

# ONE QUARTER MILLION – AND COUNTING!

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If someone had told me on that night of August 30<sup>th</sup> 1975 when I looked up to see a changed view of Cygnus that 36 years later I would be making my 250,000th variable star observation, I would have thought it a joke. As a seventeen year old amateur astronomer I was happy making observations of the planets and viewing double stars and deep sky objects. Not once did a variable star invade my observing time. Yet Nova Cygni 1975 created such an impression on me that I had to pursue it further. In those days I did not belong to a local society (although I had been a junior member of the Birmingham Astronomical Society {BAS} five years earlier), so I had no contact with anyone interested in variables. I did however have a friend (who had joined the BAS with me in 1970) who had lost interest in astronomy and knowing that I was still interested, gave me a few books and some variable star charts he had obtained (I assume) from the BAA. I had also bought Glasby's 'Variable Star Handbook' which contained a few charts at the back, so armed with these and getting charts and sequences from as many other sources as possible ('Sky and Telescope' and various books) I began to observe more and more variable stars. It took some time to 'get it' at first, as I was doing this alone and did not know anyone to turn to for help, but I soon got the knack and found myself observing variables on each night I could

manage. The early observations were made with a 6 inch f8 Newtonian and binoculars, but this was soon upgraded to a 10 inch f6.2 in 1977 – the first signs of aperture fever! Work and being a 'normal teenager' proved to be a distraction in those early years, so it wasn't until 1978 that I passed 1,000 Variable Star observations.



**Figure 1: The 6inch F8 Newtonian which was used for the first Variable Star observations in 1975.**

The stars on my programme at that time were pretty much a mixed bunch – mostly red stars with a few of the brighter CVs and a couple of RCB stars. When I moved up to the 10 inch I added more CVs as my limiting magnitude was now below magnitude 14. I also dropped many of the binocular stars I had on my programme, as I just did not enjoy observing bright variables as much as the fainter ones. Joining the BAAVSS and TA in 1978 helped me enormously, as I had access to as many charts as I could handle, and finally had contact with other VS observers. In around 1990 I got involved with a Pro-Am project run by Guy Hurst to monitor CVs for outbursts in conjunction with ROSAT. Many of these CVs were virtually unknown and uncharted (until Guy produced those ‘postage stamp’ sized charts for observers to use – invaluable they were), so it proved to be a wonderfully exciting programme. By this time I had upgraded my scope yet again to a 16 inch (in 1987), which proved to be very useful for this project. This was my first Dobsonian telescope. Previous instruments had been mounted on German equatorials with setting circles. Once the ROSAT programme had ended I kept all of the CVs on my observing programme as many were still awaiting their first outburst detection. I also dropped many of the red stars I had been observing to concentrate on these new CVs, but I did keep R Scuti and chi Cygni on my list, as I just could not bring myself to ignore them. These extra stars helped me to 50,000 observations by 1993, and only five years later in 1998 my 100,000th observation was made following my best year for observing in 1995 with 138 observable nights and over 15,000 observations made in that year.

The 200,000 landmark came in 2007, with an observation of DW Cancri (reported in VSSC 132, June 2007). A couple of years later I changed telescope again (from a 35cm SCT) this time to a 51cm f4 reflector\*, and it was with this instrument that observation number 250,000 was made on the night of 2012 March 23.989 with an estimate of the Blazar W Comae Berenices at 14.9. I knew that if the weather held and I could observe to midnight, I might pass the landmark. I needed just over one hundred estimates to get it, but was not sure exactly how many when I went to the scope. The night was a poor one, with a limiting telescopic magnitude of 15 at best, but it remained clear until just before midnight. The following day when entering the observations into the spreadsheet, I found that the W Com observation was the 118th of the night, and five observations later the sky clouded over!

Although most of my efforts over the years have been in the field of CVs, my favourite star is DY Persei – the coolest RCB star known. In fact my most observed star is R Coronae Borealis itself, with nearly 3,000 observations made since 1977. If anything I find these totally unpredictable objects more fascinating than CVs, especially as they are so rare!

\* see Figure 2, page 4

Limiting magnitude has always been something I have tried to improve on over the years, which might seem strange from an observer who lives in light polluted Birmingham, but I guess it goes hand in hand with observing CVs, many of which are quite faint even in outburst. I can still remember seeing my first 14th (AY Lyrae – 25cm reflector), 15th (AB Draconis – 40cm reflector) and 16th (FN Andromedae – 40cm reflector) magnitude variables, but in February 2011 I managed to see CY Ursae Majoris at a minimum of 17.1 with the 51cm reflector. I had always hoped to break the 17 barrier, and was pretty delighted when I managed it. It was one of those very rare clear nights with a dry and clear polar airstream, and the 17.1 was the culmination of a night filled with 16.5 and fainter estimates. I have been beyond 17 a few times since then, but the first will be remembered. The two main criteria for moving to the 51cm were to get back to a Dobsonian mount after a few years using a GOTO, and to try to monitor as many CVs at minimum as possible.

As with many VS observers who have made a few observations, there have been many interesting and exciting observations made over the years. I remember in the early 1990s seeing an outburst in the HMXB V635 Cassiopeiae. I had been exchanging observations with Dr. Diane Roussel-Dupre at Los Alamos, who was particularly interested in this object. Previous optical outbursts had always followed (by about 24h) X-ray outbursts. However on this occasion I reported V635 Cas has risen by nearly one magnitude only to be told that no increased X-ray activity had been seen. Twenty four hours later an X-ray outburst did occur, and to my knowledge this is the only occasion when optical activity had preceded X-ray with this object. Flickering in CVs has always been an interesting thing to see too, especially if you stop and think about what is actually happening. I have experienced this phenomenon many times in the past, but by far the most remarkable observation I think I have ever made was the high amplitude flickering in 1RXSJ053234.9+624755 (V391 Camelopardalis) during the March 2005 outburst (see Poyner and Shears, JBAA 116, 1 2006 and BAAVSSC 124, June 2005). It was spectacular to see a star (or more accurately an accretion disc) flicker by nearly one magnitude in the space of seconds. I have looked for it since in this object but have yet to see a repeat performance.

Playing with numbers can be fun, so taking my first VS observation as Nova Cygni 1975 on August 30<sup>th</sup> 1975, and number 250,000 on March 23<sup>th</sup> 2012 gives us 13,355 days. This equates to 18.72 VS observations made every day of the week for 36.6 years. The enjoyment has not diminished one bit over the years, and I still get a big thrill in seeing SS Cygni in outburst and chi Cygni at minimum or maximum. Jeremy Shears reminded me of something I said some time ago, that when I get to 250k visual observations I would turn to CCD. Did I really say that Jeremy? Can we make it 500k?

**Figure 2: The 20 inch F4, used to make number 250,000, over 36 years later since my first observations with the 6 inch Newtonian.**



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