The Prairie Astronomer

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COMPUTERS AND AMATEUR ASTRONOMY

It is my fortunate luck that I got in on the front edge of the micro-computer movement in the mid 70's. I look 20 years in the future when my son will look at these devices he had taken for granted for years and say his father's generation helped bring the computer to a level of understanding and use in his day that the phone is to our day.

There are three basic types of computers: 1) The 'main frame', which is very big (room size), very expensive (start at several millions), you need programmers to program it, operators to operate it, and climate control experts 24 hours a day to keep it feeling comfortable. Not exactly the computer that would fit either in your home observatory or pocket book! 2) The 'mini computer', which is still pretty good sized, still very expensive and very much oversized in terms of memory for what the amateur needs. 3) The 'micro', small in size, very economical and getting moreso all the time, and over the last several years can now 'do' what the mini's and main frames can do with certain memory and speed restrictions...and the former restriction is rapidly disappearing.

Now before you even sit down to think about a computer, you should decide what you want to do with it. Sound obvious? You'd be surprised how this is overlooked. With all the computer hubbub, everyone is rushing to get computerized with very little idea or plan laid out as to how they plan on using it. So, lay out some situations that have been causing you some problems in your viewing sessions, see if their solution via a computer will augment and support your sessions, or whether a calculator can handle the job just as well. After all, this is America, and we American's tend to buy things we want instead of a mixture of want and need. If you buy your computing device and use it as a novelty, I can tell you the novelty will wear off long before the payments do! And all you'll have then is -- payments!

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September Meeting

The September meeting of the Prairie Astronomy Club will be held on the sixth day of Autumn (the 28th) at 7:30 pm in the Hyde Observatory Auditorium. This month's program (should it decide to get here on time) will be a videotape show dealing with Apollo 11. If it doesn't arrive, the program chairman will do a trumpet solo of his version of the Star Wars theme. Let us hope the tape shows up!

Nominations for club officers for 1982-83 will begin, and we will discuss a replacement as newsletter editor for Lee Thomas, who has resigned with this issue.

PRESIDENT'S MESSAGE...

This month starts off with an apology to the members who may have attended the star party and picnic on the 18th of September. As you may have seen, there were few if any club officers there. Most of us were on business or vacation, etc. I myself found out on Friday the 17th that I was to be in Omaha Saturday and Saturday night on business. I frantically went down the line of people to help keep things organized, but alas, everyone was committed. So, again, my apologies.

This month's meeting is important to attend, as it is the meeting when we start nominations for next year's club officers. As your president this year, I started out with many things I wanted to achieve. I quickly found out how many things I actually would get done! Somehow, a year sounds like a long time to achieve something, but then you break it down into only 12 meetings, and you find out how quickly time moves.

So, instead of using this space to promote myself, instead I would like to say this: It matters not to me what capacity I serve in this club, whether it is as its highest officer or a member. I will work as hard in either case to promote amateur astronomy for the members, for the club as a whole, and for the public.

I would like to thank Walt Baumann, who, two meetings ago, brought several volumes of Sky & Telescope magazines to the meeting to sell to members. But, after that meeting, he came up to me and wanted to donate them to the club library (which was last seen south of Orion.) So, thanx again to Walt for the donation. See you at the meeting.

--RUSS GENZMER

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Observing Chairman's Report:

How faint does your telescope go? Most amateurs use a standard formula or table published in some text based on the human eye limit of +6.5. This isn't entirely accurate since the eye is having to fight sky glow. Looking into any eyepiece is a different story since the sky glow is diluted by magnification. I have found that the following formula is somewhat more accurate: M = 10.5 + 5logD, where D is the aperture in inches. You can check the magnitude limit by using the photometry standard known as the North Polar Sequence. It contains stars down to nearly 20th magnitude plus detailed charts of the Pleiades down to +14.8, the Praesepe down to +10.6, and other useful data. It is available at the Physics library.

To give you an idea of the limits for comon apertures, I have listed the approximate limits below. Remember, these are not hard and fast limits and they are not applicable for extended objects such as galaxies or nebulae.

2.4-inch...magnitude limit	M=12.4
3.0	M=12.9
4.25	*M=13.6
6	M=14.4
8	M=15.0
10	M=15.5
11	M=15.7
12.5	M=16.0
14	M=16.2
16	M=16.5
17.5	M=16.7

* The "light bump"

Don't be too discouraged if you can't reach the above values. It takes excellent conditions and (in some cases) a good clean mirror.

--DAVID KNISELY

COMPUTERS IN ASTRONOMY...

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Now, there are some basic things all computing devices do:

1) Solve complex formula related problems with far less chance of error than humans.

2) Process large amounts of data (redundancy) without getting bored. Boredom in humans leads to errors.

Now calculators can handle #1 and are not quite suited to #2 while micro computers can handle both. That is a good starting point in deciding which device will suit your level of astronomy.

There are many books out designed to give you guidelines in your study of the sky. One good one that deals primarily with the formula is PRACTICAL ASTRONOMY WITH YOUR CALCULATOR by Peter Duffett-Smith. This book lists in as simple terms as possible all of the formalae needed to solve many of the amateur's problems. From time conversion, to coordinate systems, to the sun's orbital mechanics, and the planets, stars, comets, moon... it's quite a handy book. Also, if you have a Dobsonian and most of your calculat-

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Computers In Astronomy...

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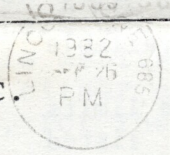
ing is converting to your alt-azm. mounting all of the problems can be solved by a hand-held inexpensive calculator. So, if this comprises a large segment of your sessions, then a calculator will do quite nicely. They are small, light weight and can easily be taken to the observing site. In the past their main advantage has been transportability. What other piece of equipment do you have that is so easy to move around, rugged, takes almost no care or maintenance and yet supplies you with so many answers to your astronomical problems? But now they have become even more appealing. Now calculators have much more memory and program steps which gives you the ability to run or, produce yourself much more complex and larger programs. They have the ability now to retain your data even after the unit is turned off, a very nice feature. They also can be connected to printout devices for a permanent record of your nite's work. With these new and more powerful features you now have a very nice desk computing device as well as doubling as an on-site calculating device.

Yes, the calculator was the device that freed the amateur astronomer from many nights of long, complex calculations and gave him much the same accuracy as his professional counterpart.

-- RUSS GENZMER

(Ed note: This is the first part of a multi-part story on computer applications for amateur astronomy. See next issue for Part 2.)

The Prairie Astronomer
c/o PRAIRIE ASTRONOMY CLUB, INC.
P.O. Box 80553
Lincoln, NE 68501



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