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ISSUE NO. 73 JULY 2017 WWW.AAVSO.ORG

AAVSO Newsletter

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.

FROM THE DIRECTOR'S DESK

STELLA KAFKA

Friends,

At the AAVSO we are constantly trying to attract more observers and introduce the world of variable stars to a wider community. At the June 2017 AAVSO/SAS joint meeting we celebrated great science that comes out of our back yards. We also discussed the potential for students to be engaged in scientific research. Some of our most prominent observers were introduced to astronomical observations early in their lives, so we are doing our due diligence in ensuring that today's youth has access to the means and training material they need to start a successful observing career. At the same time, during a recent discussion, one of our prominent members and observers, Dr. Franz-Josef (Josch) Hambsch, brought up another group of astro-enthusiasts who could be interested in joining the league of variable star observers: individuals who are skilled in astrophotography, those who create stunning photographs through their lens and are already to be introduced to the techniques of data acquisition and reduction. In particular, Josch shared a success story, a time when he introduced a friend to the community:

"I am a vivid amateur astronomer who turned about 10 years ago now towards the scientific side of amateur astronomy, namely observations of variable stars. My interest in astronomy started at about the age of 15, when I received a book about the constellations and used my father's binoculars. But due to education, work, and family it took until 1998 when I built my first observatory in my back yard and got my first CCD camera, an SBIG ST8. I turned it towards the starry sky doing pretty pictures. However, after a couple of years I'd had enough, and looked for other endeavors. The microbe was biting as I observed a Gamma Ray burst in 2003 (GRB030329) from my backyard. It was amazing to see such a distant object in my small backyard scope. That was also the first submission to the AAVSO database.

"I turned fully towards variable star observations of mainly short period ones like RR Lyr stars and High Amplitude Delta Scuti (HADS) stars a couple of years later, also due to my scientific background. Of course, I am still interested in the work of fellow astrophotographers and try to use every occasion to also make them attend to variable star observations. And indeed, a couple of months ago I was successful. A fellow amateur, Bram Goossens, from our local astronomy club, which I initiated and was president of for 20 years, approached me to ask about interesting variable star targets. He wanted to have his remote observatory in the French Alps to be more productive from the astrophotography point of view, since the nights around full moon are not usable for pretty pictures maybe except for narrow band observations. So he wanted to join our small team here in Belgium to observe HADS and RR Lyr

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PRESIDENT'S MESSAGE

KRISTINE LARSEN

Communication is Key

As I enter the final few months of my presidency (eep!), I want to thank all of you for your words of encouragement and advice over the past 1.5+ years. I especially want to thank all of you who have taken the time to post suggestions on the various forums. But I realize that not everyone takes part in the forums, and I truly value the reflections, opinions, and suggestions of each and every AAVSO member. To this aim, I have recently instituted (with the considerable help from our director and her staff at HQ) the following two avenues for hearing from YOU, our members.

First, there is a new email suggestion box: communications@aavso.org. Since this was my idea, for the foreseeable future, it is my personal responsibility (through my year [2018] as Past President). Personally, I like to use the suggestion box at my gym for submitting both honest suggestions for improvement (or change) as well as a place to submit kudos for staff members who do an exemplary job. I'd like to think members will use this virtual suggestion box in much the same way. I will be compiling your suggestions and presenting them to

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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 eowaagen@aavso.org. Photos in this issue courtesy of Andrew Pearce, Michael Poxon, and the *Mountain View* community newsletter of Randolph, New Hampshire, published by the Randolph Foundation.

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

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stars. Patrick Wils (well known to AAVSO members from his VSX work) is guiding the HADS team by choosing appropriate stars, by observing them, and by analyzing relevant observations. I introduced him to our Google spreadsheet with the stars of interest and mentored him in how to do the observations and analysis with the LesvePhotometry program developed by another Belgian amateur astronomer, Pierre de Ponthière. In the first months of 2017, Bram was so active that other team members complained that he had taken all observable stars in the list, as there was no need to observe those stars every night. In the meantime, things have a bit calmed down also due to the fact that Bram has a very demanding day time job as well.

"Bram is now hooked up also to variable star observations. He became a member of the AAVSO and he has given a presentation of his achievements so far at the variable star meeting on June 18 of the Belgian and Dutch variable star observers. Maybe this opens up a possibility to other AAVSO members to talk to fellow astrophotographers in their clubs and show them the beauty of variable star observations. Astrophotographers have the equipment and skill to do such observations. If everyone would bring one new member to the AAVSO, the association would double its members!"

The AAVSO's work focuses on providing training and support to our observers. We just introduced the AAVSO Target Tool, enhancing your toolbox with a new resource providing targets to observers who need them. I am sure that in your local club there are talented astrophotographers who wouldn't mind using their clear skies during moon-up periods for a different type of work, and would be willing to take a look at those fascinating objects we all enjoy observing and studying. I hope you will help us spread the word to your community and introduce your friends and colleagues to the fascinating world of variable star astronomy.

Best wishes—clear skies,

Stella.

PRESIDENT'S MESSAGE CONTINUED...

Council on a regular basis. While I can't promise that every suggestion will (or even can) be acted upon, it will certainly be read and given due consideration. It certainly will be appreciated as a reflection of your interest in and affection for the organization. Second, I am taking advantage of the fact that AAVSO meetings are a valuable resource for face-to-face discussions with members. This is a chance for us to meet informally and talk about the past, present, and especially future of the organization. By the time you read this, I will have had such an informal gathering with attendees at the AAVSO/SAS joint meeting in Ontario, California. Expect another gathering at the November meeting at Vanderbilt as one of my last official duties as your president. I look forward to listening to as many voices as possible—please consider joining us in person in November and take advantage of this opportunity to have the president's ear. In addition, you are always invited to chat one on one with any Council members at our meetings as well.

If you cannot attend a meeting this year, please take advantage of the Find a Member/Observer Tool at https://www.aavso.org/apps/member/search/ . Make contact with a fellow variable star enthusiast in your area. In addition to the Forums, we also have a Facebook page [https://www.facebook.com/AAVSO/]—have you "Liked" us? If you have, please "Share" our posts and help spread the word about our organization.

The AAVSO has a long and proud history, founded upon very important relationships—relationships between people, between people and telescopes, between people and stars, between people and data. All relationships thrive when there is an open channel of communication, whether it is between your CCD and your computer, your computer and the AAVSO database, between you and other AAVSO members, or between you and the leadership of the organization. Now more than ever, as the AAVSO moves forward into the era of time domain astronomy, we need to keep those channels of communication open, maximizing the bandwidth with a continual eye towards quality. I am excited at the increased opportunity to hear from you as we plot the course forward for the organization and its membership.

Ed. note: the Spanish language versions of the Director's and President's messages can be found on page 5.

AAVSO MEETINGS

Next meeting

106th Annual Meeting: November 2–4, 2017, Vanderbilt University, Nashville, Tennessee (2017 Annual Meeting)
https://www.aavso.org/vanderbilt-meeting-page

Upcoming meetings

107th Spring Meeting: July 6–8, 2018, AAVSO–British Astronomical Association (BAA), Warwick, England (2018 Spring Meeting)
https://www.aavso.org/aavso-meetings

Most recent meeting

106th Spring Meeting: June 15–17, 2017, AAVSO–Society for Astronomical Sciences (SAS), Ontario, California (2017 Spring Meeting)
https://www.aavso.org/apps/meetings/Spring2016/

The group photo from the AAVSO-SAS meeting may be viewed on the AAVSO website: https://www.aavso.org/group-photographs#2010s

Missed the 2017 Spring Membership meeting? Now you can watch it here:
https://www.aavso.org/aavso-membership-meeting-spring-2017

TALKING ABOUT THE AAVSO

The announcements in the "Talking about the AAVSO" column will now be included on the AAVSO website in the General AAVSO Discussion forum, in the thread Talking about the AAVSO (https://www.aavso.org/talking-about-the-aavso). Members and observers are encouraged to post to this thread information about presentations they have given or will be giving on the AAVSO, variable stars, and astronomy. Remember that it is necessary to be logged in to the AAVSO website to post to the forums.

AAVSO IN PRINT

A partial listing of publications using data from the AAVSO International Database, the AAVSO Photometric All-Sky Survey (APASS), the International Variable Star Index (VSX), or other AAVSO resources is available at:
https://www.aavso.org/aavso-print

Readers knowing of relevant publications not on the above lists are encouraged to email the details to the AAVSO at eowaagen@aavso.org.

Dear Readers,

You will notice major changes in the AAVSO Newsletter beginning with this issue.

We had recognized that the newsletter had become very large and that it was requiring a great deal of limited staff time to write, compile, and prepare for publication. At the recommendation of the AAVSO Programs Committee, we reviewed the newsletter content. Several sections have been shortened by consolidating text and/or including a relevant link to content on our website. Other material has been eliminated altogether because it already exists on our website or elsewhere online. Some sections appear in this issue in order to explain how to find the relevant information online; they will not appear in future issues.

Members and observers are welcome to submit articles for consideration in the Newsletter (to eowaagen@aavso.org). The only change from previous requirements is that an article may be no longer than 700 words.

A new feature that begins in this issue is the Observer's Corner. This column will contain advice and tips on observing practices for all observers – visual, DSLR, PEP, and CCD. If there is a particular topic you would like to see addressed, please let me know.

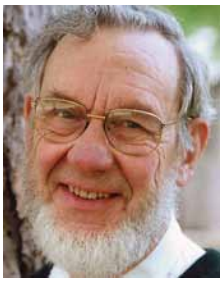
We hope you will like this more streamlined version of the AAVSO Newsletter!

Good reading, and Best wishes,

Elizabeth O. Waagen
Editor, AAVSO Newsletter

IN MEMORIAM

MEMBERS, OBSERVERS, COLLEAGUES, AND FRIENDS OF THE AAVSO



CHARLES ALLEN WHITNEY, Ph.D. (1929–2017)

Charles Allen (Chuck) Whitney, my predecessor as Editor of *JAAVSO* (*Journal of the AAVSO*), passed away on May 22, 2017, in Newton, Massachusetts, surrounded by family. He was pre-deceased by his first wife Jane in 1993, and his second wife Betty in 2014. He is survived by his five children and Betty's five, and 23 grandchildren. He enjoyed a rich and fulfilling career and retirement, enjoying family, opera, painting, and the outdoors.

Chuck was born in Milwaukee, and developed an interest in astronomy in his teens. He was educated at MIT (S.B. in Physics) and Harvard (Ph.D. in Astronomy). In 1957, he joined the staff of the Smithsonian Astrophysical Observatory, and also of Harvard. He immediately became involved in studying the effect of the upper atmosphere on the orbits of the recently-launched earth satellites, in satellite tracking, and in using satellite orbits as probes of the upper atmosphere. His main interest, though, was stellar pulsation—the topic of his Ph.D. thesis. He was part of the Golden Age of stellar pulsation theory, along with Norman Baker, Arthur Cox, John Cox, Robert Christy, Rudolf Kippenhahn, and others. But his interests were much broader. His books, articles, and lectures also cover topics such as celestial navigation, history of science, art history, and even a short story in *The New Yorker*. He was deeply involved in education, from the university level to the school level to being a consultant and editorial board member to a Children's Television Workshop series. Post-retirement from Harvard in 1989, he studied and promoted the use of computer simulations, as part of the Science Education Department of the Center for Astrophysics. He was especially known for his popular books *The Discovery of our Galaxy* (Knopf, 1971) and *Whitney's Star Finder* (Knopf, 1989).

Chuck began editing *JAAVSO* in 1975, with Volume 4, Number 1. With his talent and experience as a writer, educator, and scientist, and his broad range of interest and expertise, he was an ideal editor. His first "Editor's Note" stated that, although he was a theorist, he "entered astronomy as a young boy in the same way that I imagine most of you did—at the back end of a telescope under a clear sky." He spoke of the value of *JAAVSO*, the challenges that *JAAVSO* faced, and his desire that *JAAVSO* should be read by, and contributed to by the astronomical community in its broadest sense. In 1993, he received the 34th AAVSO Merit Award, recognizing "his leadership and thoughtful contributions to marked improvements in the content, appearance, and production of the *Journal* during that period; his efforts to fund and produce special editions of the *Journal*; and his continuous support for the goals of the AAVSO." He edited *JAAVSO* until 2009, Volume 37, Number 1.

At that point, I became Editor. In one sense, his shoes were hard to fill. They were certainly well-worn! In another sense, he made it easy, having established high standards, a world-wide readership, and a smooth editorial process, in collaboration with AAVSO HQ staff. As a long-time contributor to *JAAVSO*, I had benefitted from those standards, that readership, and that process, and from my many pleasant and helpful interactions with him when I was a member of AAVSO Council. We are fortunate that he served the AAVSO so long, and so well.

Prepared by John Percy, University of Toronto, and Editor, JAAVSO. *Based in part on an obituary in* The Boston Globe*, and on material in the SAO/NASA Astrophysics Data System.*

HELEN M. STEPHANSKY ABBOTT, former AAVSO administrative assistant to Leon Campbell and Margaret Mayall, died April 2, 2017, in Wrentham, Massachusetts at age 97.

Born on September 15, 1919, in Boston, Massachusetts, Helen Stephansky grew up in the Roxbury section of that city, and attended Roxbury Memorial High School. She began working as a secretary at the Harvard College Observatory (HCO) in 1944 as Pickering Memorial assistant to Leon Campbell. Her work at first centered on HCO matters, but she became more involved with the AAVSO the more that Campbell's duties were shifted in that direction. After Campbell retired in 1949, and Margaret Mayall took over as AAVSO director, Helen and Margaret became a team that was irrepressibly optimistic, confident, and sensible, especially during the AAVSO's crisis years of 1953–1960. Margaret valued Helen's work so highly that she gave a year of her own salary towards keeping her at AAVSO Headquarters.

Helen was not an amateur astronomer, but she often expressed appreciation and admiration for what AAVSO members were doing. She did acquire enough astronomical knowledge to have published, in a national magazine, a general-interest article on photoelectric photometry in the 1950s, and she maintained an interest in astronomy for the rest of her life.

Once the AAVSO was on firmer financial ground, Helen left in 1960 to work for a major Boston insurance company. During that time she resided in Roslindale and Brookline, in the Boston area.

In 1961 she married Herbert Whipple Abbott and, in 1967, they settled in Randolph, New Hampshire, a very small town on the northern slope of the White Mountain National Forest. Helen was a member of the Appalachian Mountain Club, and worked for them at Pinkham Notch near Mount Washington. As an all-around nature lover she contributed to the Audubon and Humane Societies; she also supported her Randolph community in many ways, including work as town secretary. After the death of her husband in 1998, she decided to return to Massachusetts to live with her niece and be closer to her family. The town of Randolph held a going-away celebration for her in April 1999.

The AAVSO may indeed consider itself fortunate to have had the benefit of Helen's dedication, loyalty, and hard work during its most difficult years.

Prepared by Michael Saladyga, with thanks to Mountain View, *the Randolph, N.H. community newsletter.*

Ed. note: following are the Spanish language texts of the Director's and President's messages.

MENSAJE DEL DIRECTOR

STELLA KAFKA

Amigos,

En la AAVSO estamos constantemente tratando de atraer más observadores y de presentar el mundo de las estrellas variables a una comunidad más amplia. En el encuentro conjunto AAVSO/SAS de junio de 2017, disfrutamos de la ciencia que surge de nuestros propios patios. También discutimos el potencial que hay en que los estudiantes participen en la investigación científica. Algunos de nuestros observadores más prominentes fueron atraídos a la observación astronómica en sus primeros años de vida, así que estamos poniendo nuestro mejor esfuerzo para asegurar que la juventud de hoy tenga acceso a los medios y al material de entrenamiento que necesiten para comenzar una exitosa carrera observacional. Al mismo tiempo, durante un debate reciente, uno de nuestros miembros y observador prominente, el Dr. Franz-Josef (Josch) Hambsch, llamó la atención acerca de otro grupo de astro-entusiastas que podría estar interesado en unirse a la liga de observadores de estrellas variables: individuos que se destacan en la astrofotografía, esos que toman asombrosas fotografías a través de sus lentes y quienes aún tienen que ser adiestrados en las técnicas de adquisición y reducción de datos. En particular, Josch compartió una experiencia exitosa que tuvo una vez que él contactó a un amigo con la comunidad de variables:

"Soy un entusiasta astrónomo aficionado que hace unos 10 años se orientó hacia el lado científico de la astronomía, más precisamente a la observación de estrellas variables. Mi interés en la astronomía comenzó aproximadamente a los 15 años, cuando recibí un libro acerca de las constelaciones y empecé a usar los binoculares de mi padre. Pero debido a la escuela, el trabajo y la familia, no fue hasta 1998 cuando construí mi primer observatorio en mi patio trasero y compré mi primera cámara CCD, una SBIG ST8. La apunté hacia el cielo estrellado y tomé hermosas imágenes. Sin embargo, tras un par de años, ya había tenido suficiente y busqué otros desafíos. Me picó el bichito cuando observé un estallido de rayos gamma en 2003 (GRB030329) desde mi patio. Fue magnífico ver semejante objeto tan lejano con mi pequeño telescopio y desde mi casa. Ese fue también mi primer reporte a la base de datos de AAVSO.

Un par de años después comencé a dedicarme por completo a la observación de estrellas variables, principalmente las de corto período, como las RR Lyrae y las Delta Scuti de Gran Amplitud (HADS), debido a mi experiencia científica previa. Por supuesto, sigo interesado en el trabajo de mis compañeros astrofotógrafos y trato de aprovechar cada ocasión para intentar que también se acerquen a la observación de estrellas variables. Y de hecho, hace un par de meses, tuve éxito. Un colega aficionado, Bram Goossens, de nuestro club local de astronomía, el cual fundé y presidí por 20 años, se me acercó para preguntarme acerca de algunas estrellas variables interesantes. Quería que su observatorio remoto en los Alpes Franceses fuese más productivo desde el punto de vista de la astrofotografía, ya que las noches de luna llena no se pueden usar para fotos lindas, salvo excepto para observaciones de banda angosta. Así que quiso unirse a nuestro pequeño grupo aquí en Bélgica para observar estrellas HADS y RR Lyrae. Patrick Wils (muy conocido por los miembros de AAVSO por su trabajo en VSX) está guiando al grupo HADS eligiendo estrellas apropiadas, observándolas y analizando las observaciones relevantes. Le mostré a Bram nuestra planilla de Google con las estrellas de interés y lo guié en cuanto a cómo realizar las observaciones y el análisis con el programa LesvePhotometry desarrollado por otro astrónomo aficionado belga, Pierre de Ponthierre. En los primeros meses de 2017, Bram estaba tan activo que otros miembros del grupo se quejaban de que había tomado todas las estrellas observables en la lista, ya que no hacía falta observarlas todas las noches. Ultimamente las cosas se han calmado un poco debido también a que Bram tiene un trabajo diurno muy demandante.

Bram ahora está atrapado también por la observación de estrellas variables. Se convirtió en miembro de AAVSO y dió una presentación sobre sus logros hasta el momento en el encuentro de estrellas variables de los observadores belgas y holandeses del pasado 18 de junio. Quizás esto abra la posibilidad a otros miembros de AAVSO de hablar a compañeros astrofotógrafos en sus agrupaciones y mostrarles lo hermoso de las observaciones de estrellas variables. Los astrofotógrafos tienen el equipo y la capacidad de realizar estas observaciones. Si todos trajésemos un nuevo miembro a la AAVSO, ¡la asociación llegaría al doble de miembros!"

El trabajo de la AAVSO se focaliza en ofrecer entrenamiento y apoyo a nuestros observadores. Acabamos de presentar la Herramienta de Objetivos de AAVSO (AAVSO Target Tool), agregando un nuevo recurso a todos los demás, resaltando objetos de interés a los observadores que los necesitan. Estoy segura de que en su club local hay talentosos astrofotógrafos a quienes no les importaría aprovechar sus cielos despejados cuando hay Luna para un tipo de trabajo diferente y estarían dispuestos a echarles un vistazo a esos objetos que todos nosotros disfrutamos observar y estudiar. Espero que nos ayuden a correr la voz en sus comunidades y a hacerles conocer a sus amigos y colegas el fascinante mundo de la astronomía de estrellas variables.

Los mejores deseos – cielos claros,

Stella.

MENSAJE DEL PRESIDENTE

KRISTINE LARSEN

La comunicación es la clave

Al entrar en los últimos meses de mi presidencia (¡eh!), quiero darles las gracias a todos por sus palabras de aliento y consejos durante el último año y medio. Especialmente quiero agradecer a todos ustedes que se han tomado el tiempo para publicar sugerencias en los diferentes foros. Pero me doy cuenta que no todos participan en los foros y realmente valoro las reflexiones, opiniones y sugerencias de cada uno de los miembros de AAVSO. Con este fin, recientemente he instituido (con la considerable ayuda de nuestro director y su personal en la sede) las siguientes dos vías para escucharlos a USTEDES, nuestros miembros.

En primer lugar, hay un nuevo buzón de sugerencias de correo electrónico: communications@aavso.org. Puesto que esta fue mi idea, en el futuro previsible, es mi responsabilidad personal (durante 2018, mi año como Presidente Anterior). Personalmente, me gusta usar el buzón de sugerencias en mi gimnasio para presentar sugerencias honestas de mejora (o cambio), así como un lugar para felicitar a los miembros del personal que hacen un trabajo ejemplar. Me gustaría pensar que los miembros usarán este buzón virtual de sugerencias de la misma manera. Estaré compilando sus sugerencias y presentándolas al Consejo de manera regular. Aunque no puedo prometer que todas las sugerencias serán (o incluso puedan) ser aplicadas, sin duda se leerán y se tendrán debidamente en cuenta. Sin duda será apreciado como un reflejo de su interés y afecto por la organización. En segundo lugar, estoy aprovechando el hecho que

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MENSAJE DEL PRESIDENTE
CONTINUED

las reuniones de AAVSO resultan un recurso valioso para las discusiones cara a cara con los miembros. Esta es una oportunidad para que nos encontremos informalmente y hablemos del pasado, presente y especialmente del futuro de la organización. Para cuando se lea esto, habré tenido un encuentro informal con los asistentes a la reunión conjunta de AAVSO y SAS en Ontario, California. Espero otro encuentro en la reunión de noviembre en Vanderbilt como uno de mis últimos deberes oficiales como su presidente. Espero escuchar tantas voces como sea posible—por favor considere unirse a nosotros en persona en noviembre y aprovechar esta oportunidad para que la presidente lo escuche. Además, siempre está invitado a conversar con cada uno de los miembros del Consejo en nuestras reuniones.

Si no puede asistir a una reunión este año, por favor, aproveche la Herramienta Encontrar un Miembro/observador en https://www.aavso.org/apps/member/search/. Póngase en contacto con un colega entusiasta de las estrellas variables en su área. Además de los foros, también tenemos una página en Facebook [https://www.facebook.com/AAVSO/]—¿Le ha dado "me gusta"? Si ya lo hizo, por favor dele "Compartir" a nuestros mensajes y ayude a difundir nuestra organización.

La AAVSO tiene una larga y orgullosa historia, basada en relaciones muy importantes, tanto entre personas, como entre personas y telescopios, entre personas y estrellas o entre personas y datos. Todas las relaciones prosperan cuando hay un canal abierto de comunicación, ya sea entre su CCD y su computadora, su computadora y la base de datos AAVSO, entre usted y otros miembros de AAVSO, o entre usted y los líderes de la organización. Ahora más que nunca, a medida que AAVSO avanza hacia la era de la astronomía en el dominio del tiempo, necesitamos mantener abiertos esos canales de comunicación, maximizando el ancho de banda con un ojo puesto continuamente en la calidad. Estoy entusiasmada por el aumento en las oportunidades de tener noticias de usted mientras trazamos el curso hacia el futuro para la organización y sus miembros.

A NOTE ON THE TRANSLATIONS

We are grateful to Sebastián 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.

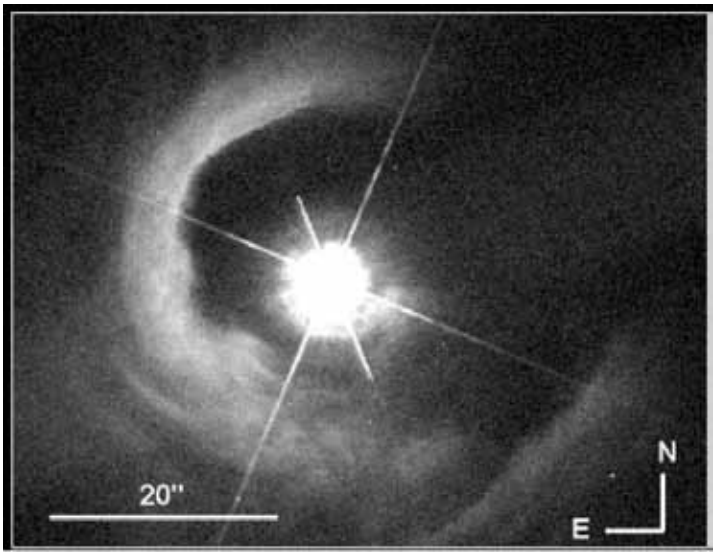
YSO SECTION

MIKE POXON (POX), AAVSO YOUNG STELLAR OBJECTS SECTION LEADER

Two (or three) to Catch for Summer

Since the first of the fields to be described contains two YSOs you'll be getting three stars to follow instead of two....

Our first star is V1331 Cyg. Even with modest visual equipment the star looks slightly indistinct. It's not in the R Mon or V380 Ori class but still not a complete "point" of light. It is especially interesting from the astrophysical point of view because we see it pole-on (picture from Quanz et al., ApJ 656, 287-292 (2007)). As would be expected from this, because it is rarely obscured by its dusty disc, its visual light-changes are not as dramatic as a star such as RR Tau or T Ori. That does mean, however, that any light-changes you do see are probably intrinsic to the star itself. It's not a star you need to observe every night, so once a week is fine, along with its neighbor....



V1331 Cyg

V1982 Cyg which, at around magnitude 13, is half a magnitude fainter than V1331 Cyg. Once again this is a variable enmeshed in a nebula, in a field of bright stars, 'though to my eyes and standard, non-nebula eyepiece, it does not look as fuzzy as V1331 Cyg.

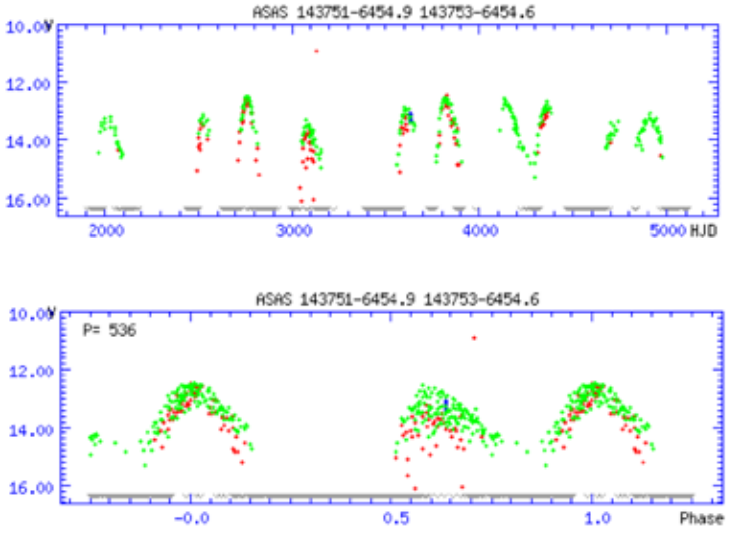
Next is V1117 Her. This is a highly interesting object, in the same low-power field as the well-known Mira star SS Her. Normally it shines at around magnitude 12–12.5 but falls sometimes three magnitudes in an eclipse-like manner, and this coupled with its early spectral type makes it one of the UX Ori class of stars. The "eclipses" are caused by protoplanetary material in its circumstellar disc passing in front of the star, which happens on average every 400 days or so, though there is some evidence—largely from AAVSO observations—that this period is changing, pointing maybe to actual physical evolution of the system. However, V1117 Her is located far away from any starforming region, and currently (June 2017) appears to be starting another decline. This is definitely a priority star for the summer!

LPV SECTION UPDATE

ANDREW PEARCE (PEX), ADMINISTRATOR

For those observers wishing to following some of the more unusual LPVs and Pulsating Red Giants (PRGs), then we'd recommend you consult John Percy's list which is found on the LPV Section web site (AAVSO LPV Section File Downloads page https://www.aavso.org/lpv-section-file-downloads—the file is titled "The Percy List.pdf"). The list includes many stars that are currently on the LPV Legacy and Legacy South lists as well (highlighted in yellow in the file). Sebastián Otero has alerted us to a couple of interesting Miras which appears to have a well-defined double maximum which was identified within ASAS data. Alas, the first one is a far southern variable in Circinus, however we would encourage all visual and CCD observers in the southern hemisphere to monitor this star closely. It is designated ASAS J143751-6454.9 and all the information on this star in the VSX can be found following the link: https://www.aavso.org/vsx/index.php?view=detail.top&oid=412307

Below is a light curve and a phase diagram from ASAS data (2001–2009) which clearly shows a pronounced dual maximum with the secondary minimum being unusually deep. A preliminary period for this star is 536 days, which is quite long for an LPV. The star is at present about 30 days after the first maximum.

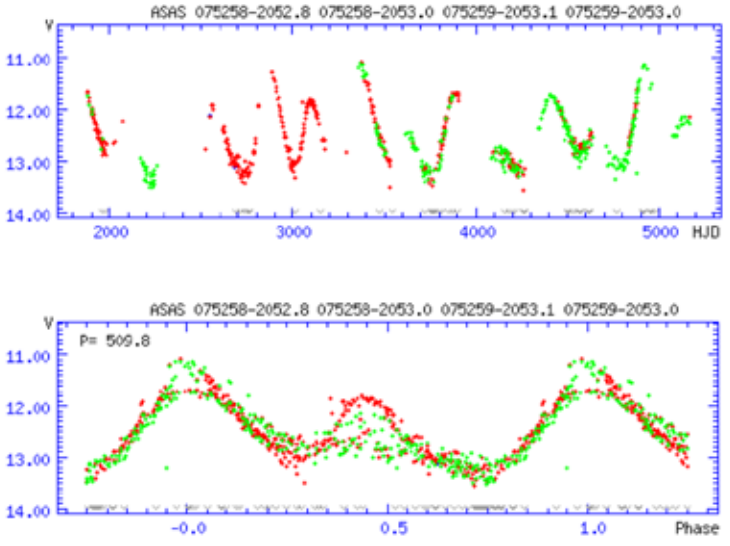


We would encourage multi-color CCD photometry by any observer who has the capability, noting that this is a relatively faint LPV. It would be useful to measure this through BVRI filters every 30 days or so. Since it is so faint there could be value in unfiltered measures near minimum with some V measures and unfiltered near maximum to determine the offset. Stan Walker has kindly provided some suitable BVRI comparison stars close to the field which were measured at Cerro Tololo Interamerican Observatory and should be accurate to 0.025 mag or better.

The second dual maximum Mira found by Sebastián which is a little further north is HR Pup. Information on this star in VSX can be found at the following link: https://www.aavso.org/vsx/index.php?view=detail.top&oid=26820

R A	Dec	Identity	V	B-V	U-B	V-R	R-I
221.0458	-47.2549	8283-1146	8.820	1.614	1.953	0.887	0.844
221.3632	-45.6654	8279-0680	9.219	0.041	0.027	0.013	0.013
221.3131	-45.4253	8279-0715	9.378	0.276	0.177	0.163	0.168
221.6070	-45.7674	8279-0852	9.584	1.108	0.939	0.562	0.523
221.9352	-45.2711	8279-0549	10.538	0.258	0.137	0.145	0.146
221.4668	-45.2578	8279-0755	10.709	0.345	0.057	0.196	0.219
221.5961	-45.5887	8279-1121	12.177	0.558	0.093	0.341	0.337
221.6048	-45.4802	8279-0029	12.336	1.319	1.340	0.702	0.624
221.6476	-45.4050	8279-0507	12.820	1.060	0.713	0.563	0.546
221.5643	-45.4188		14.171	0.987	0.547	0.541	0.548

Below is a light curve and a phase diagram from ASAS data (2001–2009) which clearly shows a pronounced dual maximum. A preliminary period for this star is 510 days.



There are now comparison stars for the charts (available via the AAVSO Variable Star Plotter (VSP), https://www.aavso.org/vsp) for both of these LPVs thanks to the Chart team, so we would encourage all visual and CCD observers to monitor these interesting stars if they are able to.

In other news, an interesting paper was released late in 2016 by N. Vogt et al. which is titled "Determination of pulsation periods and other parameters of 2875 stars classified as MIRA in the All Sky Automated Survey (ASAS)," and which can be at found the link: https://arxiv.org/pdf/1609.05246.pdf .

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LPV UPDATE
CONTINUED...

The authors developed an interactive PYTHON code and derived crucial ephemeris data of 99.4% of all stars classified as "Mira" in the ASAS database, referring to pulsation periods, mean maximum magnitudes, and, whenever possible, the amplitudes. They then went on to present a statistical comparison between their results and those given by the AAVSO International Variable Star Index (VSX). It turns out that their periods are in good agreement with those of the VSX in more than 95% of the stars. It's great to see the VSX getting due recognition in the professional community!

If anyone has any ideas as to the types of activities the LPV Section should consider adopting or interesting stars that should be more widely publicised, we'd be especially glad to hear from you!

PHOTOELECTRIC PHOTOMETRY PROGRAM UPDATE

JIM KAY (KJMB), AAVSO PEP SECTION LEADER

Observations For our second quarter of the year we had improving weather for most of our observers, with 8 PEP observers providing 556 observations, in 5 bands (B, V, R, J, H).

Observation counts by observer are given below:

AAVSO International Database PEP data contributors Q2 2017

BVE	Erwin van Ballegoij	Netherlands	10
FXJ	James Fox	New Mexico	53
KCD	Carl Knight	New Zealand	12
KJMB	James Kay	Vermont	2
KPL	Paul Kneip	Louisiana	22
LPD	Patrice LeMarchand	France	8
PGD	Gerald Persha	Michigan	441
UIS01	John Martin	Illinois	8

Reported error continues to be low, with work ongoing to check inter-observer consistency. Thanks to all the observers for contributing high quality observations.

PEP CHOICE Course The PEP CHOICE course entitled "PEP in the 21st Century" ran from May 8 to June 2 with 9 students. The course covered a range of PEP topics, including instrumentation, observing techniques, data reduction, and designing an observing program. I must admit to some struggle to reach the right balance during the two-week session on data reduction. This section will be simplified in future offerings of the course. Several data reduction spreadsheets were developed for data reduction and are available to PEP observers. Thanks to the students for the feedback on the course and on the PEP observer's guide which was used as the primary text. Updates will be made to the text and course based upon this feedback. For reference the PEP observer's guide is located at https://www.aavso.org/pep-observers-guide).

Infrared Photometry Carl Knight provided a total of 12 observations in the J and H bands of Betelgeuse. Our observing window is essentially closed for Betelgeuse for the next several months, but there are plans to include it in our campaign for very bright stars.

Eclipsing Binary Observations Gerald Persha produced some beautiful light curves for several eclipsing binaries, including BO CVn, AK Her, and i Boo. It is definitely worth a look at his light curves using the light curve generator available on the AAVSO home page. Jerry's system is automated, allowing rapid slewing and automated centering and data acquisition, and the results are high quality. It is possible to get good curves using manual slewing methods, although it certainly keeps you busy during the observing run. I encourage observers who want a challenge to add an eclipsing binary to their program, especially for bright stars, which does not have many recent observations.

Very Bright Star Observing Tom Calderwood has begun investigating observations of very bright stars based upon interest by professionals. These stars are being under-observed since most modern systems saturate on bright stars. Of particular interest is Vega, which is assumed to be non-variable, but may in fact have some small amplitude variations. Even for PEP systems this star causes saturation (not surprising at 0 magnitude!). Saturation is only one of the issues with very bright star monitoring; the other is dynamic range, since the comparison stars are typically much dimmer than the target star. For Vega we tentatively plan to use eps1 and eps2 Lyr for the comps, but at magnitude 5 these are 100 times dimmer than Vega. We are investigating techniques to achieve high accuracy with this large dynamic range, including gain switching and aperture masks. I will be sending more data on this campaign through our mailing lists as the observing techniques and campaigns are finalized.

As always an open invitation goes out to anyone wanting to try PEP. We have a range of long term and new observers, but could always use more. More information is available at the AAVSO PEP webpages at:

http://www.aavso.org/aavso-photoelectric-photometry-pep-program

EXOPLANET OBSERVING SECTION UPDATE

DENNIS M. CONTI (CDEC), EXOPLANET SECTION LEADER

As more AAVSO members are becoming proficient in exoplanet observing, their participation is a welcome addition to support current and future exoplanet surveys. For example, the launch of TESS (Transiting Exoplanet Survey Satellite), currently scheduled for early 2018, is providing added impetus for greater involvement and training of AAVSO members in conducting high precision, exoplanet observing.

TESS is a follow-on to Kepler, which itself has been responsible for the discovery of the vast majority of confirmed exoplanets. However, unlike Kepler, which focused on a relatively small area in Cygnus, TESS will be conducting an all-sky survey of brighter stars. One of the key science goals of TESS is to "measure masses for 50 transiting planets smaller than 4 Earth radii." A working group has been organized to spearhead follow-up, ground-based observations to help differentiate true exoplanet transits from false positives that might be due to variable stars or eclipsing binaries. Dennis Conti (AAVSO Exoplanet Section leader) and Stella Kafka (AAVSO Executive Director) are representing the AAVSO on this working group. In anticipation of the need for participating observers, an AAVSO program will be established to qualify those members who wish to submit their observations to the TESS team.

To increase the number of trained exoplanet observers, the first round of a CHOICE Exoplanet Observing course was held earlier this year. Forty (40) individuals participated in the course. This course was unique in that it consisted of both written and video material. As with other CHOICE courses, students were given weekly quizzes and a forum was available for intra-course communication. Another round of the course will be scheduled for later this year. This will especially be most helpful for observers who wish to participate in the TESS follow-up program. The following are topics covered during the course:

1. Background on exoplanets and detection methods.

2. Important properties of stars and planets, and the relationships among these properties.

3. Some fundamentals of high precision photometry that are important to know for exoplanet observing.

4. An overview of the equipment and software used in exoplanet observing.

5. A description of online resources that can be used to support the various phases of exoplanet observing.

6. An overview of the various phases involved in an exoplanet observing session.

7. An introduction to AstroImageJ (AIJ) software.

8. How AIJ can be used to calibrate the science images.

9. How differential photometry on the calibrated files can be performed using AIJ, as well as the meaning of the various fields in the resulting AIJ Measurements file.

10. How AIJ can be used to create exoplanet light curves and to conduct and optimize exoplanet transit models.

11. An overview of future exoplanet space missions and how amateur astronomers can contribute to these surveys.

In the past two months, observation alerts have been made for the following special exoplanet events:

1. detection of transits of recently discovered exoplanet Proxima Centauri b;

2. dimming of Tabby's Star;

3. ground-based observations of disintegrating planetesimal WD1145+017 that are simultaneous with Spitzer observations.

Finally, efforts are well underway to establish an AAVSO Exoplanet Database where member exoplanet observations can be stored for later retrieval and analysis.

LOOKING AT LEGACY STARS

These quarterly lists of most- and least-observed long period variables and cataclysmic variables on the AAVSO legacy lists are being discontinued. Information on the current observational status of legacy stars may now be obtained from the AAVSO Target Tool (https://www.aavso.org/aavso-target-tool).

OBSERVER'S CORNER

Note: With this issue we introduce a new feature, the Observer's Corner. This column will include advice on observing practices and tips for observing for visual, DSLR, PEP, and CCD observers.

Data Quality

ARNE A. HENDEN (HQA)
TOM CALDERWOOD (CTOA)

An important recurring theme for the AAVSO is the data quality of observations in the AAVSO International Database (AID). We want researchers to have confidence in the AID! A major effort to "validate" the visual database was made possible through a NASA grant in 2002. The 9.5 million observations in the database at that time were error-checked during the project, with 6.04% considered to be discrepant. As three full-time staff members were necessary to perform validation, we decided to make the process more efficient by automatically checking for the typical visual errors during submission, such as incorrect Julian date, transposed digits, name or designation errors, etc. These automated checks were called "prevalidation" and incorporated into the data submission tool, WebObs. (See Malatesta, K. H., Beck, S. J., Menali, G., Waagen, E. O. (2006), JAAVSO, 34, 238.)

The tremendous increase in the number of CCD observations has caused more problems in evaluating data quality. The AAVSO does not have the staff to manually evaluate the light curves from all of these observations; the amount of information submitted for each observation has increased dramatically, such as chart IDs and comparison star magnitudes, which makes checking harder; and small fluctuations are often present, ranging from offsets between observers to high-frequency detail in time series, making the discrepant decision more difficult.

The data quality issue was highlighted during a recent forum discussion (Vis v. V; https://www.aavso.org/vis-v-v) started by Alan Plummer, who noticed that visual and CCD observations often differed from one another. Tom Calderwood presented an analysis of both DSLR and CCD observers, showing that there were numerous errors present in submitted data, such as incorrect chart IDs, missing airmass values, etc. Based on Tom's analyses, plus posts from other observers, the following points were made in the forum thread:

- The Light Curve Generator (LCGv2) gives the viewer the option of reporting a discrepant observation. Currently, HQ staff still need to evaluate the discrepant report and work with the observer.

- Perhaps staff validation can be preferentially performed on "important" stars (for example, campaign stars).

- Should volunteers be recruited to validate observations and work with the observers?

- WebObs could be enhanced to include previews of light curves, including light curves of the check star and airmass. Additional screening could be performed to ensure all necessary parameters are present.

- Observers could be given a PDF with light curves of submitted targets on a monthly basis.

- It was suggested that some observers may be "doing it for the numbers," submitting time series and large quantities of data without inspection. Should we revisit the awards policy, which currently favors time-series observers?

- More metadata (cloud conditions, equipment, transformation coefficients) could be added to each report to help the researcher in project quality control.

- Most likely there is more systematic than random error in most submitted observations. Everyone should learn to transform their data, and start using second-order extinction.

- Quality of the comparison stars, while greatly improved over the past decade, is still an issue, especially the quoted uncertainties.

- If ensembles are used, we should probably define a unique check star, so that it is easy to see offsets from the comparison star sequence.

- Should we revisit the AAVSO's policy of accepting all submitted data, or restrict it to higher quality data? Alternatively, should we provide filters in LCGv2 and data download to screen out observations with high uncertainties?

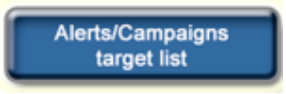
- It is far easier to mentor observers and improve the observing methodology than to correct the observations once they are in the database. Suggestions were: improve the user manuals; additional CHOICE courses; observe constant stars to see and improve your uncertainties (a constant-star pilot study is underway, under the guidance of Tom Calderwood); educate the observers about the common errors.

A careful study of how bad the problem really is should be made. Perhaps the result of that study could be a *JAAVSO* paper that can be referenced when researchers download data from the AID. The easiest path is to continue educating our observers so that they produce higher quality data. Further discussion on this topic is welcomed!

OBSERVING CAMPAIGNS UPDATE

The detailed report on observing campaigns and novae discoveries given in earlier issues of the *AAVSO Newsletter* has been discontinued. Observers may read about the observing campaigns underway and recent novae via the list below of the *AAVSO Alert Notices* issued for these targets. (Also included are two *AAVSO Special Notices* for which no related Alert Notice was issued.) Links to AAVSO Special Notices associated with an Alert Notice may be found by clicking on the Alert Notice link.

Also, the stars which are targets of observing campaigns are given in the Alerts/Campaigns list of the AAVSO Target Tool.



Current and ongoing observing campaigns

Date Name Subject

20170621 *Alert Notice 584*—Monitoring of PDS 110 requested to cover upcoming eclipse by exoplanet
20170616 *Alert Notice 583*—Photometry requested for Red Dots campaign
20170615 *Alert Notice 582*—Nova Oph 2017 photometry requested for Swift TOO observations
20170524 *Alert Notice 579*—KIC 8462852 optical dipping event
20170523 *Alert Notice 578*—Nova in Centaurus—ASASSN-17gk
20170516 *Alert Notice 577*—SN 2017eaw in NGC 6946 (PSN J20344424+6011359)
20170511 *Alert Notice 576*—Nova in Ophiuchus—TCP J17394608-2457555
20170428 *Alert Notice 575*—Monitoring of Swift J1357.2-0933 (CRTS J135716.8-093238) requested
20170425 *Alert Notice 574*—Monitoring of EPIC 204278916 requested
20170403 *Alert Notice 572*—AG Dra monitoring requested
20170316 *Alert Notice 571*—Observations Requested of Exoplanet Proxima Centauri b
20170213 *Alert Notice 568*—Nova in Scorpius—PNV J16521887-3754189 [V1657 Sco]
20170131 *Alert Notice 566*—Beta Pic observations requested for BRITE-Constellation
20161028 *Alert Notice 561*—Nova in Sagittarius = ASASSN-16ma = PNV J18205200-2822100 [V5856 Sgr]
20161024 *Alert Notice 560*—TCP J18102829-2729590 = Nova in Sagittarius [V5855 Sgr]
20161004 *Alert Notice 556*—Monitoring of V2487 Oph requested
20160927 *Alert Notice 553*—Nova Lup 2016 = PNV J15290182-4449409 = ASASSN-16kt [V407 Lup]
20160803 *Alert Notice 546*—Campaign on V1687 Cyg (WR 140)
20160408 *Alert Notice 542*—Continuing observations requested for KIC 08462852
20170502 *Special Notice #429*—V694 Mon (MWC 560) spectroscopy requested
20160119 *Alert Notice 535*—R Aqr observing campaign
20160408 *Special Notice #415*—T CrB brighter and bluer—monitoring requested
20150618 *Alert Notice 520*—X-ray nova and LMXB V404 Cyg in rare outburst
20150415 *Alert Notice 518*—Observations of 2MASS J06593158-0405277 needed
20150324 *Alert Notice 514*—RW Aur monitoring requested
20150313 *Alert Notice 511*—Monitoring requested for developing planetary systems dust production study
20150305 *Alert Notice 510*—Observations of the symbiotic nova ASAS J174600-2321.3
20140917 *Alert Notice 504*—Epsilon Aur monitoring during predicted pulsation phase
20140806 *Alert Notice 503*—Request for regular monitoring of the symbiotic variable RT Cru
20140709 *Alert Notice 502*—EE Cep observations requested for upcoming eclipse
20120625 *Alert Notice 462*—Monitoring of J1407 for next extrasolar ring system transit
20120302 *Alert Notice 454*—Monitoring of CH Cyg requested for Chandra and HST observations
20110517 *Alert Notice 440*—PEP Observing Campaign on P Cygni
20070711 *Alert Notice 353*—Monitoring of Blazars requested for VERITAS/XMM TOO
20070406 *Alert Notice 348*—Observe HMXBs; monitor AR UMa; update on *Alert Notice* 345
20080502 *Alert Notice 377*—Request extended to observe HMXBs in support of radial velocity observations
20070813 *Alert Notice 354*—Extending Request to Observe HMXBs in Support of Radial Velocity Observations
20070813 *Alert Notice 355*—Correction to Subject Title of *Alert Notice 354*