n-u in their names have been checked and allocated to the appropriate star: miu or MU, or niu or NU.

When you report your observations of μ or ν , please use the spelling miu or niu, as in "miu Cen" for μ Cen and "niu Cen" for ν Cen. You may use upper- or lower-case letters.

If there is a number as part of the name, as in "delta2 Gru", please put a space between the letters and the number, as in "del 2 Gru".

By the way, when you are searching the International Variable Star Index (VSX) for a Greek-letter star, you may put in the Russian or English spelling, the abbreviation or the full spelling. For example, "teta Aps", "theta Aps", "tet Aps", and "the Aps" will all lead you to the same star!

Below is a table of Greek letters, their abbreviation as used in the AAVSO International Database, and the English spelling. ★

Table of Greek letters, their AAVSO AID abbreviations, and English spelling

greek	AID	English	greek	AID	English	greek	AID	English
α	alf	alpha	ι	iot	iota	ρ	rho	rho
β	bet	beta	κ	kap	kappa	σ	sig	sigma
γ	gam	gamma	λ	lam	lambda	τ	tau	tau
δ	del	delta	μ	miu	mu	υ	ups	upsilon
ϵ	eps	epsilon	ν	niu	nu	ϕ	phi	phi
ζ	zet	zeta	ξ	ksi	xi	χ	khi	chi
η	eta	eta	\omicron	omi	omicron	ψ	psi	psi
θ	tet	theta	π	pi	pi	ω	ome	omega

DILLON: MEETING IMPRESSIONS CONTINUED...

What are you waiting for?

The Committee structure of the AAVSO is giving way to Sections, characterized by one or more leaders and one or more scientific advisors. Sections exist or are forming for cataclysmic variables and transits, short period variables, long period variables, eclipsing binaries and

exoplanets, data mining, and solar observing, with more sure to follow.

I thoroughly enjoyed the AAVSO/SAS meeting, and my notes here only scratch the surface. It was great to catch up with old friends, put faces to email addresses, and make new friends. New projects and ideas are whirling around in my head. All this, and in a beautiful setting too! I commend SAS Conference Committee (Lee Snyder, Robert

Stephens, Robert Gill, Jerry and Cindy Foote, Margaret Miller, Brian Warner, Dave Kenyon, Dale Mais, and other volunteers) for organizing such a large and enjoyable conference.

I think our Director had a great time too; there's talk of another joint meeting in the Spring of 2012. Don't miss it! ★

JULIAN DATE / MOON PHASE CALENDARS

2,450,000 plus the value given for each date

JUNE 2009

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 4984	2 4985	3 4986	4 4987	5 4988	6 4989
7 4990	8 4991	9 4992	10 4993	11 4994	12 4995	13 4996
14 4997	15 4998	16 4999	17 5000	18 5001	19 5002	20 5003
21 5004	22 5005	23 5006	24 5007	25 5008	26 5009	27 5010
28 5011	29 5012	30 5013				

JULY 2009

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 5014	2 5015	3 5016	4 5017
5 5018	6 5019	7 5020	8 5021	9 5022	10 5023	11 5024
12 5025	13 5026	14 5027	15 5028	16 5029	17 5030	18 5031
19 5032	20 5033	21 5034	22 5035	23 5036	24 5037	25 5038
26 5039	27 5040	28 5041	29 5042	30 5043	31 5044	

AUGUST 2009

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 5045
2 5046	3 5047	4 5048	5 5049	6 5050	7 5051	8 5052
9 5053	10 5054	11 5055	12 5056	13 5057	14 5058	15 5059
16 5060	17 5061	18 5062	19 5063	20 5064	21 5065	22 5066
23 5067	24 5068	25 5069	26 5070	27 5071	28 5072	29 5073
30 5074	31 5075					

Moon calendars courtesy StarDate online <http://stardate.org/nightsky/moon/> CONTINUED ON PAGE 14

KINNE: STARS, LIKE DUST CONTINUED...

14.5 and the Harvard Plates only went as deep as $B = 13.2$.

So even in this era of terrabyte RAID-5 disk arrays filled with data, sometimes you need to go back and see the original glass plates. While our CCDs certainly go deeper and are more accurate, there was an aesthetic operating with the glass plates and light tables that I can say I'll miss when it's finally gone. ★

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