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ISSUE NO.55

JANUARY 2013

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AAVSO

Newsletter

FROM THE DIRECTOR'S DESK

ARNE A. HENDEN (HQA)



Solar eclipses are unique variable star events. You travel thousands of miles to see a few brief moments of totality, if you are lucky. Linda and I went with our local astronomy club to Australia for the eclipse in November, and were partially successful.

As Bob Naeye of *Sky & Telescope* says, the two minutes of eclipse are an insignificant portion of your entire trip, so you need to think “vacation” with a possible reward. Towards that end, we thoroughly enjoyed our trip to the Cairns area, and were able to get some snorkel sessions on the Great Barrier Reef.

After the week in Australia, we went to New Zealand. I wanted to visit Albert and Carolyn Jones—we had given Albert the Merit Award a couple of years ago, but I was not able to hand it to him personally at that time. I’ve been trying to get to New Zealand ever since to shake his hand, and this was our first opportunity. He is doing fine, not observing any more, but busy cleaning up his logbooks and enjoying his “retirement.” We followed this brief visit with several days at Mt. John University Observatory to work on the Optical Craftsman 61-cm telescope. That ‘scope is just about ready to be added to our robotic telescope network. I was able to get



Albert Jones (JA) receiving his AAVSO Merit Award from Arne Henden

several astrometric images of fields for the HST cataclysmic variable project that is underway, and a team that includes Nigel Frost (MJUO), John Gross (Sonoita), Dirk Terrell (SwRI), and Jerry Foote (Scoopcraft) is working to finish hardware and software details. On the way home, we stopped at the University of Canterbury where I gave a colloquium on the AAVSONet system.

While I was away, the HQ staff was busy as always. Will has rewritten the AAVSONet proposal system and major parts of WebObs. In fact, we now have a new QuickLook facility that is an extension of WebObs, making maintenance of this critical tool far easier than before. Matt has

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SINCE 1911...

The AAVSO is an international non-profit organization of variable star observers whose mission is: to observe and analyze variable stars; to collect and archive observations for worldwide access; and to forge strong collaborations and mentoring between amateurs and professionals that promote both scientific research and education on variable sources.

PRESIDENT'S MESSAGE

MARIO MOTTA, M.D. (MMX)



In November I had the very good fortune to travel to Australia ostensibly to see the November 13 solar eclipse in Cairns. Unfortunately my group and I had only glimpses of totality due to clouds, despite traveling two hours at 2 a.m. to a “clear sky” place inland. The trip itself, however, was thoroughly enjoyable despite this setback. I intentionally travelled a week early to visit fellow AAVSO observers and members in Australia, as well as taking some time to visit Australian observatories.

Being the president of the AAVSO certainly has its perks, for when I expressed interest in visiting Siding Spring Observatory, a place I had always wanted to visit, observatory director Donna Burton arranged a wonderful private tour of the observatory complex for me. I spent an entire day there seeing the inner workings of this famous observatory complex. The day started with Peter Verweyan giving me a very private inner look through several of the major observatories at the complex, including the

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DIRECTOR'S MESSAGE CONTINUED...



Albert Jones and his wife Carolyn

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been working on his BM Ori/MOST research and writing proposals. Matt and Doc together have been extending the AAVSONet processing pipeline, moving the transfer table into a MySQL database and adding BSM-south to the pipeline. Rebecca has been working on grant administration, preparing for both our annual meeting as well as the May 2013 Boone, NC, meeting, and finalizing details on the DSLR workshop. We received a Citizen Sky supplemental grant to hold a workshop in March 2013 at HQ, with the goal of preparing a manual for DSLR photometry. This workshop was announced on the AAVSO homepage in December and more details are in this *Newsletter*. Sara worked with Tao Fan-Lin to produce two Chinese translations of our visual observing manual. The epsilon Aurigae special edition of *JAAVSO* is nearly ready for the printers, thanks to considerable effort from Mike Saladyga, Elizabeth Waagen, and Matt Templeton. Mike Simonsen has been busy handling end-of-year donation letters, writing an NSF grant, and producing dozens of variable-star sequences along with the Sequence Team. He also spent a couple of weeks in mid-November removing AAVSONet telescopes from the Astrokolhoz Observatory and distributing them to new volunteers. Sebastian is systematically cleaning up VSX, removing duplicates, correctly identifying variables, and also performing the majority of the new submission authentication.

Professional astronomers continue to approach the AAVSO asking for ground-based campaign support. Recent projects include a huge HST cataclysmic variable survey, a monitoring campaign for delta Ori in conjunction with the MOST satellite, Chris Lloyd's work on V452 Cas, and Darryl Sergison's study of several T Tau stars. Whether you are a visual observer or a digital expert, using your eyes, PEP, DSLR, or other techniques, there is an active campaign that needs your observations!

Mario Motta's donated 80-cm mirror has been shipped to Italy to be used in a robotic spectroscopic telescope. BSM-Berry is now on the roof of HQ, undergoing commissioning observations. We received the second of the 2GSS survey telescopes, which will be configured with one of the FLI cameras soon. Citizen Sky has been merged into the main AAVSO website and will be the key area for supporting bright-star observing. Aaron Sliski, a local college student, is helping me with various hardware tasks, including the configuration of our spectrographs.

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 ewaagen@aavso.org. Photos in this issue courtesy of A. Henden, M. Motta, L. Kiss, K. Paxson, and G. Samolyk.

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.

AAVSO
49 Bay State Road
Cambridge, Massachusetts, 02138, USA
617-354-0484 / 1-888-802-STAR(7827)
www.aavso.org

These past few months have been busy ones for the AAVSO. We continue to support our observers as much as possible, and facilitate program collaborations on a multitude of projects. I feel that we are blessed with good staff and excellent volunteers. This holiday period gives me the opportunity to reflect on the past year, and realize how the amateur community continues to provide a valuable service, and how many of you take the time to volunteer your observations, funds, and time in supporting the AAVSO. I'm looking forward to 2013—it will be a vintage year for variable star observing! ★

Ed. note: the Spanish language version of Arne's message can be found on page 10.

NEWS AND ANNOUNCEMENTS

PRESIDENT'S MESSAGE CONTINUED...

Australian National University (ANU) 2.3-meter, the 4-meter Anglo-Australian Telescope (AAT), and several smaller scopes as well. At the 4-m AAT Steven Lee and Peter showed me the inner workings of this, the largest telescope in Australia. It was fascinating for me to see the engineering as well as the instrumentation that allowed cutting edge science to be performed



Steven Lee and Peter Verweyan at the 4-meter Anglo-Australian Telescope



Dr. Robert Dean

there. I especially enjoyed seeing the advanced spectroscopy multiple fiber optic equipment, as well as their maintenance and coating facility. (Yes, I am a telescope maker at heart, and enjoy these details.) Next Dr. Robert Dean showed me the 48-inch UK Schmidt telescope, which is also currently being primarily used for spectroscopy. Later in the day I got to spend an extended period of time with AAVSO member Robert McNaught (MRH), who spends his time with the Uppsala Schmidt telescope scanning the southern skies for Near-Earth Objects. He is an avid observer, and has discovered numerous comets in his sky survey scans, including the great 2010 Comet McNaught.

After Siding Spring, I visited Parks Radio Observatory, and then went on to the Linden

Observatory where I was able to meet up with avid AAVSO member observer Alan Plummer (PAW), who graciously gave generously of his time to me. He showed me the Linden Observatory, and I was able to meet with several of his local astronomy group members, as we discussed their observing programs and their public outreach efforts. We had discussions of various AAVSO projects and observing programs as well. Alan impressed me with his dedication and work ethic in the various projects he has spent years developing and contributing to. We had planned to do some night deep sky observing, but alas, the two nights he was free sadly were to be overcast. I did get to meet one of our most famous AAVSO member observers, Rev. Robert Evans (ERO), which is one of my fondest memories of the trip. I recall many past meetings during which the AAVSO would award him yet another honor or award for his many visual supernovae discoveries—he has 42 now, all visual!

As the weather was unfortunately overcast, I had gone back to Sidney for my last day in the area before flying up to Cairns for the eclipse itself. That night I was to have met up with two members of my eclipse group for dinner. However, that afternoon a weather front went through, and the



Alan Plummer with Mrs. and Rev. Robert Evans

Western sky began to look somewhat promising. An hour before the dinner, Robert Evans contacted me stating the sky was promising, and invited me to observe with him with his famous 16-inch telescope with which he discovered many of his 42 supernovae! At that point I called my friends who were expecting me for dinner, and stated I had a bit of a dilemma of either choosing to have dinner with them as planned, or observe privately with the greatest supernova hunter of all time... needless to say I stood up my friends.

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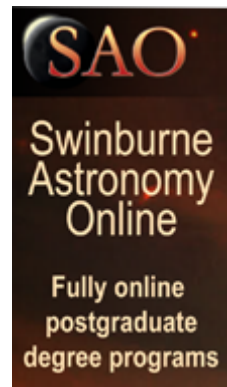
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PRESIDENT'S MESSAGE CONTINUED...

So I drove back out to the Blue Mountains, and met up with Robert, who had taken out his 16-inch *f*/5 Dobsonian. The sky turned out to be partly cloudy, and we had to observe through frequent holes. That made what I am about to tell you even more remarkable. It is well known fact that Robert Evans has a photographic memory of the night sky. I witnessed this first hand in an amazing display of sky knowledge and skill. Using a Dobsonian 16-inch telescope, with no computer guidance, no sky maps of any kind, and loaded with a 9-mm Nagler eyepiece, Bob Evans would hand slew the scope back and forth across the sky to the smallest hole imaginable, and within seconds would find a distant dim NGC object without fail. He would show me the galaxy, and describe the year, date, and circumstances of the supernova he had discovered in that galaxy at some remote past time. What is even more remarkable is that he never changed the eyepiece

to a wider low power eyepiece. He stayed with the higher power and narrow view 9-mm Nagler, and was able to find these objects with very few visible stars in what I felt to be small holes in the sky with hardly any stars visible! He could do this faster than any computerized telescope I have ever seen, including my home-computerized 32-inch. In my younger days before computer control, I thought I was fairly adept at star hopping, but even at my best, I cannot imagine doing what I saw Rev. Evans do that night, hopping from galaxy to galaxy across 90° of sky, with a narrow field eyepiece, and very few stars to be used as a guide with mostly cloudy conditions looking through small cloud holes. I have never seen anyone anywhere do what Bob Evans could do so effortlessly. It is very clear to me now how he could have visually discovered 42 supernovae in his life, a record not likely to be superseded in these days of large surveys.

It was wonderful to visit with extended AAVSO members in Australia, and although I did not get the clear skies I hoped for the eclipse, the trip will be treasured in my memory by the time spent with our wonderful Australian AAVSO brethren. I want to thank Donna Burton, Robert McNaught, Alan Plummer, Robert Evans, and all the others I met during my journey for their generous time and hospitality for making my trip memorable and so enjoyable. ★

Ed. note: the Spanish language version of Mario's message can be found on page 10.

CITIZEN SKY WORKSHOP III: PRODUCING A DSLR PHOTOMETRY MANUAL

REBECCA TURNER (TRMB), AAVSO HQ

Thanks to an NSF grant supplement that was awarded in August, the AAVSO will hold a 3rd Citizen Sky workshop. The goal of this workshop will be to produce a manual for DSLR Photometry. The workshop will be held Friday–Sunday, March 22–24, 2013, at AAVSO Headquarters in Cambridge, Massachusetts.

As stated, the goal of this workshop will be to produce a Manual for DSLR Photometry. The materials that already exist for training in DSLR photometry are few and far between—and not necessarily written for the entry-level user. Our goal is to develop an easy to use, introductory manual so that we can effectively support observers who are interested in giving DSLR photometry a try.

Our days will be filled with a mix of 1) talks by experienced DSLR photometrists and 2) breakout sessions during which small groups of participants (each with a designated leader) will develop pre-assigned sections of the manual. These small groups will be determined well in advance and will be based on participant interest, experience, and skills. No prior DSLR experience is required at the time of application but there will be some pre-workshop reading and preparation required. This pre-workshop “homework” will be based on the participant’s small group topics.

There is no registration fee for this workshop. A continental breakfast and lunch will be provided daily. Participants will be responsible for their own dinner, travel, and accommodation expenses. A block of hotel rooms has been secured at the Best Western Tria—a hotel within walking distance of the AAVSO. The group rate is \$139 per night plus 14.45% tax. The AAVSO will provide roommate-matching assistance for those who wish to economize by sharing a room. For those wishing to search for lower priced accommodations, we have assembled a list of area B&Bs.

Workshop travel grants will be available to help offset travel and accommodation expenses. These grants are available for individuals who commit to spreading the word about this project in their local communities (a requirement of the NSF funding). Most of the grants will be \$500 but some larger grants will be given for those traveling long distances.

The application process is open to the public. We welcome all with experience or interest in DSLR photometry and/or manual writing. If you are interested in attending this workshop, please complete the application as soon as possible. The first-round deadline has already passed but there are still slots available. Those applying after December 31st will be contacted within one week of application.

The application can be found at:
<https://www.surveymonkey.com/s/DSLRworkshop>

VARIABLE STAR WORKSHOP AT THE DAVID DUNLAP OBSERVATORY

JOHN R. PERCY, TORONTO, CANADA

The Toronto Centre of the Royal Astronomical Society of Canada (RASC) held a half-day workshop on variable stars and variable star observing at the David Dunlap Observatory, north of Toronto, Ontario, on November 24, 2012. Eighteen people attended. The Dunlap Observatory lands were sold by the University of Toronto to a developer in 2008, and the proceeds used to endow a new Dunlap Institute on the University campus. The Observatory is now operated by the Toronto Centre on a voluntary basis, as a public education facility, each summer.

The workshop began with a 60-minute introduction to variable stars, variable star observing, and analysis by John Percy, with a special emphasis on the contributions which amateurs' observations can make to science. Eric Briggs then supplied a historical perspective—the many contributions of the Dunlap Observatory to the understanding of variable stars over the decades. Andy Beaton discussed visual observing, highlighting the AAVSO tutorial



on this topic. Denis Grey reviewed photometric measurements, and Frank Dempsey described CCD and DSLR techniques; Denis and Frank showed practical examples. Frank then reported on highlights of the 2012 AAVSO Annual Meeting held in November. The workshop was followed by a brief session of variable star observing before the clouds rolled in, as they are inclined to do in Toronto in November. Some of us had a brief look through the Observatory's old 74-inch telescope—still the largest in Canada—courtesy of Paul Mortfield. Paul is the Observatory coordinator, and well known to the AAVSO for his contributions to the solar program.

Thanks to Stuart McNair, Observational Activities coordinator of the Toronto Centre, for organizing this workshop. ★

ASTRONOMICAL LEAGUE-AAVSO COOPERATION

ROGER KOLMAN (KRS), GLEN ELLYN, ILLINOIS

For some time Barry Beaman (BBA), Mike Simonsen (SXN), and I have been working on a cooperative venture with the Astronomical League to bring new observers into the AAVSO.

The Astronomical League is a federation of 250 societies representing 15,000 members interested in promoting astronomy. It was formed in 1947 primarily due to the efforts of AAVSO member Ed Halbach (HK). His vision was to get the public involved in what we now call Citizen Science.

The A.L. is a vast, untapped resource for us. The League, currently, has put in place a plethora of observing programs aimed at focusing the varied interests of their members. To that end, the three of us have encouraged a Variable Star Program, which would funnel members into the AAVSO. This has been accomplished under the direction of Robert (Rocky) Togni (TRL). Several A.L. members have completed the requirements for certification.

The AAVSO Binocular Program is now in place. Mike Simonsen, Sebastian Otero (OSE), and the chart team have done a tremendous job in its implementation. This inspired Togni to propose to the Astronomical League a program for Binocular Variables. Under this program, as well as the Variable Star Program, members obtain an AAVSO observer code, submit their observations to the AAVSO, report them to the A.L. program director, and on completion of the requirements receive their certificate. We see this as a way of bringing the entry-level observer into the wonderful world of variable stars. Observers then decide whether our program is of interest to them.

With a pool of 15,000 members in the Astronomical League, we see this as a positive way of increasing AAVSO membership and observership. We also encourage members of the AAVSO, who are members of the A.L., to support the efforts of the Astronomical League by participating in their program(s).

Information is available from the Astronomical League WebSite:

<http://www.astroleague.org>.

Please encourage anyone you know who is a member of the Astronomical League, yet is not sure about variable star observing, to try the A.L. programs. ★

102ND SPRING MEETING OF THE AAVSO

The 102nd Spring Meeting of the AAVSO will take place at Appalachian State University in Boone, North Carolina, on May 16–18, 2013.

Attendees are encouraged to fly into the Charlotte, North Carolina, airport. Shuttles will run from Charlotte to Boone at the beginning and end of the meeting.

Guest rooms have been secured at the local Holiday Inn Express for a special group rate of \$81 plus tax per night. This rate includes a hot breakfast. Shuttle service will be provided between the hotel and the meeting space at the University.

We will hold our awards banquet at Dark Sky Observatory, which is just off the Blue Ridge Parkway. The dinner will be catered by a local BBQ restaurant. Vegetarian options will be available.

Additional details including a preliminary schedule will be available in early 2013. (Photos of the meeting site were published in *AAVSO Newsletter No. 54* (October 2012).) ★

IN THE JOURNAL OF THE AAVSO

JOHN R. PERCY, JAAVSO EDITOR (john.percy@utoronto.ca)

Journal of the AAVSO:

The Epsilon Aurigae and Citizen Sky Issue

On December 15, 2012, the AAVSO published *JAAVSO*, Volume 40, Number 2—a special issue featuring papers on Epsilon Aurigae and the AAVSO's Citizen Sky project. This project grew out of International Year of Astronomy 2009, and highlighted the AAVSO's "citizen astronomy" philosophy which enables anyone anywhere to experience the excitement of science by making observations of variable stars, and thus contributing to science. This project concentrated on Epsilon Aurigae which, every 27 years, undergoes a two-year eclipse. The 2009–2011 eclipse, and the international campaign to observe it, came at just the right time.

Epsilon Aurigae is a genuine scientific mystery, a binary star which consists of a massive (or maybe not massive) supergiant, and a pair of stars (or maybe one star) enveloped in a donut-shaped disk of gas and dust. As you see, there is plenty of uncertainty in our knowledge! Yet this is a naked-eye star. It can be pointed out at star parties. It can be observed visually, with the unaided eye. So it's truly "citizen astronomy."

The papers in this special issue of *JAAVSO* are written by professional and amateur authors from around the world, and the observations which they use come from an even wider range of countries. Our knowledge (or lack of it) about Epsilon Aurigae is based on observations which go back almost two hundred years, so today's observers are connected to thousands of other observers, both internationally, and through time. This special issue is therefore an excellent sequel to Volume 40, Number 1, which highlights a century of science and history of the AAVSO, and the centennial history of the AAVSO (*Advancing Variable Star Astronomy*, by Thomas Williams and Michael Saladyga) which explains and celebrates how the AAVSO has been the epitome of "citizen sky" for over a century.

As *JAAVSO* Editor, I thank all those who have contributed to this project and this special issue: the National Science Foundation for grant support, the Citizen Science team (Aaron Price, Rebecca Turner, Robert Stencel, Brian Kloppenborg, and Arne Henden), AAVSO staff and observers, the authors of the papers in this issue, and partner organizations and individuals, including professional astronomers who have assisted in various ways.

Ed. note: Over 500 pages in length, JAAVSO 40, 2, also includes a full complement of papers on variable star-, observing-, and instrumentation-related topics other than epsilon Aurigae and Citizen Sky. Instructions on purchasing a copy may be found on page 7.

The Value of Long-Term Visual Observations: Another Example

Readers of *JAAVSO* may have noticed that, in recent years, my students and I have been studying semiregular (SR) and irregular (L) pulsating red giants, using AAVSO visual observations (Percy and Terziev 2011, *JAAVSO*, 39, 1; Percy and Tan 2012, *eJAAVSO* preprint #222; Percy and Kojar 2012, *JAAVSO* submitted, and references therein). We have analyzed over 200 stars. Some are not variable, or are microvariable, or are truly irregular. But some show up to three periods—one or two radial pulsation periods, and a "long secondary period" (LSP), an order of magnitude longer than the radial periods—which themselves are tens or hundreds of days. As of 2009, the nature and origin of the LSPs was not clear (Nicholls et al. 2009, *MNRAS*, 399, 2053) but there is now some evidence that the LSPs may be a result of large turbulent convection cells. There are also many other SR or L variables in the AAVSO International Database which have only a few observations, and should really be dropped from the program. Our analysis of these stars requires hundreds of observations, ideally spread over many decades.

We are now concentrating on two topics which require even longer datasets. We have found that a few of these double-mode stars switch slowly from one radial period to another, on a time scale of decades. A landmark study was of R Dor by Bedding et al. (1998, *MNRAS*, 301, 1073) using the remarkable series of visual observations by Albert Jones. They found switching, on a time scale of decades, between two radial pulsation modes. We now wish to search for this phenomenon in other SR variables with two radial periods.

The second topic is the stability of the LSP. Does the period remain constant? Does the amplitude remain constant? Any changes seem to require many decades. But they may help to explain the nature of this great mystery in contemporary stellar pulsation theory.

Both these studies require many decades of systematic, standardized observations, and the visual observations in the AAVSO International Database satisfy these criteria. So we hope that observations of these stars continue. It would help if the scientific staff of the AAVSO and/or the Long Period Variable Section would identify stars which have two radial pulsation periods and/or an LSP and are therefore a priority for observation. The AAVSO is also in the process of digitizing pre-1911 visual and photographic observations of variable stars, so it is possible that the datasets for our stars can be pushed backward as well as forward. ★



Dr. John R. Percy,
JAAVSO Editor

THE EPSILON AURIGAE SPECIAL EDITION OF THE AAVSO JOURNAL

Citizen Sky was designed as a multi-year project focusing on the bright eclipsing variable, epsilon Aurigae. Time was dedicated to observing the eclipse of eps Aur, forming research teams, learning how to do some basic analysis of the data, and learning about writing a research paper. The capstone event of this process is the publication of a special issue of the *Journal of the American Association of Variable Star Observers (JAAVSO)* which is focused on papers related to epsilon Aurigae, similar objects and amateur observing techniques of bright stars.

These papers are published in *JAAVSO* Vol. 40, No. 2 (December 2012). For more details on contents, please see page 6.

You may order a printed copy of this *JAAVSO* edition for \$13 plus shipping from <https://www.createspace.com/4107524>

And don't forget: the special two-part *JAAVSO* 100th Anniversary issue is also available for purchase: <http://www.aavso.org/aavsos-100th-anniversary-meetings-pages-aavso-journal>

AAVSO VOLUNTEER OPPORTUNITIES IN 2013

MIKE SIMONSEN (SXN), AAVSO DEVELOPMENT DIRECTOR

The AAVSO is an organization that depends on the work of our dedicated observers and volunteers. There are a number of new and ongoing projects at the AAVSO that absolutely require volunteers to make them happen. If you're looking for ways to make a contribution to the AAVSO in your spare time (or on a cloudy night!) please consider helping with one or more of these important projects!

Mentor Observers We need experienced observers, visual, CCD, and PEP, who are willing to share their time and expertise to help new observers become proficient. We are also getting more requests for DSLR mentors every week. If you would like to volunteer contact the program coordinator, Mike Simonsen (mikesimonsen@aavso.org, subject = Mentor Program).

Develop Software AAVSO members and observers use a variety of software to help plan observing runs, submit data, analyze data, and for educational purposes. A lot of this software was developed by others and given freely to the AAVSO to share with the public. Do you have a new variable star tool or game? Would you like to help develop software for AAVSO projects? Contact us (aavso@aavso.org) and let us know.

Help us validate data with Zapper Are you interested in helping HQ make sure that our variable star data remain the best in the world? Check out the Zapper program. Zapper is a Java, multi-platform program that enables our members to help us make sure our data is of the highest quality by 'zapping' discrepant data points. This can be particularly satisfying if you discover a discrepant point that is messing up the display of your favorite variable's light curve. When you zap a point, the information is sent to HQ and a staff member will investigate and resolve the discrepant observation.

JAAVSO

Volume 40
Number 2
2012

The Journal of the American Association
of Variable Star Observers

ε Aurigae Special Edition

Historic first: 1.6-μm wavelength image of ε Aur, 2009 Nov. 2, as initially processed by John Monnier, based on four telescope beam combination data acquired by MIRC at the CHARA Array and showing the shadow of the disk crossing the face of ε Aur. see page 618

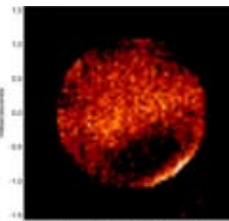


Image courtesy of John Monnier, Univ. Michigan

Also in this issue...

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- The 1909 outburst of RT Ser
- Photometry and spectroscopy of P Cygni
- A W UMa system with complete eclipses
- MP Gem—an EB with a very long period?

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49 Bay State Road
Cambridge, MA 02138
U. S. A.

Data entry projects The AAVSO has a number of data entry projects for observational data of the 19th and 20th centuries that exist on paper but not in electronic form. Some of these are AAVSO data published elsewhere (like the *Harvard Annals*), some are observations found in private papers and correspondence with Headquarters, and some are published data appearing in early literature. While these data are "safe"—they're preserved and available in paper form—they're hard to make use of to plot light curves or analyze with computer tools. To make these data easily available to researchers, we want to enter these into the AAVSO International Database and make them available through the light curve generator and data download features. We need your help to make that happen!

Some of these data, particularly those published in astronomical literature, are already scanned and available online, which means you can keypunch or try to OCR them from the comfort of your own home or office. Contact Dr. Matthew Templeton (matthewt@aavso.org, subject—Volunteering Digitization Projects) for more information. The AAVSO would be very glad to have your help with these important scientific and historical projects!

Help make Charts and Sequences The AAVSO largely automated chart production in the 21st century. Observers now download custom made charts with characteristics chosen to match their instrumentation and preferences from VSP, the Variable Star Plotter (<http://www.aavso.org/vsp>). This has eliminated the need for teams of workers creating multiple 'paper' charts of various field sizes, magnitude limits, and field rotation. But it has not completely automated the process. Volunteers using a specific set of criteria still select the comparison star sequences used on all VSP charts. This work will continue indefinitely into the future. Would you like to help? Contact the chart team leader, Mike Simonsen (mikesimonsen@aavso.org, subject = Chart Team).

CONTINUED ON NEXT PAGE

VOLUNTEER OPPORTUNITIES CONTINUED...

Write Articles for the Newsletter, Blogs, or VSOTS If you can write engaging, scientifically accurate articles about stellar astronomy, variable stars, observing, or the AAVSO, you can contribute to any number of AAVSO publications and web pages. We have a quarterly newsletter and annual report, a blog on the main website, blogs on the section web pages, a Facebook page, and a whole series of Variable Star of the Season pieces that you can help make interesting, entertaining, and educational. Contact us (aavso@aavso.org) to find out more.

Write a Book Review for the AAVSO Bookstore The AAVSO Bookstore has reviews of books on variable stars and related topics intended to help you make informed decisions on purchasing books appropriate to your interest and level of understanding. The list of reviews and books we offer is a continuous work in progress. There have been several variable star-related books published since the last update to this web page. We would also like to include titles on spectroscopy. If you have a book you'd like to see reviewed, or if you have a review of an appropriate book you'd like to submit, please contact us (aavso@aavso.org).

Referee papers for JAAVSO The Journal of the AAVSO contains the results of research on variable stars and is written mostly by AAVSO members. The quality of scientific journals such as this depends on careful, objective, and informed refereeing. Potential referees are selected by the Editor and will be asked to do the job in a reasonably short time, normally a few weeks. If you have the expertise and can devote some of your time to maintaining the standards of our Journal, please contact the Editor (journal@aavso.org) and let him know.

Help edit the Writers Bureau The AAVSO Writers Bureau is a filter blog that offers variable star and stellar astronomy content on a monthly basis to

editors of astronomy club and society newsletters. This gives us the chance to inform the public about the fascinating objects we study, as well as the science and research being done, while providing reliable, accurate information to newsletter editors who may lack the time or expertise to write or vet articles for publication. Scanning the participating science and astronomy blogs for material each week is an ongoing endeavor. If you'd like to help, contact the Bureau Chief, Mike Simonsen (mikesimonsen@aavso.org, subject = Writers Bureau).

Suggest Content for the Observer Resources pages The idea for these two pages was to assemble a list of freely available resources on visual and CCD observing, observing techniques, and products available on the Internet. If you know of any interesting or valuable resources we should include here email Mike Simonsen (mikesimonsen@aavso.org, subject = CCD Reading Page Suggestions) with links, urls, book titles, etc.

Become a Speaker in the Speakers Bureau The Speakers Bureau is always on the lookout for enthusiastic, knowledgeable speakers to provide presentations for astronomy clubs, star parties, banquets, Scout Troops, Astronomy Day activities, and other public and private astronomy functions. If you have the gift of gab and time to volunteer, contact the Bureau Chief, Mike Simonsen (mikesimonsen@aavso.org, subject = Speakers Bureau).

Submit a Variable Star Presentation to the Library The AAVSO has a library of prepared PowerPoint presentations written by AAVSO members, intended for use in talks or presentations about variable stars and related subjects. If you would like to submit a presentation for inclusion in our library see the instructions on the Presentation Library page:

(<http://www.aavso.org/presentation-library-0>). ★

TALKING ABOUT THE AAVSO ELIZABETH O. WAAGEN (WEO), AAVSO HQ

Events—AAVSO members, observers, and friends will be giving presentations about the AAVSO at the following venues:

March 5, 2013—**Katrin Fortak** (SNH01, Duesseldorf, Germany) will give the SNH Observatory's monthly public lecture (8 p.m./20.00 hours) on the night sky and current astronomy research. Her talk, "We Are Stardust", will discuss the history of the universe and the stars, showing where and how the known elements are created. Location: Sternwarte Neanderhoehe Hochdahl Observatory Planetarium "Stellarium Erkrath", Sedentaler Strasse 105 (Bürgerhaus), 40699 Erkrath-Hochdahl Germany.

March 12, 2013—**Chris Stephan** (SET, Lake Placid, Florida) will speak to the Alachua Astronomy Club in Gainesville, Florida, at its monthly public meeting (7–9 p.m., talk at 7:45) on "Visual Observing of Eclipsing Binary Stars". Chris was invited to speak by fellow AAVSO member/observer and club president Andy Howell (HOA, Gainesville, Florida). Chris reports he is looking forward to this opportunity to represent the AAVSO. Location: Florida Museum of Natural History, on the grounds of the University of Florida, University of Florida Cultural Plaza, 3215 Hull Road, Gainesville, Florida.

Let us help you spread the word! Send us information about your event (upcoming or past) for inclusion in the April AAVSO Newsletter (submission deadline March 15). Many thanks for your education and outreach efforts on behalf of the AAVSO and variable star observing! ★

SCIENCE SUMMARY: AAVSO IN PRINT

AAVSO data are constantly being used by researchers around the world in presentations and publications. Below is a listing of some of the publications that appeared October through December 2012 on the arXiv.org preprint server and used AAVSO data and/or acknowledged the AAVSO. To access these articles, type the preprint number into the “Search or Article-id” box at <http://www.arXiv.org/>.

Cezary Gałan, Toma Tomov, Taichi Kato et al., “A new look at the long-period eclipsing binary V383 Sco”, (arXiv:1212.6223) [Dec 26, 2012]

Norbert Zacharias, Charlie Finch, Terry Girard et al., “The Fourth US Naval Observatory CCD Astrograph Catalog (UCAC4)”, (arXiv:1212.6182) [Dec 26, 2012]

Polina Zemko, Taichi Kato, Sergey Shugarov, “Detection of Change in Supercycles in ER Ursae Majoris”, (arXiv:1212.5940) [Dec 24, 2012]

Joseph Patterson, Helena Uthas, Jonathan Kemp et al., BK Lynx: “The Oldest Old Nova?... And a Bellwether for Cataclysmic-Variable Evolution”, (arXiv:1212.5836) [Dec 23, 2012]

Richard I. Anderson, Laurent Eyer, Nami Mowlavi, “Cepheids in Open Clusters: An 8-D All-sky Census”, (arXiv:1212.5119) [Dec 20, 2012]

Joel D. Green, Paul Robertson, Giseon Baek et al., “Variability at the Edge: Optical Near/IR Rapid Cadence Monitoring of Newly Outbursting FU Orionis Object HBC 722”, (arXiv:1212.2610) [Dec 11, 2012]

Pierre de Ponthiere, Franz-Josef Hamsch, Tom Krajci et al., “V1820 Orionis : an RR Lyrae star with strong and irregular Blazhko effect”, (arXiv:1212.0897) [Dec 4, 2012]

Pierre de Ponthiere, Jean-Francois Le Borgne, F. Fumagalli et al., “GEOS RR Lyr Survey: Blazhko Period Measurement of Three RRab Stars - CX Lyrae, NU Aurigae and VY Corona (sic) Borealis”, (arXiv:1212.0034) [Nov 30, 2012]

Thomas E. Harrison, Ryan T. Hamilton, Claus Tappert et al., “Herschel Observations of Cataclysmic Variables”, (arXiv:1211.4841) [Nov 20, 2012]

T. Kaminski, M. R. Schmidt, K. M. Menten, “Aluminium oxide in the optical spectrum of VY Canis Majoris”, (arXiv:1211.4156) [Nov 17, 2012]

A. Mayer, A. Jorissen, F. Kerschbaum et al., “The large-scale environments of binary AGB stars probed by Herschel: I. Morphology statistics and case studies of R Aqr and W Aql”, (arXiv:1211.3595) [Nov 15, 2012]

Elena V. Glushkova, Marina V. Zabolotskikh, Sergey E. Koposov et al., “Photometric study of open clusters Berkeley 96, Berkeley 97, King 12, NGC 7261, NGC 7296, and NGC 7788”, (arXiv:1211.3541) [Nov 15, 2012]

Thomas Nelson, Laura Chomiuk, Nirupam Roy et al., “A massive, delayed ejection event in the 2011 outburst of T Pyxidis”, (arXiv:1211.3112) [Nov 13, 2012]

M. Otulakowska-Hypka, A. Olech, E. de Miguel et al., “IX Draconis—a curious ER UMa-type dwarf nova”, (arXiv:1211.1924) [Nov 8, 2012]

S. Zharikov, G. Tovmassian, A. Aviles et al., “The accretion disk in the post period-minimum cataclysmic variable SDSS J080434.20+510349.2”, (arXiv:1211.1357) [Nov 6, 2012]

E. Sipahi, C. Ibanoglu, O. Cakirli et al., “TYC 1031 1262 1: An Anomalous Cepheid in a double-lined eclipsing binary”, (arXiv:1211.1200) [Nov 6, 2012]

Miloslav Zejda, Ernst Paunzen, Bernhard Baumann et al., “Catalogue of variable stars in open cluster fields”, (arXiv:1211.1153) [Nov 6, 2012]

Sudhindra Nath Biswas, Saibal Ray, Utpal Mukhopadhyay, “Indian Amateur Astronomer R. G. Chandra: A unique AAVSO member”, (arXiv:1210.8384) [Oct 31, 2012]

Joseph Roche, “EG Andromedae: A Symbiotic System as an Insight into Red Giant Chromospheres”, (arXiv:1210.7699) [Oct 29, 2012]

Marina Orio, “Observations of Classical and Recurrent Novae with X-ray Gratings”, (arXiv:1210.4331) [Oct 16, 2012]

N. Kameswara Rao, David L. Lambert, D. A. Garcia-Hernandez et al., “The hot R Coronae Borealis star DY Centauri is a binary”, (arXiv:1210.4199) [Oct 15, 2012]

David G. Turner, Sidney van den Bergh, Frank Younger et al., “A Search for OB Associations Near Southern Long-Period Cepheids. V. AQ Puppis and V620 Puppis”, (arXiv:1210.4172) [Oct 15, 2012]

J. L. Prieto, J. Brimacombe, A. J. Drake et al., “The Rise of the Remarkable Type II In Supernova SN 2009ip”, (arXiv:1210.3347) [Oct 11, 2012]

William K. Teets, David A. Weintraub, Joel H. Kastner et al., “Detection of a Cool, Accretion Shock-Generated X-ray Plasma in EX Lupi During the 2008 Optical Eruption”, (arXiv:1210.1250) [Oct 3, 2012]

P. Godon, E. M. Sion, K. Levay et al., “An Online Catalog of Cataclysmic Variable Spectra from the Far Ultraviolet Spectroscopic Explorer”, (arXiv:1210.1118) [Oct 3, 2012]

Akira Imada, Hideyuki Izumiura, Daisuke Kuroda et al., “Discovery of superhumps during a normal outburst of SU Ursae Majoris”, (arXiv:1210.1087) [Oct 3, 2012]

Taichi Kato, Franz-Josef Hamsch, Hiroyuki Maehara et al., “Survey of Period Variations of Superhumps in SU UMa-Type Dwarf Novae. IV: The Fourth Year (2011-2012)”, (arXiv:1210.0678) [Oct 2, 2012]

We thank the above researchers for including the AAVSO and its resources in their work, and for acknowledging the AAVSO in their publication. We urge all those writing for publication to include the word “AAVSO” in their list of keywords. ★

IN MEMORIAM

MEMBERS, OBSERVERS, COLLEAGUES,
AND FRIENDS OF THE AAVSO



Jean R. Buchler

and astronomy faculty at Gainesville since 1974, where he specialized in pulsating stars and fluid dynamics (after earlier contributing significantly to the understanding of the supernova mechanism); his students very appreciated his dynamic and enthusiastic teaching style. Robert was a frequent user of AAVSO data on long period variables and a supporter of the AAVSO. A native of Luxembourg, he loved travel and outdoor activities, and was a gifted musician. Our sympathies go to his wife, Danièle, children, and family.

JEAN ROBERT BUCHLER, longtime AAVSO colleague, died October 16, 2012, at the age of 70. He was Emeritus Professor of Physics at the University of Florida,

having been on the physics

DALE R. KINNE (of Teugega Point, Rome, New York) died December 2, 2012, at the age of 72. The father of AAVSO staff member Richard (Doc) Kinne, Dale was an educator, teaching American history in the Rome schools, an education program director and education councilor

Dale R. Kinne

for the Federal government, and an adjunct professor of history at Utica College, Mohawk Valley Community College, Hamilton College, and the New School for Social Research in Rome and Saratoga Springs, New York. He was also an award-winning real estate broker in Rome. Dale was involved in numerous philanthropic and charitable organizations during his career and in retirement. We extend sincere sympathies to Doc, his sister Kristin, Dale's brother Brian, and their families.

SIR PATRICK MOORE (MOP), former AAVSO member/observer, died December 9, 2012, at the age of 89. Sir Patrick contributed 2,177 visual observations to the AAVSO International Database between 1954 and 1972. He became interested in astronomy at the age of seven and joined the British Astronomical Association in 1934. He was actively involved with the BAA as President, honorary Vice President, leader of the



Sir Patrick Moore

Lunar and the Mercury and Venus Sections, and as a member until his death. His influence extended far beyond the BAA, however. He introduced the world to the wonders and complexities of the heavens through his more than 70 books, atlases, and other writings on astronomy and observing, and through his weekly "Sky at Night" television program, which was broadcast for over 55 years. Originally called "Starmap", the Sky at Night began six months before Sputnik was launched, so it was the perfect venue to inspire and educate (and reassure at times) the public as the Space Age evolved and our astronomical knowledge grew exponentially. His infectious enthusiasm in person, on the radio and television, and in print caught the public's attention and his efforts helped create countless amateur (and not a few professional) astronomers around the world. In 1965 he became the first director of Armagh Planetarium in Northern Ireland, overseeing its construction and serving in that position for three years. His non-astronomical passions included cricket, music (xylophone and piano—he once played piano to Albert Einstein's violin), comedic entertainment, and cats (his last two cats were Jeannie and Ptolemy). He was the recipient of many honors, arguably the most noteworthy of which came in 2001, when his contributions to the public understanding and appreciation of science were recognized in his being knighted by Queen Elizabeth II (he had previously been made an

Officer of the Order of the British Empire (OBE) and then a Commander of the Order of the British Empire (CBE)). Minor planet (2602) Moore was named in his honor.

JORGE SAHADE, astrophysicist, died December 18, 2012, at the age of 97. His main area of research was interacting binary systems (including symbiotics) and massive stars; together with Otto Struve, he discovered the Struve-Sahade effect in double-lined spectroscopic binaries. Over the course of his distinguished career, he taught at universities in Argentina, England, Belgium, France, and Germany, and at the National Academies of Sciences of Buenos Aires and Córdoba and the Royal Academy of Exact, Physical and Natural Sciences of Madrid. He was Vice-President of the IAU Executive Committee in 1967–1970 and 1970–1973, and IAU President 1985–1988. He was also Chair of IAU Commissions 29 (Stellar Spectra) and 42 (Close Binaries), and was a member of Commissions 44 (Space and High Energy Astrophysics) and 46 (Astronomy Education and Development). Dr. Sahade was a central figure in Argentinian astronomy. He was former director of observatories and astronomy institutes there, and the first President of the National Commission for Space Activities (CONAE). A firm believer in public outreach and science education, he was a founder and honorary member of LIADA, the



Jorge Sahade

Liga Iberoamericana de Astronomía. The Jorge Sahade Telescope, at 2.15 m Argentina's largest optical telescope and located at The "El Leoncito" Astronomical Complex (CASLEO) near Barreal, Calingasta, San Juan, is named in his honor. Minor planet (2605) Sahade is also named in his honor. We express our sympathy to his family, friends, and colleagues.

IN MEMORIAM CONTINUED...



Bill Shawcross

WILLIAM E. SHAWCROSS, AAVSO friend and former publisher, company president, and long-time managing editor of *Sky & Telescope*, died September 3, 2012, at the age of 77. In September 1956, with a new undergraduate degree in physics and astronomy,

Bill joined the *S&T* editorial staff, which included Sky Publishing Co. founder Charles Federer, Jr., Joseph Ashbrook, and Leif Robinson. In 1956 the Space Age was just beginning and things were changing fast. Bill stayed with *S&T* for 35 years, and over those years he came to know every aspect of the magazine's composition and production, from paper to advertising to grammar to style to ink and color, and his eagle-eye review of every word and image in each issue of the magazine assured *S&T*'s quality cover to cover. He was very interested in computers and helped the magazine make the transition to computerized publishing and in-house management of circulation. He was not always an easy managing editor to work for—he was a perfectionist and held others to the high standards set for the magazine—but the sense of family among the *S&T* staff was very strong. Bill retired in 1991 to pursue with passion his varied interests, including archaeoastronomy (particularly Mayan), homebrewing, figure skating, classical music, and science fiction/fantasy. He also continued to be an active member of Boston's Buddhist and gay communities (and he had some extensive and quite beautiful tattoos).



Giovanni Sostero

GIOVANNI SOSTERO (SUG), former AAVSO member/observer, died December 6, 2012, after a heart attack at the age of 48. With colleagues Ernesto Guido and Nick Howes at the Remanzacco Observatory in Friuli, Italy, he was very involved in the search for, discovery of, and imaging of comets, asteroids, including NEOs, supernovae, and novae. His particular passion was comets. An enthusiastic teacher and a kind and patient mentor, he was committed to public outreach and education and was a former president and active member of the Associazione Friulana di Astronomia e Meteorologia of Remanzacco in Italy. He was also the coordinator of the Comets Section of the Unione Astrofili Italiani (UAI). Asteroid 9878 Sostero (1994 FQ) was named in his honor. We extend our sympathies to his wife, Sara, family, and friends. *Image courtesy of the Remanzacco Observatory*

NEW BOOKS

Estrellas y Matemática (Stars and Maths)

by Jaime R. García

ISBN: 978-987-1758-16-6

Published by Kaicron, Av. Santa Fe 2252 1er piso, C.A.B.A. Argentina, C.P. 1121

<http://www.kaicron.com.ar/paginas/astronomia/astronomia.htm>



This book covers everything from what is a star to the binary stars, and multiple variables, photometric observations and analysis. Jaime says that the book is “about stars, variable stars, photometry, and the use of Maths for working with the observations. The main tool I explained in the book is obviously VStar...”

Deep-Sky Companions: The Secret Deep

by Stephen James O'Meara.

ISBN: 978-052-1198-76-9

Published by Cambridge University Press

http://www.cambridge.org/us/knowledge/isbn/item5979249/?site_locale=en_US



A new list of 109 deep-sky gazing challenges not previously featured in the Deep-Sky Companions series. Included is the flattest galaxy known and the companion star to one of the first black hole candidates ever discovered. Filled with beautiful photographs and sketches and Stephen O'Meara's original finder charts and directions to finding the objects. Worth noting about Stephen's book is that the object photos are all by AAVSO President Mario Motta.

Ed. note: following is the Spanish language text of Arne's Director's message.

MENSAJE DEL DIRECTOR

ARNE A. HENDEN (HQA)

Los eclipses solares son eventos únicos de variabilidad estelar. Viajas miles de kilómetros para ver sólo unos breves instantes de totalidad, si es que tienes suerte. Linda y yo fuimos con nuestro club de astronomía local a Australia para ver el eclipse de Noviembre y, en parte, tuvimos suerte. Como dice Bob Naeye de Sky & Telescope, los dos minutos de eclipse son una porción insignificante de la totalidad de tu viaje, por lo tanto tienes que pensarlo como unas “vacaciones” con una posible recompensa. Encarándolo de esa manera, disfrutamos por completo nuestro viaje al área de Cairns y hasta fuimos capaces de participar en unas sesiones de buceo en la Gran Barrera de Coral.

Luego de una semana en Australia, nos dirigimos a Nueva Zelanda. Quería visitar a Albert y Carolyn Jones. Le habíamos otorgado a Albert el Premio al Mérito hace un par de años pero no había podido entregárselo en persona. He estado intentando llegar a Nueva Zelanda desde aquel momento para darle un apretón de manos y ésta fue nuestra primera oportunidad. Le va bien, ya no observa más pero se mantiene ocupado revisando sus antiguos registros y disfrutando de su “jubilación”.

Después de esta breve visita continuamos con varios días en el Observatorio de la Universidad de Mt. John para trabajar en el Telescopio óptico Craftsman de 61 cm. Ese telescopio está a punto de estar listo para sumarse a nuestra red de telescopios robóticos. Pude obtener varias imágenes astrométricas de campos para el proyecto de variables cataclísmicas del HST que se está desarrollando actualmente, y un equipo que incluye a Nigel Frost (MJUO), John Gross (Sonoita), Dirk Terrell (SwRI) y Jerry Foote (Scoopcraft) está trabajando para terminar con algunos detalles de software y hardware. En el camino de regreso a casa nos detuvimos en la Universidad de Canterbury, donde di un coloquio sobre el sistema AAVSONet.

Mientras estuve fuera, el staff de HQ estuvo ocupado como siempre. Will ha revisado el sistema de aplicación para AAVSONet y partes importantes de WebObs. En efecto, ahora tenemos una nueva utilidad QuickLook que es una extensión de WebObs, lo cual hace que el mantenimiento de esta herramienta imprescindible sea mucho más

fácil que antes. Matt ha estado trabajando en su investigación con MOST de BM Ori y redactando propuestas. Matt y Doc juntos han estado extendiendo la cadena de procesos de AAVSONet, mudando la tabla de transferencia a una base de datos de MySQL y agregando BSM-South a esa cadena. Rebecca ha estado ocupada con la administración de donaciones, preparándonos tanto para nuestro encuentro anual como para el de mayo de 2013 en Boone, NC, y ultimando detalles del taller de DSLR. Recibimos una donación de fondos adicionales para llevar a cabo un taller de Citizen Sky en marzo de 2013 en HQ, con el objetivo de preparar un manual sobre fotometría DSLR. Este taller se anunció en la página de la AAVSO en diciembre y hay más detalles en este Newsletter. Sara trabajó con Tao Fan-Lin para realizar dos traducciones al Chino de nuestro manual de observación. La edición especial de epsilon Aurigae del JAAVSO está casi lista para ir a la imprenta, gracias al considerable esfuerzo de Mike Saladyga, Elizabeth Waagen y Matt Templeton. Mike Simonsen ha estado ocupado manejando las cartas de donaciones de fin de año, preparando una propuesta de fondos para la NSF y produciendo docenas de secuencias de estrellas variables junto al Equipo de Secuencias. También pasó un par de semanas a mediados de noviembre desinstalando los telescopios de AAVSONet del Observatorio Astrokolkhoz y distribuyéndolos a nuevos voluntarios. Sebastián está limpiando sistemáticamente VSX, removiendo duplicados, identificando variables correctamente y también llevando a cabo la mayor parte de la autenticación de los nuevos envíos.

Astrónomos profesionales continúan contactándose con la AAVSO solicitando apoyo desde tierra para sus campañas. Proyectos recientes incluyen un enorme relevamiento de variables cataclísmicas del HST, una campaña de monitoreo de delta Ori en conjunto con el satélite MOST, el trabajo de Chris Lloyd con V452 Cas y el estudio de Darryl Sergison de varias estrellas T Tau. Tanto si eres un observador visual como un experto en lo digital, utilizando tus ojos, fotometría fotoeléctrica, DSLR u otras técnicas, ¡siempre hay una campaña activa que requiere de tus observaciones!

El espejo de 80 cm. donado por Mario Motta ya ha sido enviado a Italia para ser usado en un telescopio robótico. BSM-Berry ya está en el techo de HQ llevando a cabo observaciones para su puesta en marcha. Recibimos el segundo de los telescopios para el relevamiento 2GSS, que pronto será configurado con una de las cámaras FLI. Citizen Sky se ha fusionado al sitio principal de la AAVSO y será el área clave para apoyar las

observaciones de estrellas brillantes. Aaron Sliski, un estudiante local, me está ayudando con varias tareas de hardware, incluyendo la configuración de nuestros espectrógrafos.

Estos últimos meses han sido ajetreados para la AAVSO. Continuamos apoyando a nuestros observadores en todo lo posible y facilitando la colaboración entre profesionales y aficionados en un sinnúmero de proyectos. Siento que estamos bendecidos con un buen staff y excelentes voluntarios. Estas fiestas me dan la oportunidad de mirar el año que termina y darme cuenta cómo la comunidad amateur continúa ofreciendo un servicio valioso y cuántos de ustedes se toman el tiempo de donar desinteresadamente sus observaciones, dinero y tiempo para apoyar a la AAVSO. Espero ansiosamente el 2013. ¡Será un año memorable para la observación de estrellas variables! ★

Ed. note: following is the Spanish language text of Mario's President's message.

MENSAJE DEL PRESIDENTE

MARIO MOTTA, M.D. (MMX)

En noviembre tuve la buena fortuna de viajar a Australia, con el pretexto de ver el eclipse solar del 13 de noviembre en Cairns. Desafortunadamente, nuestro grupo tuvo sólo atisbos de la totalidad debido a las nubes, a pesar de viajar dos horas a las 2 de la madrugada hacia un lugar, en el interior, con “cielo despejado”. El viaje en sí, sin embargo, fue muy agradable, a pesar de este revés. Intencionalmente viajé una semana antes para visitar colegas observadores y miembros de AAVSO en Australia, así como tener algo de tiempo para visitar los observatorios australianos.

Ser Presidente de la AAVSO ciertamente tiene sus ventajas, porque cuando expresé mi interés en visitar el Observatorio Siding Spring, un lugar que siempre había querido visitar, la directora del observatorio, Donna Burton, organizó un maravilloso viaje privado al complejo de observatorios sólo para mí. Pasé un día entero viendo el funcionamiento interno de este famoso complejo de observatorios. El día comenzó con Peter Verweyan ofreciéndome un paseo muy privado a través de varios de los observatorios más importantes del complejo, incluyendo el telescopio de 2,3 metros de la Universidad Nacional de Australia (ANU), el telescopio Anglo-Australiano (AAT) de 4 metros y también varios más pequeños. En el AAT de 4-m Peter y Steven Lee me mostraron el funcionamiento

CONTINUED ON NEXT PAGE

MENSAJE DEL PRESIDENTE CONTINUED...

interno de éste, que es el telescopio más grande en Australia. Fue fascinante para mí ver la ingeniería, así como la instrumentación que permiten obtener allí resultados científicos de vanguardia. Me gustó especialmente ver el equipo de espectroscopia avanzada de múltiples fibras ópticas, así como sus instalaciones de mantenimiento y recubrimiento. (Sí, soy un constructor de telescopios de corazón, y disfruto de estos detalles). Luego, el Dr. Robert Dean me mostró el telescopio Schmidt de 48-pulgadas del Reino Unido, que también se utiliza principalmente para espectroscopia. Más tarde, ese día, pude pasar un largo rato con Robert McNaught, miembro de AAVSO, que pasa su tiempo explorando los cielos del sur en busca de NEOs, objetos cercanos a la Tierra, con el telescopio Uppsala Schmidt. Él es un ávido observador y ha descubierto numerosos cometas en sus exploraciones del cielo, incluyendo el gran cometa McNaught de 2010.

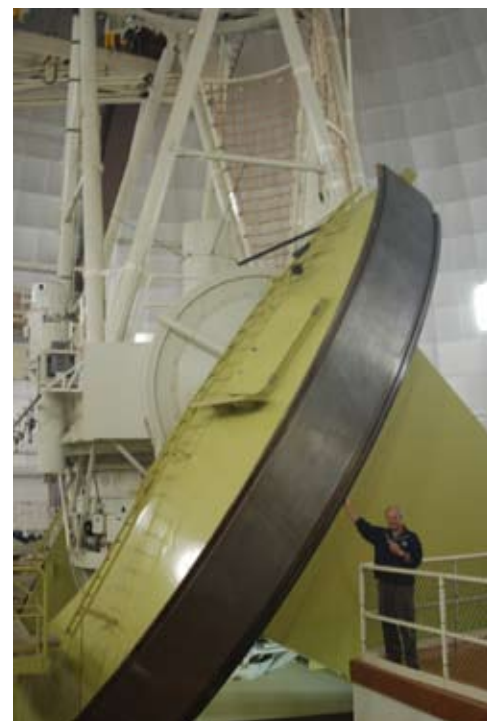
Después de Siding Spring, visité el Radio-observatorio Parks, y luego fui al Observatorio Linden donde tuve la oportunidad de reunirme con Alan Plummer ávido miembro observador de AAVSO, quien amablemente me ofreció generosamente su tiempo. Me mostró el Observatorio Linden y tuve la oportunidad de reunirme con varios de los miembros del grupo de astronomía local, con quienes comentamos sus programas de observación y sus actividades de divulgación. Tuvimos también discusiones sobre los proyectos de AAVSO y sus diversos programas de observación. Alan me ha impresionado por su dedicación y ética de trabajo en los diferentes proyectos que ha desarrollando y contribuido por largos años. Habíamos planeado hacer un poco de observación del cielo nocturno profundo pero, por desgracia, las dos noches que él tuvo libres tristemente resultaron con cielo cubierto. Llegué a conocer a uno de nuestros más famosos miembros observadores de AAVSO, el reverendo Robert Evans, uno de mis mejores recuerdos del viaje. Recuerdo muchas reuniones anteriores durante las cuales la AAVSO le otorgara algún premio o distinción por sus muchos descubrimientos visuales de supernovas, ¡ya tiene 42 y todas visuales!

Como el tiempo desgraciadamente estaba nublado, regresé a Sidney para mi último día en la zona antes de volar a Cairns para ver el eclipse. Esa noche iba a ser reunir a cenar con dos integrantes de mi grupo del eclipse. Sin embargo, esa tarde un frente frío pasó, y el cielo occidental comenzó a presentarse prometedor. Una hora antes de la cena, Robert Evans se puso en contacto conmigo

señalando que el cielo era alentador y me invitó a observar con él, con su famoso telescopio de 16 pulgadas ¡con el que descubrió muchas de sus 42 supernovas! En ese momento llamé a mis amigos que me estaban esperando para la cena y les dije que tenía un pequeño dilema entre elegir cenar con ellos, según lo previsto, u observar en privado con el mayor cazador de supernovas de todos los tiempos ... no hace falta decir que dejé plantados a mis amigos.

Así que conduje de vuelta a las Montañas Azules y me reuní con Robert, que había sacado su Dobsoniano de 16 pulgadas f/5. El cielo se puso parcialmente nublado y tuvimos que observar a través de los frecuentes huecos. Esto hace que lo que voy a decir sea aún más notable. Es un hecho bien sabido que Robert Evans tiene una memoria fotográfica del cielo nocturno. Fui testigo, de primera mano, de una impresionante demostración de conocimiento del cielo y habilidad. Usando un telescopio Dobsoniano de 16 pulgadas, no de los guiados por computadora, sin mapas del cielo de ningún tipo, y equipado con un ocular Nagler de 9 mm, Bob Evans puede mover de aquí para allá, apuntando al más mínimo agujero imaginable, y en cuestión de segundos encuentra un objeto NGC distante y débil sin fallar. Él me mostraba la galaxia y describía el año, la fecha y las circunstancias de la supernova que había descubierto en esa galaxia en algún momento remoto pasado. Lo que es aún más notable es que él nunca cambió el ocular por otro de menor aumento. ¡Se quedó todo el tiempo con el Nagler 9 mm de mayor potencia y de menor campo, y fue capaz de encontrar estos objetos con las pocas estrellas visibles en lo que percibí como pequeños agujeros en el cielo sin casi ninguna estrella visible! Y él pudo hacer esto más rápido que cualquier telescopio computarizado que he visto, incluyendo mi propio telescopio computarizado de 32 pulgadas. En mis días de juventud antes del control por computadora, pensé que era bastante hábil para realizar saltos entre estrellas, pero incluso con lo mejor de mí, no me puedo imaginar haciendo lo que vi hacer esa noche al reverendo Evans, saltando de galaxia en galaxia a través de 90 ° del cielo, con un ocular de campo estrecho y muy pocas estrellas que se utilizara como guía con las condiciones de cielo mayormente nublado, mirando a través de los pequeños agujeros de las nubes. Nunca he visto a nadie en ninguna parte hacer lo que Bob Evans pudo hacer sin esfuerzo. Es muy claro para mí ahora cómo pudo haber descubierto 42 supernovas visualmente en su vida, un récord que probablemente no pueda ser superado en estos días de grandes surveys del cielo.

Fue maravilloso visitar a los miembros de AAVSO en Australia, y aunque no he tenido el cielo despejado que esperaba para el eclipse, el viaje será atesorado en mi memoria por el tiempo que pasamos con nuestros maravillosos hermanos australianos de AAVSO. Quiero dar las gracias a Donna Burten, Robert McNaught, Alan Plummer, Robert Evans, y todos los demás que conocí durante mi viaje por su generoso tiempo y hospitalidad y por hacer que mi viaje sea memorable y tan agradable. ★



Mario Motta at the 4-meter Anglo-Australian Telescope

A NOTE ON THE TRANSLATIONS

We are grateful to Sebastian Otero and Jaime García for providing, respectively, the Spanish language versions of the Director's and President's messages. We hope that readers of the *Newsletter* will enjoy this feature.

ERRATUM

In *AAVSO Newsletter* 54 (October 2012), the Director's and President's messages were both translated into Spanish by Jaime García, not by Jaime García and Sebastian Otero as originally stated.

A SOLAR ECLIPSE EXPEDITION TO TROPICAL NORTH QUEENSLAND

LÁSZLÓ KISS KISS (KIL), SYDNEY, AUSTRALIA

It is nearly impossible to stay cold-minded and rational when remembering the most beautiful astronomical event that regularly occurs now and then on planet Earth: I still feel the trembling of my body after the two minutes of totality and the breathtaking variations of lights and colors of nature in the hour immediately before the Sun was eclipsed by our Moon on November 14, 2012. But let us not rush in advance of what we were lucky enough to catch about 100 km northwest of Cairns, the capital of the Tropical North Queensland in Australia.

Supported by an EU FP7 IRSES grant (for the record: grant agreement no. 269194), I spent a bit over ten weeks at the Sydney Institute for Astronomy of the University of Sydney between late September and early December 2012. While the main aim was to collaborate with my esteemed colleagues at SIfA in asteroseismic studies using NASA's Kepler space telescope, the timing was not an accident: we planned as early as 2009 that my visit should coincide with the 2012 total solar eclipse best visible around Cairns. In addition to myself, I helped two of my colleagues from the Konkoly Observatory (and one wife) to also come to Australia for a shorter stay, so that we formed a real solar eclipse expedition. Officially we claimed to be the expedition of the single Hungarian astronomical news website hirek.csillagaszat.hu, where we continuously updated the preceding events and then concluded with a detailed report. The following account is based on our final astro-blog that was read by a couple of thousand Hungarian readers in the first few days after publication.



Observers at Bob's Lookout



The four happy Hungarian observers (left to right: Szilvia Tahin, Krisztián Sáárneczky, László Kiss, Robert Szabó)

We made very careful preparations before the event that occurred in the early morning on Wednesday, November 14, local time. As early as the previous Friday we had already identified a place called Bob's Lookout along the main inland road, located roughly two hours' drive from Palms Cove, the place where we stayed for nine days in total. The main advantages of the lookout included a large enough distance from the shore (so that the clouds forming over the ocean did not drift that far inland), a perfect view towards southeast, the direction of the rising Sun, and also a perfect overview of the tableland above which the eclipse was going to occur.

However, we wanted to make 100% sure that the place was just right: two days before the eclipse we watched the rising thin crescent of the Moon from the very same lookout (we left our apartment at 2 a.m. to be there on time), and the positive impressions made us confident that it was exactly the place we wanted to be on Wednesday morning. Our determination was made even stronger one day later when we watched sunrise over the Pacific between the palm trees of the beautiful sandy beach of Palm Cove: clouds were all over the place, all constantly forming and dissipating as the humid air over the ocean reacted to the rapid changes of the temperature as the Sun started to climb its daily path across the skies.

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A panoramic view of the totality shows the shadow of the Moon.

ECLIPSE EXPEDITION
CONTINUED...

*Crescent Suns through the holes
as the eclipse is underway*

Then came Tuesday afternoon, November 13. We were sure that a large number of amateur astronomers, eclipse chasers from all around the world, would also reach the same conclusion, that is, the farther from the ocean the better the chances of beating the clouds. Reportedly over 50,000 people arrived just to catch the two minutes of the totality, so that the chances of traffic jams on remote Ozzie roads that usually see several cars per hour in the busiest periods of the day seemed to be quite possible. Because of that we left Palm Cove at 8 p.m., full of hopes for great stargazing during the night and then culminating with the solar eclipse the following morning.

As the doctrine says, no battle plan survives the first contact with the enemy—and that was also the fate of our plans for a joyful night with the stars. As soon as we crossed the great dividing range covered by lush rain forests, a mat-blank dark sky was waiting. Not a single star was visible while driving to the lookout—the eastern wind drove the clouds well inland and the sky was absolutely overcast. It is difficult to describe the

feeling when you feel your hair graying from minute to minute....

Rationality had finally won: there could be great many changes in the eight hours till 6 o'clock in the morning, hence Bob's Lookout, already full of other cars at about midnight, was as good place to wait as anything else within 100 km. So some of us went to sleep, some decided to stay up and follow what the clouds were doing.

3 a.m., Wednesday morning: the three male astronomers were indeed happy astronomers with the clouds all gone! From onwards till dawn we enjoyed the stunning display of the southern constellations, the magnificent Magellanic Clouds almost 200,000 light years away, and the rising Centaurus and the Southern Cross, well known from the Australian flag. Occasionally a bright shooting star—a meteor—gave some dynamics to the heaven above to the greatest pleasure of the hundreds (or thousands) of observers scattered along the tens of kilometers of the road, all easily spotted from our vantage viewing point.

Sunrise was at 5:38 a.m. and minutes after the partial eclipse began. Totality was 6:38–6:40 a.m., when the Sun was 13 degrees above the horizon. We had all seen the 1999 eclipse from Hungary, so that we had some expectations about the color and light changes as the Sun faded away. However, reality overwhelmed all our expectations!

In the beginning we only watched the Sun through the special eclipse viewing glasses, following the increasing fraction of the Moon getting in front of the Sun. Roughly halfway to the totality was when we first noted the fading of



A perfect view 13 degrees above the horizon

the colors. Everything became somewhat lifeless grayish, just as if life wanted to desert the place. The deep blue sky turned into a strangely bluish-grayish color, never seen under regular weather circumstances. Planet Venus, a bit above the Sun, became visible to the naked eye quite soon, while every single shadow of small holes turned into little crescent Suns.

To keep up with the events, we set clock alarms ten, five, and two minutes before totality and one alarm in the middle of it. When watching this natural beauty, it is very easy to lose track of time, which can be dangerous if you want to make a picture of some selected phases of the eclipse.

We were not extensively prepared with sophisticated telescopes or cameras. One of us, Robert Szabó, was the photographer with a 250-mm telephoto lens and a Canon DSLR camera and a panoramic imager in his smartphone. The rest of us watched by naked eye (through the special glasses) and small binoculars. Each one of us observed different phenomena and it took several hours afterwards for us to collect all the memories of this great event.

The Moon eclipses the Sun—why on Earth is that such a big deal, one could ask. It is almost impossible to describe the feelings one faces when our Sun, the source of life on this planet, disappears and transforms into a large flower



Total eclipse 2012!



*The diamond ring through thin
cirrus clouds*

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ECLIPSE EXPEDITION
CONTINUED...

with a great black spot in the middle, a yawning darkness surrounded by the pearl-shining solar corona. With small pairs of binoculars one can clearly see the purple prominences along the solar limb, hot and light-emitting hydrogen clouds ejected by unimaginable forces of the solar activity. Darkness falls across the skies and the brightest stars become visible during daytime. Our group members were able to identify planets Venus, Jupiter, and Saturn, stars alpha and beta in Centaurus, and the whole Southern Cross. There were a couple of other bright stars above the horizon but they were left for the other observers.

The gorgeous diamond ring marks the immediate beginning and the end of totality—we managed to capture the latter in a digital image. The return of the Sun literally means the return of life and thus hope for every living creature. Things are getting back on track, business as usual. However, we stay wordless for a couple of moments: this was indeed a real miracle of nature, one that must be seen and lived through by everyone lucky enough to live in or visit the path of the lunar shadow on Earth's surface. A total solar eclipse has a mind-transforming power and it is easy to see why so many people become eclipse tourists after the first encounter. We will certainly try to follow-up the next good one, which will be in the United States in 2017. That is barely four more years to go.... ★

A NOTE FROM AUSTRALIA ON THE 2012 TOTAL ECLIPSE

GERRY SAMOLYK (SAH), GREENFIELD, WISCONSIN

The weather along the coast had broken clouds each morning so, I decided to check out the conditions in the high country to the west of Port Douglas, Queensland, Australia (about 65 km north of Cairns), the day before the eclipse. One advantage of this area was a road that ran parallel to the centerline, making last minute travel easy. In the small town of Mount Carbine (about 65 km west of Port Douglas), I met Christos Spyrou, an amateur from Cyprus, along with a number of Australian observers. There was a pub-restaurant in town that became the site of a pre-eclipse party the night before. A local couple invited us to sleep at their farm, so we would not have to make the drive up from the coast in the morning.

Before sunrise on eclipse morning, we could see clouds on the east horizon so Christos and I drove west until those clouds were not an issue. Between 20 and 30 km west of town we found an area with a good east horizon along the road. I set up a tripod with a 300mm lens on a DSLR. Since the totality was only two minutes long, I spent little time taking photos so I could enjoy watching the eclipse. I had a pair of 10 × 50 binoculars with me.

The Sun rose above the coastal clouds when it was less than 25% covered by the moon. The rest of the sky was clear. Venus became easily visible long before totality. After the initial diamond ring, the corona was symmetrical, as is typical during solar maximum. There were a number of bright streamers in all directions. There were many small prominences scattered around the limb. During totality, I took a quick glance to the South and was able to see alpha and beta Centauri along with part of Crux. While looking in that direction, I saw a bright meteor traveling north to south (a first for me during a total eclipse). Christos also saw the meteor, a first for him also. I had the countdown alarm on my wristwatch set to beep a few seconds before the third contact so I could catch the final diamond ring. Like many others around us, we stayed until the final contact.

After the end of the partial, many of us gathered back in Mount Carbine to share our experiences and show photos. This is the third time that I was able to observe an annular and total eclipse six months apart. It also maintained my personal record of never being clouded out during a total (or annular) eclipse (although I have partial clouds at times in the past). ★



Second-contact diamond ring



Solar corona visible during totality

GARY POYNER—VISUAL VARIABLE STAR OBSERVING IN THE UK

KEVIN B. PAXSON (PKV), SPRING, TEXAS

Gary Poyner (PYG) is 54 years old and he lives in Birmingham, England, with his wife of 25 years, Jean, and their two cats, Bonnie and Bramble. Gary is the most prolific visual variable star observer in the UK and one of the leading cataclysmic variable star observers in the world. As of the beginning of December 2012, Gary has a total of 254,866 visual observations and 10,616 CCD observations. Gary is well published and either has authored or co-authored 90 papers, according to a recent search on the NASA ADS system.

Gary became interested in astronomy back in 1965 at the age of seven, observing and drawing Jupiter and other planets with a 60-mm refractor. He later upgraded to a 6-inch $f/8$ reflector and joined the Birmingham Astronomical Society at the age of 12 in 1970. He made his first variable star (VS) observation in 1975, observing Nova Cyg 1975 (V1500 Cyg). After that he was “hooked on these new stars that can appear without warning.” Since that time, Gary has used the following telescopes: a 10-inch $f/6$ reflector, a 16-inch $f/5$ reflector, an 18-inch $f/4.5$ reflector, and a 14-inch Meade GPS. He currently uses a 20-inch $f/4$ reflector as his main instrument and an 8.75-inch reflector for areas of the sky not accessible from his garden observatory.

When Gary began observing VSs in 1975, he had no mentors and he described himself as a “lone wolf.” He had no contact with other observers until he joined the BAA in 1978. He joined “The Astronomer” organization in 1989. Gary learned his visual observing techniques from books, the literature, and experience at the eyepiece. He later joined the AAVSO in 1993. Since that time, Gary has mentored dozens of amateurs in visual observing and finer points and nuances of cataclysmic variables (CV’s).

Gary’s observing locality is challenged by severe light pollution, being located five miles north of the center of Birmingham, the UK’s second largest city. The orange “light dome” is evident and when in season, floodlights from a football club 2.5 miles to the south increase Gary’s light pollution dramatically. “Being in a relatively high crime area, every house in my neighborhood owns a security light, except my own. My next-door neighbor also has a bedroom lamp that illuminates my garden and observatory. To block out stray light from entering my observatory, I keep my hedges high (12 feet) to the North and East and they also act as a security barrier. I have placed wooden screens around the fence of my garden to the South, which prevents light from two security lights, and I have a portable high screen to block the light from my neighbor to the West. All of these measures do help, but the downside is I do lose a fair bit of sky.”

“On the best nights I can see magnitude 5 with the naked eye. Telescopically, the magnitude on an average night is in the mid 15s, but when the Moon is absent and the air is transparent I can see into the 16s. On a few occasions I have been through the magnitude 17 barrier, but the target has to be overhead or to the North with transparent skies. The partially clear nights usually outnumber the clear ones and this is one of the reasons why I went back to using a Dobsonian telescope after owning a Meade 14-inch SCT for a number of years. You just can’t chase holes in clouds with a modern computerized mount! I average about around 100 observable nights per year.”



Gary Poyner with his 20-inch $f/4$ reflector in his garden observatory

The best techniques that Gary uses are averted vision and movement of the stars across the field of view. He once tried an “observing hood,” but the eyepiece kept “misting up,” so he gave that up. Experience with observing in a light polluted environment over time has developed Gary’s technique. “My detailed drawings of planets, especially Jupiter, have helped train my eye to see faint detail (and therefore faint stars) through the eyepiece. I think I’m just quite lucky that I seem to have pretty good eyesight for astronomical observing.”

“For many years I have used TeleView eyepieces, particularly their Naglers. Twelve months ago, I purchased a 10mm (x204) Ethos and 6mm (x340) Delos, both of which are superb eyepieces. The Delos has replaced my 7mm (x291) Nagler as the workhorse eyepiece for faint CVs. I also use a 12mm (x170) Nagler, 14mm (x145) Radian, and very occasionally a 32mm (x64) Plossl.

“I can usually observe 30 to 40 variables per hour and on a good night usually do 175 to 200 observations. I did not set out to be a fast observer, as it is just something that has developed over the years. I never spend more than a couple of minutes looking for a very faint star. My magnitude-17 stars have all been seen within 20 to 30 seconds. I don’t use charts either, unless there has been an update. I know the positions of around 500 variables, along with the positions and magnitudes of all the comparison stars. I can move from variable to variable relatively quickly, most often without star hopping. The 60mm finder scope on the 20-inch is excellent for this. I always begin the night in the West and then move to the East as the night progresses. If there are clouds, I just drop into holes and gaps and make the estimate.”

Gary is a CV enthusiast. “The allure of cataclysmic variables is the surprise factor of seeing a star in outburst, whether it is SS Cyg every 50 days or

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UK OBSERVER
CONTINUED...

UZ Boo every 10 years. One of the great things about VS observing is the unpredictability. You never know what you are going to see when you look through the eyepiece! But there is also the science behind these systems that holds a fascination. I always try to imagine what's going on whenever I see some unusual behavior in a CV. I never think of them as a single point of light. Our understanding of CV's is also rapidly changing, so it never, ever gets dull."

"I also love symbiotic stars, because they can be just as exciting and unpredictable as dwarf novae, yet show the subtle variations of a system which is accreting from an envelope rather than a mass stream, and one where the secondary star plays a significant role in the variations we see. RCB stars are wonderful too. These are some of the rarest types of star in the galaxy and we are making nightly observations of how they behave! Ideas are changing on how these objects evolve—final flash or double degenerate? I try to observe all the RCB's I can, either with my own scope or remotely. I have a couple of Mira's, too, which I have been observing for so long I haven't got the heart to drop.

"My favorite star is DY Per. It's an RCB that lies in a lovely star field and it has a period! How strange is that? In 1991 Margareta Westlund (the late Swedish observer) sent me a chart for DY Per saying no one was observing it and that it deserved further attention. I have a complete light curve of it to present day. I've also corresponded with the Latvian professional astronomer Andrejs Alksnis on DY Per and analysis of my own data matches his derived period very closely! Another favorite is V1329 Cyg, which is a slow symbiotic nova. It has a lovely light curve that is far from predictable, and is bright enough (magnitude 12.0 to 14.5) to be seen in all conditions. Lastly, V1413 Aql is another symbiotic star, but it is one that eclipses. Its intrinsic brightness varies quite a bit, too. I have John Bortle to thank for bringing this one to my attention in 1994."

Gary also does remote CCD photometry, using the Bradford 14-inch in the Canary Islands and AAVSONet telescopes. "Five years ago I set up a program within the BAAVSS (with the help of Professor Boris Gaensicke) to monitor a list of under-observed magnetic polars and I used AAVSONet telescopes SRO-50 and W-28. I also used SRO-50 to monitor V630 Cas at minimum. Jeremy Shears and I wrote a paper on V630 Cas for the *BAA Journal* in 2010. I believe visual and CCD data are complementary and both can be used to good effect to detect and study CV outbursts."

"I have made many CV outburst detections during the 1980s and 1990s (many for the first time) before these objects became well known or even charted. I also monitor novae over long periods of time. Novae are often forgotten once they have faded, but I observe them and extend the light curve for as long as possible. Sometimes the behavior of a nova many years past its eruption is just as interesting as the initial transition phase. Just look at V723 Cas, HR Lyr, and Q Cyg, for example! I also observed intense flickering in 1RXSJ053234.9+624755 during the superoutburst of April 2005. Jeremy Shears and I wrote a paper for the *BAA Journal* on the outburst, which contained details of this amazing flickering. Dr. Chris Lloyd believes that this phenomenon was real."

Gary has received many awards for observations and contributions to variable star science. "I was awarded the BAA Steavenson Award for 'Outstanding

Contributions to Observational Astronomy' in 2000, the AAVSO Director's Award in 2003, the BAA VSS Charles Butterworth Award in 2008 for passing 200,000 visual observations (which was presented at the joint BAAVSS/AAVSO meeting in Cambridge, England), and the George Alcock Award from 'The Astronomer' magazine in 2011 for 'Contributions to Variable Star Astronomy' and to the magazine."

"I'm not a great writer of papers, but I do enjoy getting involved when possible. I guess I'm lazy, as I've been writing a DY Per paper for 10 years! I have two additional papers awaiting publication in the *BAA Journal*. It's pretty tough getting a paper through the refereeing process in the *BAAJ*, so I was delighted when my V1413 Aql paper was accepted. I also managed to get on the author list for a paper (letters) published in *Nature* on OJ287 in April 2008, as I coordinated international observing projects for both the 1995 and 2007 outbursts."

Gary believes the biggest threat to visual observing, at least in the UK, is the lack of young people interested in such an activity. "The challenge is to find them, interest, and educate them and keep them interested. I give VS talks to many groups around the country and the interest level is high, but it's difficult to motivate people to go outside and make the observations. The general feeling towards visual VS observing is that it can't be done because of light pollution, which is of course not true. I see more and more observers moving to CCD and the old school visual people slowly fading away. However, I do see automated surveys being the major stumbling block for 'new' people to come into variable star observing, particularly visual CV work. The disciplines for CCD photometry are quite challenging and many people find it too much of a task to undertake. Data from CCDs and surveys can only get better as technology improves, thus expanding our knowledge of the variables that we love to look at. I also see a bright future for amateur spectroscopy."

Gary doesn't see his observing program changing too drastically in the future, "other than adding new objects or dropping a few of the fainter CVs as light pollution increases. I don't feel threatened by CCD surveys at all. It wouldn't matter to me if every CV outburst were picked up by a survey. I observe variables because I enjoy it and I find them incredibly interesting. The rest is a bonus."

Gary has other interests besides variable stars. "I enjoy observing comets, but don't have the quality of sky to observe them seriously. I organize various meteor watches for my society throughout the year, too. I am also interested in the weather and I hope to have an automated weather recorder in the next few months. I enjoy football (soccer), rugby, and cricket in the sporting field. I'm absolutely passionate about history, particularly Bronze Age to post-Roman British history. I've visited hundreds of ancient sites throughout the UK and have a huge photographic record of them. I'm also a hard rock fan and have been since the late 1960s. I often listen to Jimi Hendrix, Black Sabbath, and others while observing (with headphones, of course)."

Gary truly has a great passion for visual variable star observing. For more information, please check out Gary's excellent variable star page at: <http://www.garypoyner.pwp.blueyonder.co.uk/varstars.html>. CV observers may wish to check out the BAA VSS Recurrent Objects Program (ROP) and the Long Term Polars Program sections of his website. Keep up the great work, Gary! ★

USING AAVSO SUNSPOT OBSERVATIONS, THE NATIONAL RESOURCES CANADA, MOUNT WILSON OBSERVATORY, AND ROYAL GREENWICH OBSERVATORY DATA TO LOOK INTO SUNSPOT CYCLES

RODNEY HOWE (HRHA), AAVSO SOLAR SECTION CHAIR

The AAVSO Solar Section has collected digitized raw data from sunspot observers for well over two years now. (The AAVSO has been collecting paper/electronic sunspot reports from sunspot observers since the 1940s.) We've built a database to house each observer's raw group counts, sunspot counts, and the calculated Wolf number: $(10g+s)$, where g =groups and s =sunspots. These data look back at the last part of solar minimum from May 2010 to January 2011, and the first six months of the beginning of solar cycle 24, from February through July 2011. On average from 50 to 60 solar observers submit data each month (see Table 1). About half of them have a long-standing K factor (observer's overall rating), which is used to calculate the American Relative sunspot number $R_a = k*(10g+s)$, which is posted in the AAVSO monthly *Solar Bulletin* (<http://www.aavso.org/solar-bulletin>).

In taking a look back through these AAVSO solar data it is possible to compare them with the 10.7-cm Solar Flux Index (SFI) and daily Solar Flux Unit (SFU) values collected by National Resources Canada (NRC) Space Weather Canada at their Penticton Observatory (<http://www.spaceweather.ca/sx-eng.php>). Figure 1 shows a year of AAVSO and NRC sunspot data.

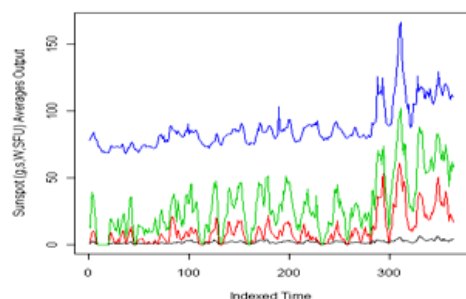


Figure 1 shows the AAVSO group counts in black, sunspot counts in red, and calculated Wolf number $(10g+s)$ in green. The top blue line is the NRC's 10.7-cm radio Solar Flux Index averages for the same days. These AAVSO and NRC data cover one year from May 2010 through May 2011. The X-axis is in days.

It's pretty easy to see the 25–27-day solar rotation cycle with AAVSO observer sunspot counts. If we use a 25-day lag period for an autocorrelation function (ACF) scan, the curve shows up where the sunspot count dips a week or so after the beginning of the solar rotation, as seen in Figure 2.

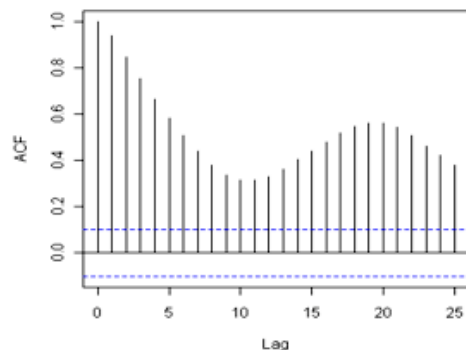


Figure 2 shows a consistent dip in the curve over 14 solar rotations. Since the solar rotation of 25–27 days is slightly faster than the lunar rotation of 28 days, we can't quite line everything up on a monthly cycle. But, for the most part the sunspot counts drop close to zero between the 5th and the 15th of the month during one year from May 2010 through May 2011.

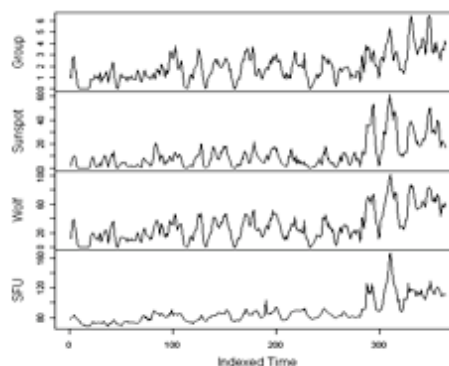


Figure 3 shows how the group, sunspot, and NRC SFU daily averages track through the last of the solar minimum until about January 2011, when cycle 24 began in earnest. The group counts also show a lot of variability, which will affect the Wolf number as the group count is "amplified" by a factor of 10. Wolf Number = $(10g+s)$.

When looking at all these sunspot and group data it's easy to see the variability in each and see the dependencies and what happens at the beginning of solar cycle 24, which began around the first of February 2011. It seems the group count in Figure 3 may have more variability in these data than any of the other counts, especially when compared to variability of the sunspot counts.

We can draw pair-wise comparison plots among these data and see how well the AAVSO sunspot counts and the NRC SFU match. Figure 4 shows some trending lines and pair-wise comparisons.

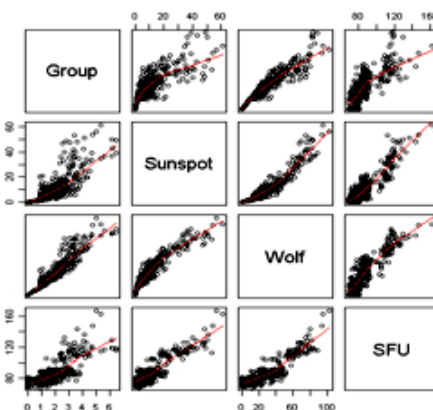


Figure 4 shows how the group counts begin to scatter during the rise in solar activity. The sunspot count and NRC SFU are better confined to a root mean square fitted line. The Solar Flux Unit (SFU) data show a definite split and clustering between solar minimum and the start of solar cycle 24.

One way to visually look at the solar rotations—from the solar minimum and into the start of cycle 24—is to look at the magnetic plage strength graphs from the Mount Wilson Observatory (MWO) in southern California. A plage is a magnetic field in an active region. Mount Wilson Sunspot Index data come from: http://obs.astro.ucla.edu/150_data.html#plots.

In Figure 5 we've taken MWO plage data from June 2010 through June 2011 and counted the peaks of the active region plage. The plage generally surrounds the sunspot groups of an active region, and is a good indicator of the intensity of these magnetic regions, and may be like the 10.7-cm SFI, a surrogate for sunspot counts.

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SUNSPOT CYCLES CONTINUED...

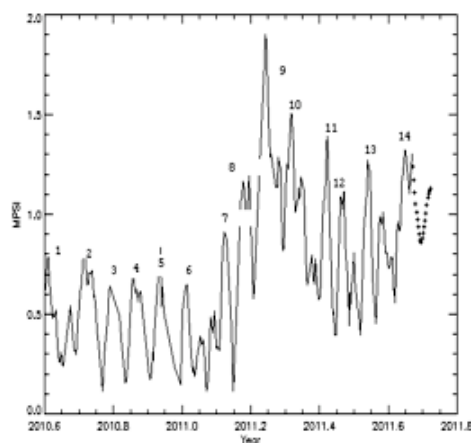


Figure 5. MWO Magnetic Plage Strength Index data for June 2010 through June 2011 show 14 peaks of high intensity plage (magnetic fields in active regions). Given a 365-day year these 14 peaks represent ~26-day rotation period, a reflection of the 25–27-day solar rotation we see in the AAVSO sunspot data (Figure 2). Also seen is the start of solar cycle 24.

It should be interesting as we continue to collect sunspot count data over cycle 24 to see how our observers' sunspot counts compare to historical data from previous cycles and to other observatories' indices. One question we might ask is why during the solar rotation are there times when the sunspots disappear? And, will we find these quiet times (and areas on the sun) occurring throughout the entire cycle 24?

If we compare AAVSO sunspot numbers from solar minimum (Figure 6) with numbers collected for the past six months, when the sunspot counts are increasing (Figure 7), we can see from the AAVSO VStar program's period analysis a reflection of the solar rotation.

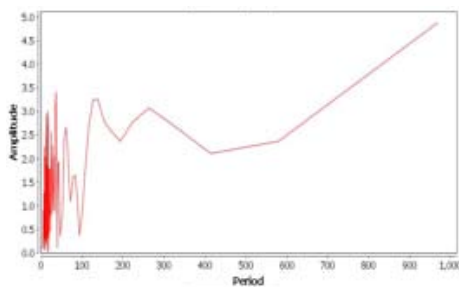


Figure 6. Even though there may be few sunspots detectable on a quiet sun, this VStar period analysis shows there are many hidden periods during the 25–27-day solar rotation for the last part of the solar minimum in 2010. Data used are AAVSO sunspot counts from May through December 2010.

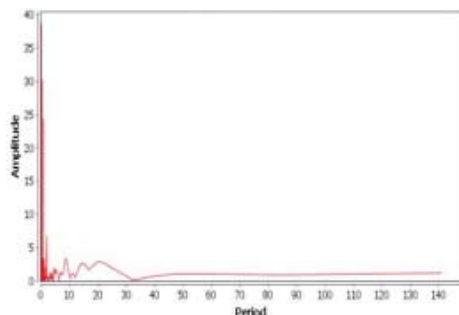


Figure 7. A distinct period spike is seen around the 10-day period and a dip past the 25–27-day solar rotation. It should be easier to pick out these periods when the sun becomes more active and sunspots more visible. Data used are AAVSO sunspot count from January through June 2011.

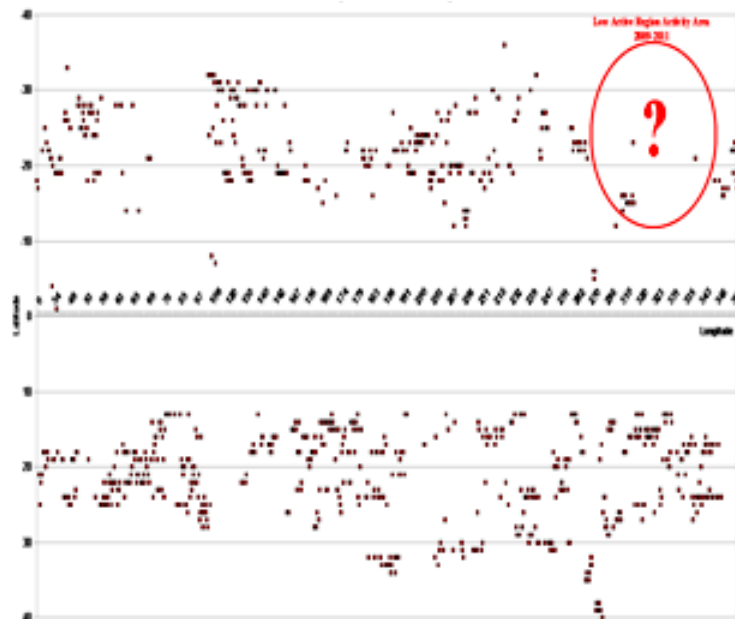


Figure 8. Circled is a distinct location on the sun where over a two-year period there were few sunspots. As this is also a reflection of the 25–27-day solar rotation, it gives a more detailed topological view of where on the sun we do not see sunspots, and reflects that at certain times (days) during the solar rotation there are few to no sunspot counts. These data represent the accumulated sunspot counts and cover 27 or more solar rotations for this time (2009 to 2011). X axis is degrees longitude on the sun. These data are from the Royal Greenwich Observatory, <http://solarscience.msfc.nasa.gov/greenwch.shtml>

However, the only way we can look further back into the solar minimum will be to look at other observatories and their data. In Figure 8 we have taken data from the Royal Greenwich Observatory in the UK (<http://solarscience.msfc.nasa.gov/greenwch.shtml>) and plotted the sunspot latitude and longitude for both northern and southern hemispheres of the sun from 2009 to the beginning of 2011.

References

- AAVSO Solar Bulletin (<http://www.aavso.org/solar-bulletin>).
- National Resources Canada (NRC), Space Weather Canada, Penticton Observatory (<http://www.spaceweather.ca/sx-eng.php>).
- Mount Wilson Observatory (http://obs.astro.ucla.edu/150_data.html#plots).
- Royal Greenwich Observatory data (<http://solarscience.msfc.nasa.gov/greenwch.shtml>). ★

LOOKING AT LEGACY STARS

STARS OBSERVED RECENTLY AND RECOMMENDATIONS FOR THE NEXT FEW MONTHS

MATTHEW TEMPLETON (TMT), AAVSO SCIENCE DIRECTOR
SARA J. BECK (BSJ), AAVSO TECHNICAL ASSISTANT
ELIZABETH O. WAAGEN (WEO), AAVSO SENIOR
TECHNICAL ASSISTANT

This column, introduced in *AAVSO Newsletter 54* (October 2012), is a quarterly summary of popular and important targets of the previous quarter as observed by the AAVSO community. This will help keep the observers up to date on the observations being submitted to the AAVSO archives, and more importantly on what stars may need improved coverage by the community.

We encourage observers to keep a smaller subset of variables at the top of their observing planning via the Legacy and Program lists for LPVs and CVs (see <https://sites.google.com/site/aavsolpvsection/Home/lpv-files> for the LPV lists, and <https://sites.google.com/site/aavsocvsection/aavso-legacy-cvs> for the CV list). These lists were established to provide guidance on which stars had the best-observed light curves and thus had greatest potential for science if those stars continued being observed. There are thousands of other stars that are still regularly observed, and many objects not on the lists above remain worthy targets for variable star observers, visual and CCD alike.

Target lists for observers vary throughout the year, and the number of observations received changes depending upon a star's observability in a given season as well as whether there is special interest—for example, an observing campaign or recent notable activity. Quarterly totals also help to highlight what new and interesting data sets the AAVSO now holds.

Below are the most- and least-observed stars of the LPV and CV Legacy lists, showing the number of visual and CCD observers ($N_{(vo)}$ and $N_{(co)}$) along with the total number of nights observed ($N_{(von)}$ and $N_{(con)}$).

Top ten best-covered stars of the LPV Legacy program, as measured by number of nights observed, 2012 October 1 through 2012 December 31:

Name	Con	R. A. (J2000)	Dec. (J2000)	$N_{(vo)}$	$N_{(von)}$	$N_{(co)}$	$N_{(con)}$
CH Cyg	Cyg	19:24:33.06	+50:14:29	56	84	10	66
Z UMa	UMa	11:56:30.22	+57:52:17.6	39	83	1	6
AF Cyg	Cyg	19:30:12.84	+46:08:52	47	82	0	0
W Cyg	Cyg	21:36:02.49	+45:22:28.4	40	80	0	0
omi Cet	Cet	02:19:20.78	-02:58:39.5	44	77	4	23
rho Cas	Cas	23:54:23.03	+57:29:57.8	40	76	1	10
U Del	Del	20:45:28.23	+18:05:24	32	75	0	0
RY UMa	UMa	12:20:27.32	+61:18:34.6	25	73	1	3
R And	And	00:24:01.94	+38:34:37.3	41	70	7	20
miu Cep	Cep	21:43:30.49	+58:46:48	28	70	3	32

$N_{(vo)}$ = number of observers making visual observations

$N_{(von)}$ = number of nights with visual observations

$N_{(co)}$ = number of observers making ccd observations

$N_{(con)}$ = number of nights with ccd observations

Twelve least-observed stars of the LPV Legacy program for the quarter 2012 October 1 through 2012 December 31:

Name	Con	R. A. (J2000)	Dec. (J2000)	$N_{(vo)}$	$N_{(von)}$	$N_{(co)}$	$N_{(con)}$
R Car	Car	09:32:14.59	-62:47:19.9	5	8	0	0
R CVn	CVn	13:48:57.05	+39:32:33.2	7	8	1	2
R Cnc	Cnc	08:16:33.82	+11:43:34.5	6	7	2	5
S Boo	Boo	14:22:52.91	+53:48:37.2	4	6	2	4
R Cen	Cen	14:16:34.31	-59:54:49.2	3	6	0	0
Z Pup	Pup	07:32:38.05	-20:39:29.2	4	6	0	0
R Vir	Vir	12:38:29.94	+06:59:18.9	2	6	0	0
T Cen	Cen	13:41:45.55	-33:35:50.5	3	4	0	0
S Her	He	16:51:53.91	+14:56:30.6	4	4	1	1
R Hya	Hya	13:29:42.77	-23:16:52.7	1	2	0	0
R LMi	LMi	09:45:34.27	+34:30:42.8	1	2	2	5
SS Vir	Vir	12:25:14.4	+00:46:10.9	1	1	0	0

Observations are strongly encouraged as these stars become observable. Observers should consider adding any of these stars to their observing programs to improve coverage of the legacy stars.

Top ten best-covered stars of the CV Legacy program, as measured by number of observers and nights observed, 2012 October 1 through 2012 December 31:

Name	Con	R. A. (J2000)	Dec. (J2000)	$N_{(vo)}$	$N_{(von)}$	$N_{(co)}$	$N_{(con)}$
SS Cyg	Cyg	21:42:42.77	+43:35:09.7	77	87	27	84
RX And	And	01:04:35.53	+41:17:57.6	40	85	18	85
CH Cyg	Cyg	19:24:33.05	+50:14:29.2	56	84	10	66
EG And	And	00:44:37.18	+40:40:45.6	32	81	2	5
RU Peg	Peg	22:14:02.57	+12:42:11.3	30	81	14	77
Z And	And	23:33:39.94	+48:49:06	37	81	5	11
Z Cam	Cam	08:25:13.18	+73:06:39	23	73	5	29
IP Peg	Peg	23:23:08.58	+18:24:59.5	12	69	6	28
DX And	And	23:29:46.69	+43:45:04.4	11	69	6	7
SS Aur	Aur	06:13:22.47	+47:44:25.6	20	67	7	19

Stars in CV Legacy list with no visual or CCD observations during the quarter from 2012 October 1 through 2012 December 31:

Name	Con	R. A. (J2000)	Dec. (J2000)	$N_{(vo)}$	$N_{(von)}$	$N_{(co)}$	$N_{(con)}$
OY Car	Car	10:06:22.23	-70:14:04.3	0	0	0	0
SY Mus	Mus	11:32:10.01	-65:25:11	0	0	0	0
EX Hya	Hya	12:52:24.22	-29:14:55.5	0	0	0	0
V0485 Cen	Cen	12:57:23.26	-33:12:06.2	0	0	0	0
NN Cen	Cen	13:14:15.61	-60:52:46	0	0	0	0
V0803 Cen	Cen	13:23:44.53	-41:44:29.2	0	0	0	0
BV Cen	Cen	13:31:19.47	-54:58:33	0	0	0	0
V0504 Cen	Cen	14:12:49.18	-40:21:37.2	0	0	0	0
AE Cir	Cir	14:44:51.29	-69:23:34.2	0	0	0	0
BR Lup	Lup	15:35:53.09	-40:34:04.6	0	0	0	0
LX Ser	Ser	15:38:00.08	+18:52:03.1	0	0	0	0
HP Nor	Nor	16:20:49.54	-54:53:22.3	0	0	0	0
IK Nor	Nor	16:25:28.86	-55:20:02.2	0	0	0	0
V2051 Oph	Oph	17:08:19.11	-25:48:30	0	0	0	0
BF Ara	Ara	17:38:21.32	-47:10:40.9	0	0	0	0

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LEGACY STARS
CONTINUED...

MU Ser	Ser	17:55:52.76	-14:01:16.8	0	0	0	0
V0618 Sgr	Sgr	18:07:56.89	-36:29:36.4	0	0	0	0
V1830 Sgr	Sgr	18:13:50.65	-27:42:20.6	0	0	0	0
V0533 Her	Her	18:14:20.5	+41:51:22.5	0	0	0	0
FM Sgr	Sgr	18:17:18.25	-23:38:27.4	0	0	0	0
V0441 Sgr	Sgr	18:22:08.1	-25:28:47	0	0	0	0
V0446 Her	Her	18:57:21.58	+13:14:28.8	0	0	0	0
PW Vul	Vul	19:26:05.05	+27:21:57.7	0	0	0	0
LV Vul	Vul	19:48:00.7	+27:10:19.3	0	0	0	0
V0476 Cyg	Cyg	19:58:24.46	+53:37:06.7	0	0	0	0

As above, observations are strongly encouraged as these stars become observable and observers should consider adding any of these stars to their observing programs to improve coverage of the legacy stars.

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PHOTOELECTRIC PHOTOMETRY PROGRAM UPDATE

MATTHEW TEMPLETON (TMT), AAVSO SCIENCE DIRECTOR

The previous quarter starting September 15, 2012, was another productive one for the AAVSO PEP program, with ten AAVSO PEP observers making 226 observations of 57 different stars.

Our most prolific observer of the season was Section Chair Jim Fox (FXJ), who tallied 43 V-band measures and 13 B-band measures during the quarter for a total of 56. Charles Calia (CCB) was next with 53 V-band measures, followed by Henri Van Bommel (VBR), with 33 V-band measures. These were followed by Tom Peairs (PTX) with 17 measures; new PEP observer Pat Rochford (RPT) with 16; Erwin Van Ballegoij (BVE) with 13; Adrian Ormsby (OAD) with 12; John Martin (UIS01), 11; infrared observer Thomas Rutherford (RTH) with six J- and five H-band observations; and Hans Nielsen (NHS), 4.

P Cygni received the most concentrated attention again this quarter, with 32 observations total. There were too many other stars to mention in the list, but those receiving more than five observations were: campaign target CH Cygni (24 observations), epsilon Aurigae (14), EG Andromedae (12), V395 Vulpeculae (11), AC Herculis (9), II Pegasi (8), and omicron Andromedae (7).

Since it is now January, I'll renew my perennial call for Betelgeuse observations. This star was previously very well covered by PEP observers, but has not been well observed in several years. It's a difficult target, but very interesting astrophysically as a pulsating supergiant.

As I write this, we're preparing a campaign announcement on the star b Persei (HD 26961 = SAO 24531). Dr. Robert Zavala (US Naval Observatory) contacted AAVSO Headquarters in late December alerting us to a possible eclipse on 2013 January 28 around 20:24 UT $\pm$ 1.5 hours. It's unknown at this point if the tertiary star of this triple system will substantially eclipse the inner short-period system, but it's a great opportunity to do interesting observations in support of this target of ground-based optical interferometry. By the time you read this, we will have issued an Alert Notice on this campaign, so please check the AAVSO website and participate in the campaign if you can. At V = 4.5, this is an ideal target for PEP observers.

Clear skies, Happy Holidays, and a Happy New Year to everyone. ★

AAVSO OBSERVING CAMPAIGNS UPDATE

ELIZABETH O. WAAGEN (WEO),
AAVSO SENIOR TECHNICAL ASSISTANT

2012 turned out to be probably the busiest year in the AAVSO's history for observing campaigns on variable stars. There was something for everyone among the very varied campaigns and targets—so many types of variables and all types of observing! 20 (of 25) *AAVSO Alert Notices* and 27 (of 54) *AAVSO Special Notices* related to campaigns were issued in 2012. Each campaign is summarized on the AAVSO Observing Campaigns page (<http://www.aavso.org/observing-campaigns>), which also includes complete lists of all AAVSO *Alert* and *Special Notices* issued for each campaign.

Campaigns concluded since October 2012

The astrometric campaign on **SS Cyg** organized by Dr. James Miller-Jones (International Centre for Radio Astronomy Research, Curtin University, Perth, Western Australia) in August 2011 was very successfully concluded in late October—early November 2012. He requested monitoring of this most popular northern CV and immediate notification of outburst during a specific window each month to facilitate VLBA and e-MERLIN (the UK's VLBI National Radio Astronomy Facility operated by the University of Manchester) observations and to provide simultaneous optical observations (*AAVSO Alert Notice 445*, and *AAVSO Special Notices* #258, 279, and 303). He had three sets of observations available to him, so over the 14 months the campaign lasted, observers followed SS Cyg closely and notice of each outburst that occurred within the windows was relayed to Dr. Miller-Jones immediately. Thanks to AAVSO observations and very prompt reporting and notification, the VLBA/e-MERLIN observations of the three outbursts he observed were very successful. Analysis of the data is underway. Dr. Miller-Jones was extremely appreciative of the superb AAVSO coverage of SS Cyg, especially over so many months.

In the campaign organized by Dr. Koji Mukai (Universities Space Research Association/NASA) on **RU Peg** (*AAVSO Alert Notice 459*), AAVSO monitoring was requested in order to detect an outburst to enable target-of-opportunity observations by the Swift satellite. The campaign was semi-successfully concluded. Shortly after the campaign's announcement, RU Peg went into outburst. It was caught early by AAVSO observers and Dr. Mukai was notified, and the Swift observations were triggered and carried out. However, due to the outburst happening on the weekend it took the Swift team longer to begin the observations. Also, the outburst was an anomalous one (rise taking several days) rather than a normal outburst with a fast rise to maximum. As a result, the Swift observations did not cover all of the phenomena that Dr. Mukai had hoped for, although the data they obtained (and the complementary AAVSO data) will be interesting to analyze. Dr. Mukai was very appreciative of the excellent AAVSO coverage and timely notification, and he plans to revisit RU Peg in the future, and looks forward to AAVSO assistance again.

Campaigns initiated since October 2012

Four campaigns were initiated between October 1 and December 31.

In October, Dr. Noel Richardson (Université de Montreal, formerly at Georgia

State University), requested monitoring of **HD 5980** in support of his CTIO multiwavelength campaign (*AAVSO Alert Notice 472*). AAVSO assistance was requested in order to update the eclipse ephemeris for this system to schedule the CTIO observations and then to provide simultaneous optical coverage during the CTIO observations. This campaign will run at least through February 2013.

In November, Darryl Sergison (University of Exeter) requested visual observations, multiband photometry, and spectroscopy from AAVSO observers in support of his campaign to study the environments of **six T Tauri stars** (*AAVSO Alert Notice 473*). This campaign runs through 2013 at least; to date three of the six stars—**RY Tau**, **DN Tau**, and **DR Tau**—have been selected and are being observed.

In mid-December, Drs. Tony Moffat (Université de Montreal), Michael Corcoran (NASA GSFC), Noel Richardson (Université de Montreal, formerly at Georgia State University) and others requested AAVSO assistance in obtaining photometry and spectroscopy of **delta Ori (Mintaka)** in support of their Chandra and MOST observations (*AAVSO Alert Notice 474*). The campaign is underway and continues through January 2013.

A campaign organized by Dr. Michael Shara (American Museum of Natural History, Columbia University) to monitor the dwarf nova **U Gem** to enable and support HST/COS ultraviolet observations was also initiated in mid-December (*AAVSO Alert Notice 475*). U Gem was declining from an outburst as the campaign was announced, so the campaign will last at least into the spring, when the next outburst of U Gem is anticipated.

Campaigns in progress

The large campaign on **cataclysmic variables** organized by Drs. Boris Gaensicke (Warwick University), Joseph Patterson (Columbia University, Center for Backyard Astrophysics), and Arne Henden (AAVSO), and the 13 other consortium members astronomers, including Drs. Ed Guinan, Knox Long, and Paula Szkody, is well underway (*AAVSO Alert Notice 471* and many *AAVSO Special Notices*). As of the end of 2012, 8 targets from the original list of 40 have been successfully observed by the Hubble Space Telescope Cosmic Origins Spectrograph (HST COS). These observations were possible thanks to the efforts of AAVSO observers worldwide who monitored the targets to be sure they would be faint enough for HST to observe safely. After a brief break over Christmas and New Year's, the campaign has resumed with full intensity, and observers are urged to continue their multiband photometry, spectroscopy, and visual observations as best their equipment and schedules permit. Dr. Gaensicke has reported extremely interesting findings to date, including some that were unexpected. He is very grateful for the excellent AAVSO support and looks forward to this fruitful collaboration continuing.

The MOST campaign on the novalike (VY Scl subtype) cataclysmic variable **TT Ari** continues (*AAVSO Alert Notice 469*). As reported in *AAVSO Newsletter 54* (October 2012) Principal Investigator Dr. Nikolaus Vogt has been very pleased with the coverage provided by the AAVSO to date.

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CAMPAIGNS UPDATE
CONTINUED...

About the campaign since October 1, he writes: "...Between 6th and 20th October MOST will monitor TT Ari exclusively without interruptions. As far as I know, there is no standard magnitude calibration of the satellite. All differential magnitudes are referred to the general average. Therefore, at least occasional simultaneous monitoring between MOST and AAVSO will be very important, in order to define the magnitude zero point, as well as to compare the accuracies of both observing methods, ground-based and satellite." These observations were successfully carried out, and analysis is underway.

Dr. Margarita Karovska's HST and Chandra campaign on **CH Cyg** (*AAVSO Alert Notice 454* and *AAVSO Special Notices #267, 294, and 320*) has been continued again. Dr. Karovska has been very pleased with all of the coverage so far and is urging continued coverage, especially in V and B. CH Cyg's most recent cycle was not typical and so continued coverage is important to its analysis. Also, this campaign marks the first time CH Cyg has been observed extensively by the AAVSO in B, she notes, and that is very exciting.

Dr. Noel Richardson's multiwavelength campaign on the luminous blue variable prototype **S Dor** has been extended at least through the 2012–2013 observing season (*AAVSO Alert Notice 453*, *AAVSO Special Notice #280*, *AAVSO Special Notice #293*, and S Doradus Telegram on organizer's website).

J1407 (1SWASP J140747.93-394542.6)—determine eclipse behavior of transiting ringed substellar companion (*AAVSO Alert Notice 462*)

Nova Oph 2012—nova (*AAVSO Alert Notice 457*)

Ernst Pollmann's campaign on the S Dor (= Luminous Blue Variable) variable **P Cyg** (*AAVSO Alert Notice 440*) **HAS BEEN EXTENDED** "for several more years," at least through the 2014 season.

3C 273 and 3C 279—blazar-type quasars (*AAVSO Alert Notice 430*, AAVSO campaign page <http://www.aavso.org/campaign-blazars-3c-273-and-3c-279>)

HBC 722 and VSX J205126.1+440523—Young Stellar Objects (*AAVSO Alert Notice 425*)

HMXBs and SFXTs—High-Mass X-ray Binaries and Super Fast X-ray Transients, Dr. Gordon Sarty's list (*AAVSO Alert Notices 348, 354, and 377*, *AAVSO Special Notices #118, #129, #143, #213, and #220*, and description of research program in *JAAVSO*, Vol. 35, p. 327; article viewable at <http://adsabs.harvard.edu/abs/2007JAVSO...35..327S>)

Blazars—Dr. Markus Boettcher's list (*AAVSO Alert Notice 353* at <http://www.aavso.org/node/1555/451>)

QX Pup—Mira variable (<http://www.aavso.org/qx-pup>)

Novae

After a wild several months, 2012 concluded quietly as far as novae went. No galactic novae were discovered between October 1 and December 31.

2013 is off to a very busy start and promises to be as active or moreso than 2012—please keep observing and participating in as many campaigns as your schedule and equipment permit!

The astronomers and we at AAVSO Headquarters are grateful to all of you who are participating in AAVSO Observing Campaigns, and we thank you for your contributions. You have been and continue to be a vital part of variable star research, so stay tuned, get plenty of rest, and keep your equipment at the ready! ★

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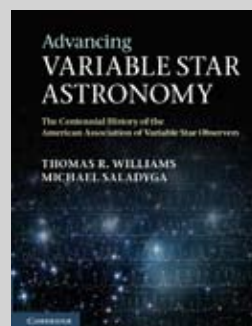
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FEBRUARY 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 6 3 2 5	2 6 3 2 6
3 6 3 2 7	4 6 3 2 8	5 6 3 2 9	6 6 3 3 0	7 6 3 3 1	8 6 3 3 2	9 6 3 3 3
10 6 3 3 4	11 6 3 3 5	12 6 3 3 6	13 6 3 3 7	14 6 3 3 8	15 6 3 3 9	16 6 3 4 0
17 6 3 4 1	18 6 3 4 2	19 6 3 4 3	20 6 3 4 4	21 6 3 4 5	22 6 3 4 6	23 6 3 4 7
24 6 3 4 8	25 6 3 4 9	26 6 3 5 0	27 6 3 5 1	28 6 3 5 2		

MARCH 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 6 3 5 3	2 6 3 5 4
3 6 3 5 5	4 6 3 5 6	5 6 3 5 7	6 6 3 5 8	7 6 3 5 9	8 6 3 6 0	9 6 3 6 1
10 6 3 6 2	11 6 3 6 3	12 6 3 6 4	13 6 3 6 5	14 6 3 6 6	15 6 3 6 7	16 6 3 6 8
17 6 3 6 9	18 6 3 7 0	19 6 3 7 1	20 6 3 7 2	21 6 3 7 3	22 6 3 7 4	23 6 3 7 5
24 6 3 7 6	25 6 3 7 7	26 6 3 7 8	27 6 3 7 9	28 6 3 8 0	29 6 3 8 1	30 6 3 8 2
31 6 3 8 3						

Moon calendars courtesy StarDate online

<http://stardate.org/nightsky/moon/>

THE AAVSO MENTOR PROGRAM

Since the earliest days of the AAVSO, experienced observers have helped new observers by corresponding, answering questions, and even providing personal guidance at the telescope.

If you would like to talk with an experienced variable star observer, contact the AAVSO and we will put you in contact with the mentor program coordinator, Mike Simonsen. Just send us an email (mentor@aauso.org), or call 617-354-0484 to let us know you are interested in this program.

Ideally, Mike will be able to provide you with names, addresses, and phone numbers of active AAVSO observers near you. If there are none located in your area, he can at least provide you with more distant contacts. A simple phone chat with an experienced observer may provide all the feedback you need to continue progressing as an AAVSO observer.

Visit the AAVSO mentor program webpage:

<http://www.aauso.org/mentor-program>



BY POPULAR DEMAND!

A set of twenty pdf commemorative posters exhibited at AAVSO Headquarters is available for downloading from our ftp site.

The posters show portraits of the AAVSO's Directors, Presidents, Secretaries, Treasurers, Council members, and Staff from 1911 to 2011, and the top Visual, CCD, PEP, and Photographic/Photovisual observers. For more information go to: <http://www.aauso.org/aauso-100th-anniversary-commemorative-posters>

or use this link:

<http://tinyurl.com/cge9t9s>

THE AAVSO
WALTER A. FEIBELMAN SUITE

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.aauso.org/walter-feibelman-guest-suite>.



See the following pages for important information about membership renewals and contributions.

JOIN THE AAVSO!

AAVSO 2013 New Member Form

Please send application, first year's dues, and application fee to:
AAVSO, 49 Bay State Road, Cambridge, MA 02138, USA

Date: _____

Full Name: _____

Full Address: _____

Telephone 1: _____ Telephone 2: _____

E-Mail: _____

Birth Date: _____ Vocation: _____

Telescopic Equipment: _____

Astronomical Experience (if any): _____

How did you learn about the AAVSO? _____

Types of Membership Offered and Dues

Annual:	Adult	US \$5.00 per month
	Associate (Under 21)/Pension/Limited Income	US \$2.50 per month
Sustaining:		US \$10.00 per month

Membership is paid through the end of the year, starting with the current month.

All applicants also add a one-time, \$10.00 application fee.

*Please note that if joining in September–December, the following year's dues are already being collected, so we request that you pay for the end of this year and for the following year.

Please consult the following table to find out how much to pay, including application fee.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept*	Oct*	Nov*	Dec*
Annual	\$60.00	\$55.00	\$50.00	\$45.00	\$40.00	\$35.00	\$30.00	\$25.00	\$80.00	\$75.00	\$70.00	\$65.00
A/P/LI	\$30.00	\$27.50	\$25.00	\$22.50	\$20.00	\$17.50	\$15.00	\$12.50	\$40.00	\$37.50	\$35.00	\$32.50
Sustaining	\$120.00	\$110.00	\$100.00	\$90.00	\$80.00	\$70.00	\$60.00	\$50.00	\$160.00	\$150.00	\$140.00	\$130.00

Dues (see chart): US \$ _____ **Application fee:** US \$ 10 _____

Donation (optional): US \$ _____ to _____ fund (see box on right)

Total payment (dues + fee + donation): US \$ _____

Contributions (see last page for descriptions):

AAVSO Building Fund	\$ _____
Janet A. Mattei Research Fellowship	\$ _____
Margaret Mayall Assistantship	\$ _____
Member Sponsorship Fund	\$ _____
AAVSO General Fund	\$ _____

_____ I have enclosed a check / money order _____ Please charge my credit card (Visa or Mastercard)

Credit card #: _____ Exp. Date: _____ Security Code (on back of card): _____

Cardholder's Name (as on card): _____

Billing address (if different from above): _____

Signature: _____

MEMBERSHIP RENEWAL

On this page is a copy of the AAVSO membership renewal form for 2012. You may also renew your membership online. Safe and secure online payments are possible by visiting <http://www.aavso.org/membership-renew>. If your postal or email address has changed, please also take a minute to update your personal profile online. Simply click "User login" at the upper right of the home page, then go to "My account." Please note: We are transitioning from charging membership dues from the fiscal year (October 2010–September 2011) to the calendar year (January 2012–December 2012). If you paid dues for 2010–2011, you will be charged for the rest of 2011 (October–December) plus all of 2012. The prices listed for 2012 have been updated to reflect this. This is a one-time update and does not reflect a change in the price of our membership dues. In addition to your dues, your contributions to the AAVSO further support the organization's activities and are very much appreciated. Also, on the next page you will find descriptions of the various funds to which you may contribute.



AAVSO
Membership and Subscriptions
49 Bay State Rd
Cambridge, MA 02138-1203

Address Service Requested

Name _____

Address _____

City _____

State/Province _____

Zip/Postal Code _____

Country _____

Payment and Contact Information

My **check** for \$_____ is enclosed. *Checks must be in US funds and made payable to AAVSO.*

For payment by **credit card** please complete the section below. *All fields are required.*

___ Visa ___ Mastercard Card Number _____ Exp Date: ____ / ____

Card Security Code (3-digit number on the back of your card): ____ Total to be charged: \$_____

Name on card: _____ Signature: _____

***If the billing address for this credit card is different from your address above, please provide it here:**

Billing Address _____ City _____

State/Province _____ Zip/Postal Code _____ Country _____

Please make any changes necessary to correct and complete your membership contact information below:

Name: _____

Address: _____

City: _____ State/Province: _____

Zip/Postal code: _____ Country: _____

Phone: _____ Email: _____

2013 Membership Dues Renewal Form

Membership Type *(please check one)*

___ Annual \$60 ___ Sustaining \$120

___ Associate (under 21) \$30

___ Pension/Limited Income \$30

Contributions *(see next page for descriptions)*

AAVSO Building Fund \$ _____

Janet A. Mattei Research Fellowship \$ _____

Margaret Mayall Assistantship \$ _____

Member Sponsorship Fund \$ _____

AAVSO General Fund \$ _____

TOTAL ENCLOSED \$ _____

SUPPORT THE AAVSO

In order to sustain the AAVSO and its operations, we rely on the generous support provided by members, sponsors, donors, and staff. Together we are the AAVSO. Your gift is a way for you to say that you believe in what we are doing and that you want it to continue moving forward. Every dollar given and membership purchased benefits the AAVSO in a necessary and unique way.

AAVSO Building Fund: Contributions to this fund will be used to replenish the Endowment, to refurbish the building, and to cover other costs associated with the purchase of 49 Bay State Road, Cambridge, Massachusetts. We expect the new Headquarters to meet the needs of the AAVSO for decades to come, with sufficient space for growth, for safeguarding our century-long archives, and for giving us the opportunity to hold meetings and workshops at Headquarters.

Janet A. Mattei Research Fellowship Fund: Contributions to this fund help to bring a visiting scientist, postdoctoral researcher, or student to AAVSO Headquarters to perform research using the AAVSO International Database with the goal of disseminating the results throughout the astronomical community.

Margaret W. Mayall Assistantship Fund: Established in honor of the former Director of the AAVSO on the occasion of her retirement in 1974, this fund is used to hire summer research assistants to carry out various important technical projects of the organization.

Member Sponsorship Program: Contributions to this fund go toward paying for the membership dues of an active observer who otherwise would not be able to become a member of the AAVSO. The recipients are chosen by the Director based on the quality and number of observations submitted to Headquarters and the perceived benefit of membership to the observer.

AAVSO General Fund: Contributions to this fund help in the operation of the AAVSO, enabling us better to serve the needs of our members and the astronomical community.

If you wish to contribute to one or more of these funds please fill in the amount on the appropriate line on your renewal form and include it in the total. *All contributions are tax-deductible in the USA.*

You may also donate online at: <http://www.aavso.org/support-aavso>

Thank you for your support of the AAVSO!