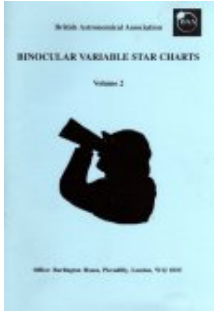
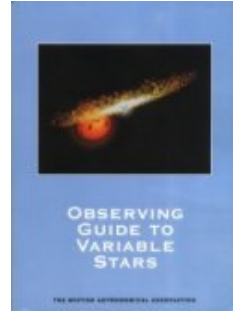


# Absolute Beginners

If your new to Variable Star observing, and would like a few recommendations as to what are the easiest and best placed stars to observe for a particular season, then you have come to the right place.



Below are listed ten stars each for Spring, Summer, Autumn and Winter - five telescopic and five binocular. By clicking on the star name, you will be taken to the chart for that object. For Mira stars, don't forget to check the [predictions](#) page for an idea as to when maximum and minimum occur.



Finally there are a couple of useful hints and tips which will help you make your first (of many) observations!

If you need assistance with any of the objects below, do not hesitate to contact any of the VSS officers!

*This page is also available as a [PDF download](#)*

\* = both binocular and telescopic object. This indicates that occasionally the star *may* get brighter than magnitude 8, at which time the variable is better observed with binoculars or a very small telescope!

\*\* = Circumpolar

## Spring

### Binocular

star	Type	Range	Period	Frequency
<a href="#">V CVn</a>	SRa	6.5-8.6	192d	5d-7d
<a href="#">AH Dra</a> **	SRb	7.0-8.7	158d	5d-7d
<a href="#">X Oph</a>	Mira	5.9-9.2*	328d	7d-10d
<a href="#">Z UMa</a> **	SRb	6.2-9.4	196d	5d-7d
<a href="#">RY UMa</a> **	SRb	6.7-8.3	310d?	7d-10d

### Telescopic

star	Type	Range	Period	Frequency
<a href="#">U Boo</a>	SRb	9.8-13.0	201d	5d-7d
<a href="#">V Boo</a> *	SRa	7.0-12.0	258d	5d-7d
<a href="#">R CrB</a> *	RCB	5.7-15.0	NA	Nightly
<a href="#">V CrB</a> *	Mira	6.9-12.6	358d	7d-10d
<a href="#">X Leo</a>	UGSS	11.1-16.5	17d	Nightly

## Summer

## Binocular

star	Type	Range	Period	Frequency
<a href="#">W Cyg</a>	SRb	5.0-7.6	131d	5d
<a href="#">CH Cyg</a> *	ZAND+SR	5.6-10.5	NA	Nightly
<a href="#">AC Her</a>	RVa	6.8-9.0	75d	5d
<a href="#">ST Her</a>	SRb	7.0-8.7	148d	7d
<a href="#">R Sct</a>	RVa	4.2-8.6	146d	7d

## Telescopic

star	Type	Range	Period	Frequency
<a href="#">chi Cyg</a> *	Mira	3.3-14.5	408d	7d-10d
<a href="#">SS Cyg</a> *	UGSS	7.7-12.6	50d	Nightly
<a href="#">SS Her</a>	Mira	8.5-13.5	107d	5d-7d
<a href="#">YY Her</a>	ZAND	11.1-<14.0B	NA	Nightly
<a href="#">V Vul</a>	RVA	8.1-9.5	76d	5d-7d

## **Autumn**

### Binocular

star	Type	Range	Period	Frequency
<a href="#">U Cam</a> **	SRb	7.7-8.8	?	5d
<a href="#">SS Cep</a> **	SRb	6.7-7.8	90d	5d
<a href="#">AF Cyg</a>	SRb	6.4-8.4	92d	5d
<a href="#">Y Lyn</a>	SRc	6.5-8.4	110d	7d
<a href="#">Z Psc</a>	SRb	7.0-7.9	144d	7d

### Telescopic

star	Type	Range	Period	Frequency
<a href="#">Z And</a> *	ZAND	8.0-12.4p	NA	Nightly
<a href="#">RX And</a>	UGZ	10.3-15.1	14d	Nightly
<a href="#">X Cam</a> * **	Mira	7.4-14.2	144d	5d-7d
<a href="#">omicron Cet</a> *	Mira	2.0-10.1	332d	7d-10d
<a href="#">RU Peg</a>	UGSS	9.0-13.2	74d	Nightly

## **Winter**

### Binocular

star	Type	Range	Period	Frequency
<a href="#">X Cnc</a>	SRb	5.6-7.5	195d	7d
<a href="#">TX Dra</a> **	SRb	6.6-8.4	78d?	5d
<a href="#">RY Dra</a> **	SRb?	6.0-8.2	200d	7d
<a href="#">BU Gem</a>	Lc	5.7-8.1	47d?	5d
<a href="#">U Mon</a>	RVB	5.9-7.9	91d	5d

### Telescopic

star	Type	Range	Period	Frequency
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star	Type	Range	Period	Frequency
<a href="#">T Cas</a> *	Mira	6.9-13.0	445d	10d-14d
<a href="#">U Gem</a>	UG+E	8.2-14.9	105d	Nightly
<a href="#">U Ori</a> *	Mira	4.8-13.3	368d	10d
<a href="#">AX Per</a> *	ZAND+E	8.0-13.0	NA	Nightly
<a href="#">RV Tau</a>	RVB	8.8-11.0	77d	5d

## **Eclipsing**

New charts for Algol and beta Lyra are waiting to be drawn.

star	Type	Max	Min II	Min I	Period d	Eclipse Duration (h)
<a href="#">Algol</a>	EA	2.1	2.2	3.4	2.87	10
<a href="#">RZ Cas</a> **	EA	6.2	6.3	7.7	1.2	5
<a href="#">U Cep</a> **	EA	6.8	6.9	9.4	2.49	9
<a href="#">beta Lyr</a>	EB	3.3	3.9	4.4	12.91	
<a href="#">W UMa</a>	EW	7.8	8.4	8.5	0.33	

## **Tips and hints**

Measure the (true) field of view for each eyepiece you use, and attempt to identify your telescopic limiting magnitude. These two basic steps will help you in identifying the field and comparison stars more easily.

To measure the diameter of your eyepiece, point the telescope to a star with zero degrees declination. Time the interval it takes for the star to pass from the eastern edge of the field of view, through the centre, until it disappears at the western edge. Multiply this by 15 to give the *true* FOV for your eyepiece. Repeat for each eyepiece in use.

Try to identify the field in which the variable lies rather than look for the variable itself. See if you can identify the comparison stars and the patterns they make. On some occasions the variable might be fainter than your telescopic limit, in which case you will never find it until it brightens again and enters your telescopic range.

If you have a drive on your telescope, switch it off and watch which way the stars move. This is West. Orientate your chart so that the west point on the chart is aligned with the motion of the stars. This will help you ID the field more easily.

Chart orientation can be confusing. Classical Newtonians have North to the bottom and West to the left. SCT's and Refractors using a diagonal (which most do) have North to the top and West to the left.

Red stars when bright can prove difficult to measure reliably. De-focus the variable and comparison star to make your estimate. This is especially helpful if you're observing red stars with Moonlight interference.

Try not to over observe the stars on your programme. The frequency number shown above is the ideal period as to when your stars should be observed.

## **Estimating Magnitudes**

The VSS employs two main methods for estimating magnitudes: the Fractional method and the Pogson step method.

With the fractional method you compare the variable against two comparison stars. You look alternately at each star and try to judge the differences between them. This sounds more difficult than it really is. As an example, suppose the variable (usually denoted V) appears to be midway in brightness between comparison stars A and B. You would then record your estimate as A(1)V(1)B. However, if the A-V difference appears to be twice as big as the V-B difference then you would record A(2)V(1)B. The brighter star should always be written first. If the variable appears to be equal in brightness to one of the comparisons then you would record, for example, =B. If possible the difference between the magnitude of comparison stars should not exceed 0.6 mag."

In order to derive the magnitude from a written fractional estimate, assume the following comparison star magnitudes:

$$A = 7.1 \quad B = 7.4 \quad C = 7.6$$

The estimate of  $A(1)\sqrt[2]{B}$  would then be worked out thus.

$$\text{Difference between A \& B} = 0.3$$

$$\text{Divided by the fraction used } (2+1=3) = 0.1$$

Multiplied by the step from A (1), and added to A =  $(7.1 + 0.1) = 7.2$ , which is the estimated magnitude of the variable.

With the Pogson step method you compare the variable against just one comparison star at a time and you try to judge the brightness difference in units of tenths of a magnitude. This does require some practice but it is not that difficult. Suppose the variable appears to be two tenths of a magnitude fainter than star A, then you would record the estimate as  $A-2$ . If it was four tenths brighter than C then you would record  $C+4$ . If it was equal to B then it would be  $=B$ .

To derive the magnitude from a written Pogson estimate you must remember that the designated magnitude increases as the brightness decreases (the Pogson step unit is really plus (or minus) one tenth of a magnitude). With the same magnitudes for the comparison stars as noted above the reduced magnitude of the variable will be: 7.1 and 7.2. The average is then taken of the reduced estimates and rounded off (downwards) to the nearest tenth:  $(7.1 + 7.2)/2 = 7.25$ , rounded off gives the reduced magnitude of 7.3.

If the variable star is too faint to be seen then you can still make a useful observation by recording the faintest comparison star visible. For example,  $<C$  gives  $<7.6$ .