ERUPTIVE VARIABLES: HOW TO OBSERVE THEM EFFICIENTLY

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U Gem and Z Cam stars recently have received great attention from professionals all over the world. Instruments in outer space have detected X-ray and EUV emission during outbursts of SS Cygni. This paper is meant as an aid and guideline to variable star observers who would like to observe these stars more effectively. Professional astronomers need to be alerted in case of outbursts because it is during this phase that these stars not only are most active but also become bright enough to be studied with instruments of all sorts.

Since eruptive stars will probably not adapt to observers, it is necessary for observers to adapt to the behavior of these stars. In the case of U Gem or Z Cam stars, this means making at least one observation every day when possible. Such a systematic approach is bound to yield results.

"Adaptation" to the behavior of dwarf novae, in general also requires a fair size (8" to 10") instrument. The bigger the better! Because, with few exceptions, these objects are inherently faint. In addition, in some cases like X Leo, V811 Cyg, IR Gem, or AH Her the variable must be separated from a nearby star. There is also a possibility that such a companion is variable, like the "$13^{m}.5$" just north of X Leo which at times I have seen at $13^{m}.0$ or so. A too-small instrument can easily mislead an observer. Then there are the many other obstacles, such as haze, moonlight, city lights, and even northern lights at times, etc. All these influences can discourage an observer. And, isn't it strange that two out of the three maxima of T Leo, that I have seen during the last five years, occurred when the full moon or an eight day old moon was close to the field? Also, if low or medium power fails to show the star, high power often will (take a second look!).

Observing these star fields again and again makes it possible to do away with star atlases and charts after a while, except for occasional "refreshers". This can save a lot of time. And it is usually possible to memorize a series of a dozen or more such estimates for a few minutes. A tape recorder could be of use too. With experience, coverage of all U Gem and Z Cam stars currently on the AAVSO program takes maybe 30 minutes at any given time of the year.

If an eruptive star is caught on the rise - the chance increases with more frequent observations - it is justified to make several estimates during one night, maybe one per hour. When an outburst is observed, judgement must dictate what to do about it. A postcard to AAVSO Headquarters is always in order. More important observations may require a phone call or a telegram to our Director, who represents the "clearing house" for all such observations.

Then there is the problem of monthly reports. This chore need not discourage an observer. Just list the designation, star name, Julian Date, and the magnitude of the first observation for the month on a particular variable, the rest of the observations for the star is simply a matter of listing significant digits and decimals of the Julian day and magnitude. During minimum, one decimal of the Julian day is sufficient, however when the variable is rising or fading from maximum the Julian date should be reported to three decimals.

Finally, it should be said that an observer should always assume she or he is the only one out and observing that night. This, of course, is almost never the case. But judging from our Circular, there are quite a few single observations that could use confirmation.