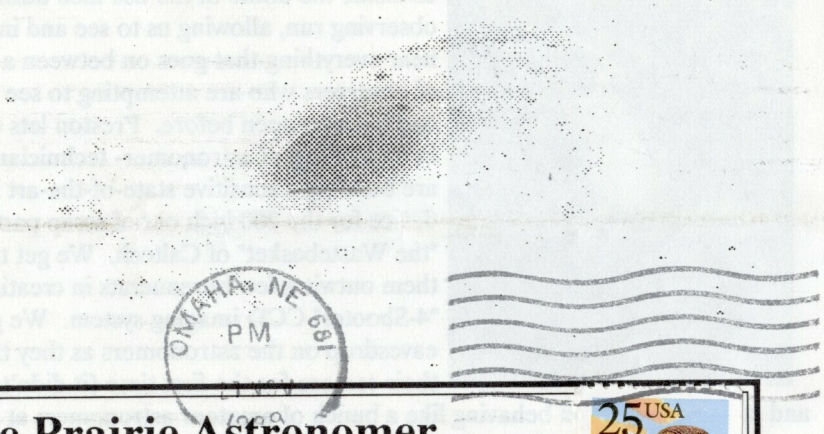
and time. This is my favorite section, since I have done a little electronic tinkering myself.
We see Jim Gunn take a few pencil drawings into "The P-3 Wastebasket", and we follow the progress as the gadgeteers begin to create their quasar-hunting "4-Shooter".
The final section concerns what was discovered (or what wasn't) by these diligent astronomers. We see the first hints of the limits of the quasars, and we see the asteroids the Shoemakers have picked up. And we see astronomers thinking about both the extreme past and the distant future.
This book uniquely captures the FEEL of Astronomy as only the astronomers know it. I know of only one other author (Timothy Ferris) who has written in the same style and with the same effect as Richard Preston. I highly recommend First Light. Once you start reading it, you may not be able to put it down!



The Prairie Astronomer
c/o The Prairie Astronomy Club, Inc.
P.O. Box 80553
Lincoln, NE 68501

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Next Meeting November 28, 1989

Volume 30 #11
November 1989

THE Prairie Astronomer

At the Last Meeting...

[EDITOR'S NOTE: Erik Hubl provided me with the meeting notes this month, but warns that he will NEVER EVER take notes for Ellen again!!! Hmmm, must have been an awful experience! Anyway, thanks Erik!]

The meeting opened at 7:35pm, but Lee motioned that the yearly elections be held anyway. Dave seconded it and the motion carried. The PAC received a donation of $50 from the Transamerica Foundation gifts program with Norma Coufal as the employee donor. Thanks Norma!!! The address for Transamerica is 600 Montgomery Street, San Francisco, CA, 94111. Norma's address is 218 East LaFrance Ave, Alhambra, CA, 91801 (just in case someone wants to send a 'thank you').

Club elections were held, with many officers being reelected by acclamation. It's the same old group: Ron Debus is President, Dave Knisely is Vice-President, Ellen Owen is Secretary, Lee Thomas is Treasurer, and Jack Dunn is 2nd Vice-President. Congratulations to all!!!

Del announced that he is resigning as Atlas site manager. Ron Debus says that Steve Bornemeyer has expressed interest in taking over the job.

Ron Veys reported on a convention that he and Lee attended. The convention was held in Ames, IA, and Ron and Lee got to

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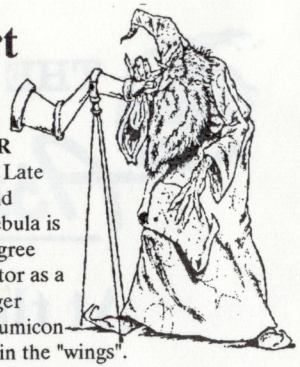
Observing Chairman's Report

by Dave Knisely



THE NEXT SCHEDULED STAR PARTIES ARE ON DECEMBER 1st AND DECEMBER 29th AT THE ATLAS OBSERVING SITE. Late fall and early winter skies offer a number of interesting nebulae and clusters, plus a few hold-over galaxies. An interesting planetary nebula is M76, the "Butterfly" or "Mini-Dumbell" nebula located about a degree north and 1/3 degree west of Phi Persei. Visible in a 60mm refractor as a small faint fuzzy dumbbell, this object will show some detail in larger instruments, especially if nebular filters are used. A 10" and the Lumicon OIII filter reveal detail inside the dumbbell and delicate structure in the "wings". Another good object is the bright open star cluster M34, located 4.3 degrees west and two north of Beta Persei. Small telescopes generally show it as a medium sized group of 20 to 30 faint stars while large instruments make the group look like a small cluster superimposed on a larger and very loose cluster. Of course, the best two clusters in the late-fall sky are h and Chi Persei (NGC884, and 869), located just over a degree north and slightly west of g Persei. Visible to the unaided eye as a pair of fuzzy spots, these two clusters can easily fit in the one degree field of many 2.4" refractors. They are both very rich, with 884 being the larger one. Anything over four inches will show color in the stars and will reveal a few red giants nearby.

A somewhat more difficult target is the interesting planetary nebula, NGC 1514, also known by some observers as the "Crystal Ball" nebula. It can be found 1.25 degrees south and 3.75 degrees east of Zeta Persie (in Taurus) and shows as a small fuzzy spot in small instruments. Larger instruments equipped with filters reveal detail including the central star and two faint arcs that make the object look a bit like M64.

For those who like galaxies with some detail, look for NGC 891, and edge-on spiral located about three degrees east of the beautiful double star Gamma Andromeda. It is very faint and probably will take at least a four inch aperture to make it visible as a dim narrow streak of light. An eight inch makes the middle of the galaxy seem fatter and hints at a possible dark lane across the nuclear region. A good 10 inch will show a vague irregular dark lane down the length of the galaxy, and a twelve inch makes it look like its photograph.

In Eridanus about 2.5 degrees south of the faint star 39 is the planetary nebula NGC 1535. Small telescopes make it look like a fuzzy 9th magnitude star, with large instruments showing hints of a two shell structures at high power.

As a final challenge, try looking for detail in the faint spiral galaxy NGC 772, located about 1.3 degrees east and 1/4 degree south of Gamma Aretis. This object is difficult to see in small telescopes with an eight inch showing a moderate sized faint slightly elongated fuzzy patch with a brighter small elliptical core. The outer edges seem very irregular, especially on the north side. a ten inch under good conditions shows a noticeable flaring of the outer haze towards the north-west and a vague dark arc just south of the nucleus.

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc., and is free to all club members. Membership status and expiration date are listed on the mailing label. Membership dues are: Junior Members and Newsletter Only Subscribers...$10/yr; Regular Members...$24/yr; Family Memberships...$27/yr; Address all new memberships, renewals, or questions to THE PRAIRIE ASTRONOMY CLUB, INC., P.O BOX 80553, LINCOLN, NE 68501. For other club information contact one of the following officers: Ron Debus (Pres)435-5688, Dave Knisely (V.Pres)223-3968, Kim Ellen Owen (Sec)423-7440, Lee Thomas(Tres)483-5639, Jack Dunn (2nd V. Pres)475-3013. All newsletter comments and articles should be sent to Newsletter Editor JOHN LORTZ, 9255 CADY AVE. #14, OMAHA, NE 68134 no later than 7 days before monthly club meetings.

The Reviewer

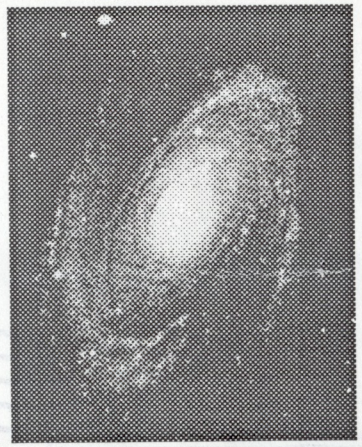
by Dave Knisely

First Light
The Search for the Edge of the Universe

by Richard Preston, copyright 1987, Urania Inc.,
Published by Atlantic Monthly Press, New York, $8.95

If you ever have wondered exactly how it feels to be an astronomer doing research with the world's largest instruments, you really ought to read First Light, by Richard Preston. It is an exciting and interesting work on how science is done by real people, showing how they work, think and feel when it comes to Astronomy.

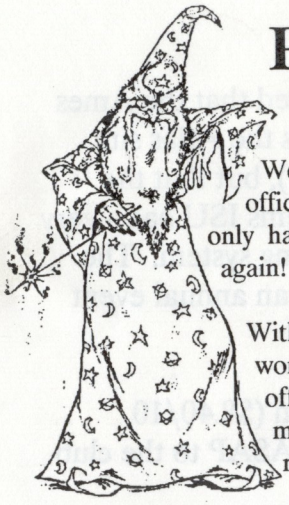
Most of the book concerns the attempts by a few astronomers working with the Hale 200 inch telescope at Mount Palomar to find the edge of the visible universe. Preston did something unusual in writing procedure: instead of just interviewing people and doing some book work research, he went along with the people he wrote about as they worked. He lets us inside the dome of the 200 inch during an observing run, allowing us to see and in a sense hear everything that goes on between a group of observers who are attempting to see what no one has ever seen before. Preston lets us look in on a group of astronomer- technicians who are building a sensitive state-of-the-art imaging device for the 200 inch out of scrap parts in "the Wastebasket" of Caltech. We get to see them outwit a few bureaucrats in creating their "4-Shooter" CCD imaging system. We get to eavesdrop on the astronomers as they try out their camera for the first time (it didn't work), and later, we see them behaving like a bunch of amateur astronomers at a star party as they view countless galaxies floating by on the viewscreen when the 4-Shooter finally starts behaving itself.



The book starts out by giving us a brief introduction to "The Big Eye" ie: the 200 inch telescope. We see through the eyes of the Senior Night Assistant, Juan Carrasco, as he carefully sets up and runs the Big Eye. We listen to Maarten Schmidt as he talks about quasars. We hear the astronomers curse and then praise the equipment as they worry continually about the weather while eating Chips Ahoy! cookies! Preston lets us see these scientists as people, and lets us share in their frustrations and in their joy of discovery. We also get a good dose of Astronomy in the process.

The second part of the book gives us an intriguing look at asteroid hunters Eugene and Carolyn Shoemaker as they look for dangerous Earth-crossing objects along with a few comets. It also gives us an interesting look into the past to the origins of the Schmidt camera and the beginnings of Planetary Science.

Part three concerns "The Gadgeteers", those tinkerers who build up and maintain the equipment that will eventually push back the boundaries of space



President's Message

by Ron Debus

Well, it looks like the PAC is stuck with the same old officers again this year. It really won't be so bad as we only have to serve 12 meetings. Then the PAC can vote again!

With the same officers we'll save Lee some time since he won't have to fill out new forms and get all the new officers together to sign them. I don't want to get mushy, but I would like to thank the club for electing me president again this year.

This past year I've done a lot of lunar observing. Many events occurred during my moon viewing. First, I wrote a review for our newsletter at the same time that our editor John Lortz started putting pictures in the newsletter. Wouldn't you know that he would put in a picture of the moon to go along with my article! And it was just in time for Edgar Mitchell (the sixth man to walk on the moon on the Apollo 14 mission) to sign his name across it.

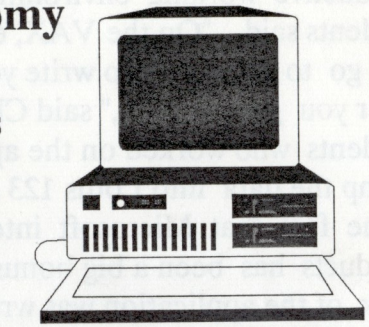
If that's not enough, we had a beautiful total eclipse in August! What more could you ask for? Well, I also received a 20th year commemorative coin symbolizing the first Apollo landing. Jack (slug) Winemiiler, the youngest member of the PAC (that I'm aware of) presented me with the coin. Since I do collect coins and have a small coin collection, this coin will be on display in my lunar case forever. I really had no idea that all of this would take place when I began my lunar observations at the start of last year.

After we get the Thanksgiving and Christmas holidays out of the way, I think one of the first things on my list for 1990 will be Astronomy Day. You may think it's too early to start thinking about this but time flies when you're having fun and Astronomy Day will be here faster than you think.

One more item... Dave Kiple, I still need to deliver your beautiful PAC jacket. It's yours, it's paid for, but I have failed to get it to you. I'll bring it to the next meeting on November 28! I hope everyone had a nice Turkey Day. See all of you at the next meeting. Thanks for listening...

Editors Note: I will be on vacation just before Christmas, so please have all articles for the newsletter to me no later than December 15th. Sorry for the inconvience!!! jbl

Computers In Astronomy



Scientists Use PCs, Image Processing to Gauge Neptune's Weather Patterns

by Paul M. Sherer

As the Voyager spacecraft speeds away after successfully collecting data in its pass by Neptune, the work has just begun for a team of researchers who will spend years analyzing the images and data sent back by the spacecraft.

Armed with supercharged 386 PCs and a variety of language tools, a group of scientists at New Mexico State University in Las Cruces has developed an image-processing application to clean up the Voyager data for map9ping climate patterns on Neptune, according to Reta Beebe, professor of astronomy at the university.

Before the researchers could analyze the data, they had to design software that corrects distortions caused by Voyager's video cameras and determines exactly where on the planet's surface the photos were taken.

Beebe's group chose to develop the image-processing application on the PC for several reasons. Most important, the PC translates to lower development costs. However, it also offers a wider range of tools and greater reliability than the Digital Equipment Corporation VAX or MicroVAX minicomputers traditionally used by the group, she said.

"We find that this type of machine requires almost no maintenance," she said, noting that a PC system doesn't crash as often as a multiuser system.

A 20MHz Compaq 386 computer with an internally developed image-processing board provides the number-crunching power for the application that was written by two graduate students using Microsoft Corp's FORTRAN and C compilers and Microsoft Assembler.

The easy access to other PC tools makes the PC a more

productive working environment for the scientists, the students said. "On the VAX, every time you need to do a plot, you go to somebody to write you a program, and a couple days later you get the plot," said Chris Barnet, one of the graduate students who worked on the application. "On the PC, I can dump the data into Lotus 123 and plot it in a minute."

"The fact that Microsoft integrates all its language products has been a big bonus to us," he added. Although the bulk of the application was written in FORTRAN, the compiler's ability to use modules written in Microsoft C or Assembler allowed the researchers to fine-tune sections of the application with the language best-suited for each task.

FORTRAN was a natural for the application, Barnet said, because of its ability to work with complex numbers. Barnet used Assembler where the application needed to talk directly to DOS, and another graduate student added C modules when system-level speed and flexibility were required, Barnet said.

[From PC Week, October 23, 1989]

Contineud from page 1

visit two different observing sites. They reported that the Ames Amateur site 20 miles north was not as good as the Atlas site (too many lights and too close to the interstate), but that the Iowa State observing site was very good. It seems ISU has a very impressive computer controlled guiding/locating system. The Iowa club is planning to make the convention an annual event and hold it next year at Des Moines.

Guy Ottwells calendar will be ordered very soon ($8.40/10 copies) and members should mail their money ASAP to the club mailbox.

Dave reported that a large solar flare occurred this morning, so for the next 24 to 36 hours the northern lights should be good for viewing. He reported good displays last weekend as well.

Rick Johnson suggested the 'calling list' idea again. The idea is that during astronomical events (solar flares, northern lights, etc.) the club members be alerted by 'chain calling' each other.

The club telescope is still waiting patiently for parts. Poor thing! The meeting was adjourned at 8:25pm.

A Note from Lee...

The RASC Handbooks have arrived. Those who have ordered and paid for them can pick them up at the November meeting.

There will be two extras available for sale on a first-come, first serve basis. The price is $7.50.