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EYEPIECE VIEWS #317  
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Table of Contents  
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1. Introduction
2. Tracking the unpredictable: monitoring R CrB stars
3. Observing CVs from Belgium
4. A New View Through The Eyepiece

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1. INTRODUCTION

The 95th Annual Meeting of the AAVSO was recently held in Newton, MA. It was exciting to see so many people from diverse backgrounds and interests gather around one common objective that is to share their love and knowledge of astronomy. Scientific paper sessions were great as well as the workshop, "The Chandra X-Ray Observatory and AAVSO Collaboration."

We also enjoyed the last phase of fall foliage here in Cambridge with breathtaking colors capturing the attention of every visitor.

This issue of Eyepiece Views comes to you again with enthusiastic articles. Matthew's wonderful article will take you into the world of R CrB stars while you should also be prepared for an exciting ride through Eddy's observing experiences.

Our grand finale of the year is a wonderfully written article from one of our tireless observers who has mastered the art of both CCD and visual observing. This was originally an e-mail drafted to me before Keith's experience was turned into this great article you are about to enjoy. I personally had an immense joy reading it in its e-mail form and now hoping to share this wonderful experience with you all. So enjoy, from Keith's pen to your eyes and ears.

We at AAVSO Headquarters wish you a very pleasant time at this holiday season.

Thanks and good observing!  
Gamze Menali, AAVSO Technical Assistant (MGQ)

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## 2. TRACKING THE UNPREDICTABLE: MONITORING R CrB STARS – Matthew Templeton

Whether you're a casual skygazer enjoying the simple pleasure of watching the stars change or an astrophysicist probing the details of stellar evolution, the R Coronae Borealis (R CrB) stars are one of the most remarkable and exciting classes of variable in our sky. The light variations exhibited by R CrB stars are matched by few other classes of variable star, and their irregularity makes them even more remarkable. Years-long spans of near constant brightness can end in a matter of weeks with declines of eight magnitudes or more.

The R CrB stars are believed to be near the ends of their lives, and their dramatic declines in light are thought to be obscurations by thick clouds of dust blocking all but a trickle of their enormous luminosities. The dramatic observational show they put on for observers is matched by the dramatic physical problem they pose to stellar theorists, namely -- how do you make five thousand solar luminosities of optical light disappear in a few weeks? Observations by variable star observers provide an important clue for solving their riddle.

The reasons for these events aren't fully understood yet, though it seems a good bet that they're intrinsic to these stars, rather than something like binarity. The comprehensive review by Geoff Clayton in the March 1996 issue of Publications of the ASP outlines most of what has been learned about these stars, and the best guess as to their dramatic declines in light seems to be the episodic ejection of stellar material, and its subsequent cooling and condensation into dust that rapidly shrouds the star. The end stages of stellar evolution are an active time for most stars, and the R CrB stars are no exception.

There's more to the R CrB stars than their dramatic fadings. The long light curves that come from visual and other observations show that these stars also pulsate, and have periods of several tens of days like the RV Tauri stars. Most R CrB pulsations have low amplitudes, and it takes a careful eye and a good sequence to pick them out clearly. But a few show obvious pulsations. Take a look at RY Sgr using the light curve generator on [www.aavso.org](http://www.aavso.org); try plotting the 500 days between JD 2450000 and 2450500. Although the light curve has scatter common to very red stars, a pulsation period of around 38 days is clearly visible. As Geoff Clayton noted in his article, multiple pulsation modes are seen in a few of these stars, making their behavior even more complex. The pulsation periods of R CrB stars provide an important constraint on the stellar properties, so the better-defined the periods are, the better we can understand them. And the best way to define the period is with more data! That's another reason why your careful observations are important.

The list of R CrB stars given by Geoff Clayton in his review is well represented in the AAVSO International Database, and where charts exist, the visual light curves are very well-defined. Because of their dramatic behavior, the bright R CrB stars are among the best-observed objects in the AAVSO International Database, and the light curves only increase in value with time as more and more observations are collected. However, some R CrB stars aren't well observed, and more observations are especially important. One example, DY Per, was originally classified as semiregular in the GCVS, but subsequent observations showed it to be an R CrB star; a chart for DY Per is available from the AAVSO website.

All observations of R CrB stars are valuable, whether they be visual or instrumental. Visual observations have provided the bulk of the data for these stars in the AAVSO International Database, and are an incredibly valuable resource for research on these stars. But in addition to being scientifically important, the R CrB stars are also remarkable objects to watch and enjoy. As I write this, R Coronae Borealis itself is at its maximum, at the edge of naked-eye visibility. When will it next go into decline?

Watch and see for yourself!

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## 3. OBSERVING CVs FROM BELGIUM – Eddy Muylaert

As a CV junkie I do about 9000 observations a year. Like many other observers of cataclysmic variables do, lots of these are naturally negative observations.

I live in Belgium and my hometown is Oostende, a city by the “North Sea”. My home lies on the outskirts of the city. Of course there is some light pollution but generally I can’t complain. The best skies are from the northeast via the south to the west.

About my observatory, I can be very short -- I have none! The main reason is because my garden is too small (only about 100 sq. meters). Although my wife doesn’t mind me observing so much, an observatory would be too much of a good thing. The main instrument I’m using is a classical C8 SCT on a fork mount. The mount has the advantage that eyepieces can be left in the middle of it. My main oculars are a 15 mm WA Ultima, a 7.5 mm Ultima and a 6 mm LV. Besides that I have an 8x56 binocular.

In spite of my many observations, here the weather isn’t really favourable for observing CVs. It is very changeable. It can be good but equally cloudy. I have experienced cloudy skies for almost 3 weeks. So an important outburst could easily be missed. But I am using every opportunity. And cataclysmic variables are just as likely to have outbursts around the nights of the full moon as any other night. I have often noticed that most observers are inactive around the nights of the full moon. Of course the sky is brighter but there is still enough to be seen.

A typical observing session lasts about two hours when at best I can do some 130 CV’s and other irregulars. On the best of nights I can almost reach an astonishing 15th magnitude! Really not bad for an 8 inch. Or have I got such good eyes? Normally I start observing the variables that are getting low in the western sky and then work to the east. Often I do all the CV’s of a constellation at one time. Regarding my observing techniques, my best way of finding a CV or its field, is by star hopping. I’m following always the same pattern to find the field. As I am an experienced observer, most of the time I can do this without any charts. It’s all about routine. The more you observe the easier it will get locating your target. And as your skills increase you can try more challenging targets. The technique I’m generally using to estimate variables is the out-of-focus method. Estimating stellar disks is easier than stellar points.

One of the great pleasures in observing CV’s is you never know what the observing run will bring. Often I catch regular outbursts but once in a while I detect an rare outburst. At that moment I get a kick out of that event. It’s really difficult to describe the excitement that comes over me.

I have a lot of favourite CV’s. One of those is the dwarf nova IP Peg, which shows fascinating eclipses clearly visible when in outburst. Another one is VY Aqr. A month ago it accidentally went off. Pity though it turned out to be a short outburst. This one was way overdue. But it seems very likely that one or more outbursts have been missed during a few weeks of the proximity to the sun. Z Cam is also one of my favourites. Although it has been observed for more than a century it has not yielded up all its secrets. Lately it has shown strange behaviour. Only one bright outburst and no definite standstill in half a year. What will happen next? Other DNe that attract my attention are those that show the so-called precursor outbursts and/or rebrightenings. For instance UV Per has shown such fascinating phenomena in the past. And then there are others I’m still eagerly waiting for, like PQ And and KX Aql.

Observing CV’s can be fun but it requires experience and patience. It is an ideal choice for those who would like to take their hobby to a new level. But beware, it can turn into a passion. Once you are hooked on it, it’s hard to get rid of!

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#### 4. A NEW VIEW THROUGH THE EYEPIECE – Keith A. Graham

I have always been an advocate for both visual and CCD astronomical observing. Throughout my 25 years of observing, I have done my share of both. While the majority of my visual observing occurred during the first 18 years, the past 7 has been devoted predominantly to CCD observing. Actually, my CCD endeavors began when I realized that my eyes were not the dependable photon collectors that they were in earlier years. I simply could not trust them to give accurate estimates of variable stars. So I decided that if I wanted to continue submitting meaningful observations to AAVSO, I needed shift my observing methodology to CCD photometry.

Since the advent of my CCD photometry undertakings, I have been essentially tied to the CCD camera mounted to my 12" SCT. I have even resorted to running a cat5 line into my house so I could do my variable star observing from the computer in my warm office during those cold months. 99% of my telescope time is devoted to CCD photometry of variable stars. Last summer, Tim Crawford, a fellow AAVSO CCD observer, sent out an email to many of us telling us how he took his camera off the scope one evening and replaced it with an eyepiece just to be a kid again. His message got me to thinking how obsessed we left brained science guys can get in gathering as much variable star data as we can only to be missing out on our right brain faction of astronomy. It also made me realize how much I have been missing when I didn't take time to look directly at the celestial wonders that are out there just begging to be gazed at and recognized. So I decided to do something about it

About a month ago, I found a used 8" SCT on Astromart being sold by a young man who lives only about an hour away. After a few reciprocating emails, I drove up to his home, purchased the scope, and I now have it in my observatory next to my 12". I am now fortunate to have the best of both worlds. While that 12" is busy capturing photons of a variable star via an ST9e camera, my personal photon collectors are enjoying the celestial wonders through the 8". It is so nice to be back at the eyepiece where I can absorb the beauty of celestial objects in a wide field ocular. There is just something very special about viewing those stunning subjects in person, in real life. There is an inner feeling of peace, relaxation, and just pure enjoyment when I put my eye against my 2 inch 35mm Televue Panoptic and gaze in awe at the Double Cluster in Perseus. Switching to my 12 mm Panoptic delivers some awesome views of M57 and M27. I am so grateful that I have rediscovered the power of the eyepiece. No matter what kinds of astounding images the many available top grade CCD cameras can deliver, there is still something about good old-fashioned eyepiece observing that they cannot replace.

My recent re-acquaintance with the eyepiece has given me some new insight as to the importance of visual observing. The personal pleasure derived from what we are doing is the heart of what is so important. Losing the aesthetics of astronomy in favor of simply collecting data means we are denying ourselves a major faction of this magnificent hobby. The acquisition of an 8" SCT has enabled me to, once again, get up close and personal to some old friends of the night sky while introducing me to some new ones. I look forward to seeing new friends whom I have not yet met. I feel very fortunate that I can fulfill both the scientific aspect of astronomy by submitting variable star observations to AAVSO and the aesthetic facet through personal contact with the celestial wonders. I invite all to take time to be come a kid again and enjoy our universe in a very special and personal way - through the eyepiece.

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EYEPIECE Views is published bimonthly and when circumstances warrant via e-mail. An archive is available at <http://www.aavso.org/publications/eyepieceviews/>.

Please send comments and suggestions to [gamze@aavso.org](mailto:gamze@aavso.org).

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The AAVSO has many free online publications including "CCD Views", a similar newsletter intended for CCD observers. To learn more and subscribe visit: <http://www.aavso.org/publications/email/>

Good observing!

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