ORBIT
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THE LONG ROAD

Nightly Work On Various Types

Conclusion

Harry Pulley

SS Cygni is a dwarf nova type where an old white dwarf steals material off of a red dwarf and sometimes flares up when it has gathered enough material which is exciting as it brightens almost as much as a supernova. In the attached sequence of images from August 5th, 13th and 22nd you can see the star near maximum, near middle and near minimum. Note how much dimmer the three close stars appear on the 5th since SS CYG is so bright while their brightness is close the SS CYG by the 22nd when the star is at minimum. Look at the light curve which shows it going from minimum on July 29th to near maximum on August 5th, then back down to minimum by August 21st. The actual cycle is almost 50 days but they are irregular, there and subminimums and submaximums, etc. I only have half the cycle there. Another dwarf nova I'm following is AM Cassiopeia which I saw and reported at in outburst at near maximum on August 5th, to go down to minimum also by the 21st (it is now in outburst again but I missed it due to weather).

Another major type of variable star is the pulsating type like RR Lyrae. They have short periods so they are fun to image all night to get most if not all of their light curve in one go. The one I'm working on now is RW Draconis with a period of less than half a day. See it's light curve over the past few weeks to examine what I've imaged; the first three attempts only caught the downward part of the light curve. The 4th caught the bottom of the light curve and the 5th caught the tail end of the

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FROM THE EDITOR

Ev Rilett

Well, this is the last issue for this year's board of directors. It is also my last issue as I am stepping down for a while. I have very much enjoyed the job of editor and I hope you have enjoyed reading the issues I've put out. If a newsletter is a success it is because of it's contributors. I have had many, and I wish to take this opportunity to thank all of them. Your articles, photographs, drawings, gizmos & gadgets, buildings, imaginations, skills and so much more never cease to amaze me on what a talented group of people I have the privilege to know and admire.

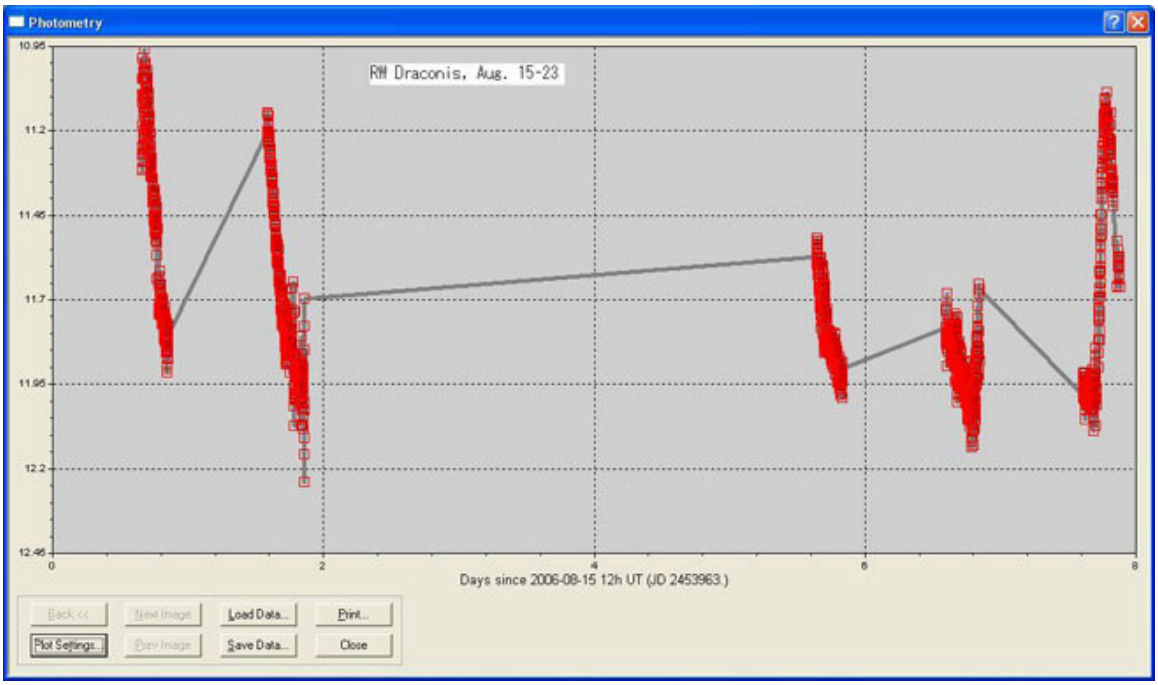
There has been so much happening in our centre over the last two years and it has made making Orbit a terrific source of information and also satisfaction. How can it fail?

I look forward to seeing the newsletter in whosever capable hands it should land in. I know the editor will always be on the lookout for contributions. It is the hardest part of the job. Please help ensure him/her of a full and unique issue each month. Always remember that this is your newsletter and only you can make it great.

Thanks so much for making my editorship a great success.

INSIDE THIS ISSUE

bottom followed by the spike to maximum and the fall back down. In the winter I should be able to observe the entire cycle in one night as it is a circumpolar object (never sets) and the 10.63 hour cycle should fit into one long, dark night.



I also wanted to view some long period Mira types and eclipsing binaries (which I haven't gotten to yet). I'm currently tracking DH Draconis which is near maximum and DO Draconis, ES Draconis and VX Ursa Major which are near minimum. There are literally thousands of known variables to observe and an infinite number of unknowns. The AAVSO shows charts, recent observations and light curves for all of them so you can choose to follow stars others are working on or those which you alone are imaging. The possibilities are endless and the hard part is picking what you want to work on.

I like having some long term variables to observe every few days or weeks and some short to medium term stars which I can image all night to get an interesting light curve right away. Mira types and cataclysmic variables are good for occasional observations while dwarf novae, RR Lyrae and eclipsing binaries are good to leave the scope running while I sleep.

Imaging variables is relaxing. The focus need not be perfect; in fact you often want to defocus a bit so the star's light is spread over a few pixels. Alignment need not be perfect either as long as the tracking error is short all the light will be integrated by MaxImDL when it calculates the brightness of the stars. My mount is capable of 5 minute unguided exposures now which are good enough for photometry when I was lucky to get 2 minutes when I was doing astrophotography work.

It is neat to imagine all the scenarios played out by the variable stars you can image. From supernova and gamma ray sources to stars which pulsate slowly or quickly, stars which orbit so close to one or more other stars that they share material and flare up and sometimes eclipse one another. The light curve may give us clues into what is going on, which is exciting when studying an object from so far away.

Looking Ahead

Filtering to get proper results reduces greatly the amount of light hitting the CCD chip. Also, getting good results requires a decent signal to noise ratio so it isn't enough to merely detect the star, you need a good strong image to figure out the magnitude. With these limitations it seems magnitude 16 is about the limit for me to get good results with my 20cm telescope which would otherwise easily detect 18th or 19th magnitude in

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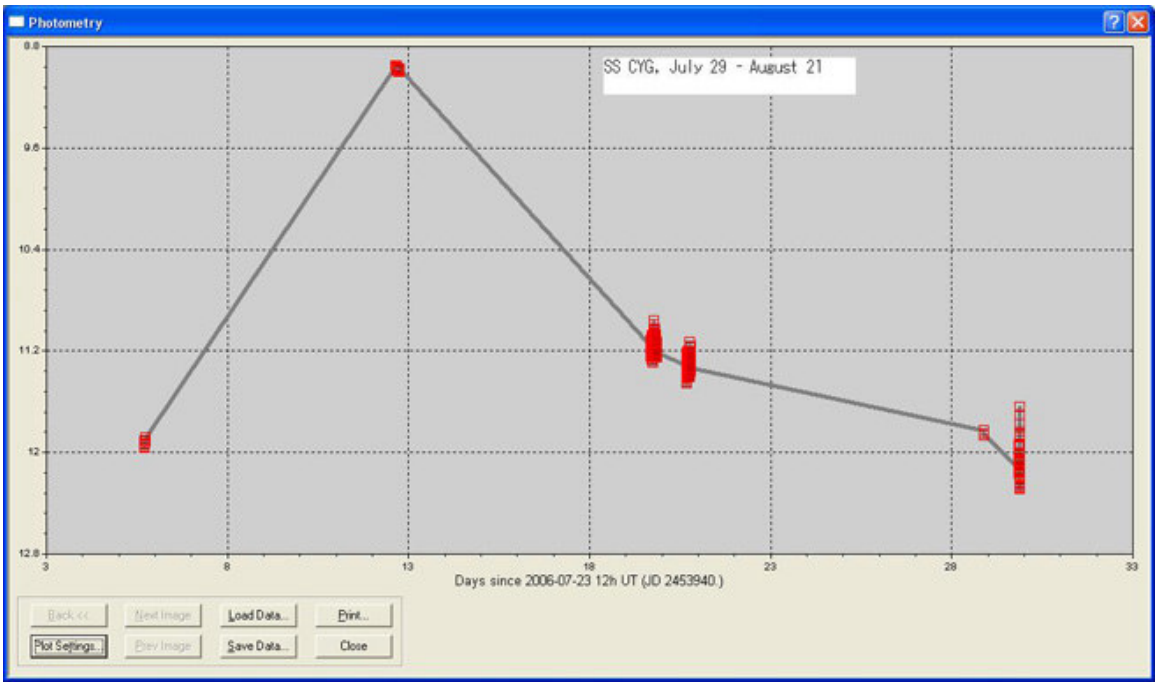
just a relatively short exposure. So, to get down further to say 18th magnitude I'd like to use the club's telescope but with it's long focal length I don't know if my CCD camera will have a large enough field to fit in the target and comparison stars. My 1.25" filter won't fit the 2" filter wheel so I may have to get a 2" V filter to work with the ST11K on the 16" OGS-RC.

A night full of images from the ST11K is going to be difficult to transport so I'll likely have to reduce my data at the observatory, perhaps even as it comes in before it fills up the drive. It is neat to reduce hundreds or thousands of megabytes of images into a single comma separated value file; the best compression ratio around! Thanks to all the RASCals which have helped me to get here. I'm still working on getting everything right but it is fun and it keeps me coming back for more. I actually feel guilty when I don't observe or have any old data to work through.

Other future projects include the verification of recently found new minor planetary bodies. Looking in those regions allows for the possibility of finding new ones which would be neat. Follow-up work on supernovae might also be worthwhile. For now, however, I'm really enjoying the variable stars that I've sought for so long to meter with my CCD.

Starfest 2006 was mostly cloudy but many of the excellent talks featured remote and robotic telescopes plus more ideas for backyard observatories. I'd like to have an observatory and an even more automated setup than I currently have. As well, I'd really love to be able to use the Trillium Telescope from my basement but watching those talks it was obvious that it would be a huge amount of work and money. Perhaps that could be a goal for follow-up Trillium funding, to fully automate the scope for remote operation.

If anyone else wants to get into variable star photometry, let me know and I can run a workshop at the observatory cloud or stars (if its cloudy I'll bring some old data to work on to go over the techniques). I'm enjoying this project and think some other imagers would too.



I need more data points here, obviously, as there was a lot going on between nights that I missed.

SCHEDULE OF EVENTS

Hamilton Steam Museum located at **106 Parkwood Crescent, Hamilton, ON L8V 4Z7**, *hosts our General Meeting on the* ***1st Thursday*** *of each month at* ***8:00 pm***.

September

7 - General Meeting –@ Steam Museum

Board Meeting – 15 @ Observatory

10 – Mustang Rally Pit Stop @ Observatory from 2.30 – 4.30pm

October

5 General Meeting

12 – Board Meeting place TBA

THE HAMILTON CENTRE OBSERVATORY:

From Highway 6 North of Hamilton.

Take Concession 7 East eastbound, cross Centre Road.
Continue on 7E, keep going past railroad tracks, to near end.
Observatory driveway is on the right just before the stop sign.

From Mississauga or Milton.

Britannia Road past Highway 25, Guelph Line, Cedar Springs Road to End. South 1 Block on Milborough Townline to Concession 7 East.
Our gate is on the south side of the last lot (south west).
The observatory phone number is (905) 689-0266.

YOUR BOARD OF DIRECTORS

President - Les Nagy - 905 388 1011 – president(at)hamiltonrasc(dot)ca
Past President – Steve Barnes – sbarnes(at)worldchat(dot)com
Telescope Scheduler – Steve Barnes – sbarnes(at)worldchat(dot)com
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Observatory – 905 689 0266

LIST SERVERS

Check out our newest addition of communications. We have a **new website** found at http://www.hamiltonrasc.ca/new . Also, we have a new forum linked from the new homepage including an interactive calendar which members can contribute to, found at the following: http://www.hamiltonrasc.ca/forums
Les Nagy will be making improvements to their appearance and function as the weeks go on.

There are two list servers available for members to receive and contribute with informative conversation. Our local centre list. Get in touch with Mark Kaye (see Board of Directors List) and he will sign you up.

There is also the national list. Members must go the national web page to sign up for. http://www.rasc.ca/computer/rasclist.htm

PUBLIC EDUCATION

Public Education is very important at the Observatory. Among other events, our Centre is involved with Girl Guides, Scouts, and other groups interested in a guided tour of the night sky. We generally give a brief discussion, a slide show or other visuals, and then a tour outside with two or three different scopes. This gives the guests a chance to decide for themselves which type of telescope they like best.

It is wonderful to see the look on a child's face the first time they look through a telescope. Also, if you know of a group that may be interested in an evening under the stars call for a booking.

Call a board member to find out more. Your help is always welcome.

MONTHLY SWAP MEET

Feel free to bring in any astronomical items you no longer need in your collection. It might be just what someone else is looking for. A table will be set up each month for items to be swapped that evening. So, clear out that closet space and make room for some new, slightly used astro ware.

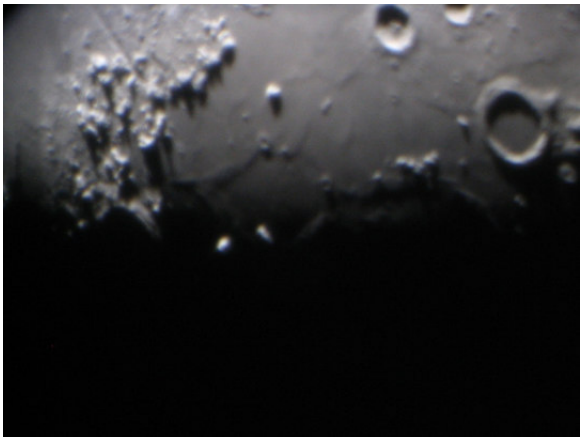
DO YOU WANT A KEY FOR THE OBSERVATORY

- If you are a Key Holder please make sure you get your new key from John Williamson.
- If you are interested in becoming a key holder, you must be a member in good standing for one year, sign a release form and take a short Observatory Security Training evening.
- Please forward any questions you may have to Board Members.

REMEMBER THESE ?

2005

2006



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Kevin Hobbs Carl Roussell Paul Tarvydas Mike Spicer Gary Colwell

Rick Cudmore Stephen Kinsella Eric Golding Walter McGaw

EVENTS

Open House at the Observatory Astronomy Days Centre Bar-B-Q's

Seven Sister Tree Cutting Service Award to Mark Kaye Mustang Rally

Thanks to everyone, Take Care & Clear Skies - Ev