

NORTHERN LIGHTS

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Roaming the Region

by Janet Stevens



We regret to announce that we are resigning as editors of *Northern Lights*. We have been putting out this newsletter for more than seven years and find that we now must move onto other things. If you or someone you know would like to take over as editor, please give us a call.

For those of you who joined the Racine Astronomical Society at their observatory for the NCRAL Convention, we think you should know that among other chores they performed in readying their observatory site, was filling 47 gopher holes!

Last March, Des Moines Astronomical Society President Bryan Butcher submitted several photographs taken by society member Allen Beers to the NASA/JPL Comet Hale-Bopp website. As a result of this submission, one of his photos landed on the cover of *Modern Astronomer*, a magazine published in England. An image of the comet looming over the D.M.A.S. Ashton-Wildwood Observatory's west dome was the picture selected by this publication.

In spite of all the grousing about the light pollution caused by some casino river boats, not all the news is bad on that front. The Popular Astronomy Club received a call from the Casino Rock Island offering their assistance if they ever considered doing a fund-raising program. This resulted in the PAC's Dark Sky Benefit Banquet that took place June 9, at the casino. They also raffled off a 3-inch Edmund Scientific Newtonian telescope at the banquet. The fund raising is going towards the PAC's new observatory.

Northern Lights can be reached via E-mail at jastevens@compuserve.com (back up: bstevens@mcs.net), or write us at the address on the bottom of page two.

Northern Prairie Star Fest - August 1-3, 1997.

The Northern Prairie Star Fest, (NPSF) sponsored by Deneb Observatory and the Northern Sky Astronomical Society, will be held under very dark pristine skies near the North Dakota-Manitoba border. NPSF '97 will be the third annual star party held on a wheat farm next to an amateur observatory, 7 miles west and 1 mile south of Sarles, ND.

Ample space is provided for telescopes, tents, camper trailers, and motorized homes. All registrants are provided electricity (telescope drives, CCD equipment, camping), water, food/beverage refrigeration, and bathroom/shower facilities at no additional charge. Motel space is available at Rolla, 27 miles southwest of the NPSF97 site, and a hard-surfaced airport is located there as well.

Guided day trips are planned to Spruce Woods Provincial Park (Manitoba), and to the International Peace Gardens (North Dakota-Manitoba border). The annual Saturday barbecue, paper presentations, photo contest, and swap meet will round out the daytime activities.

Last year participants came from Indiana, Illinois, Wisconsin, Minnesota, South Dakota, North Dakota, and Saskatchewan. Many have again made plans to attend, and three additional groups are expected to arrive from Saskatchewan and Manitoba.

Registration fees are $15 ($20 CDN) per person, and $20 ($27 CDN) for families. The optional barbecue is $10 ($13 CDN) for adults and $4 ($5 CDN) for children. A 10% discount is offered for all advance fee payments made by July 15.

Further queries and a registration packet request should be sent by e-mail to 73424.3533@compuserve.com or you may send snail mail addressed to:

John Leppert
1101 Westwood Street #209
Bismarck, ND 58405-6292.

The 1997 North Central Region of the Astronomical League Annual Convention.

By Bert Stevens



This year's installment of the North Central Region of the Astronomical League's Annual Convention, "Martian Tales and Comet Trails", occurred June 6, 1997, at Racine, Wisconsin. Hosted by the Racine Astronomical Society, the event was held at the Society's Modine-Benstead Observatory and the University of Wisconsin - Parkside.

Friday afternoon and evening, the Racine A.S. hosted a barbeque and star party at their observatory atop a hill ten miles west of Racine. The Observatory has several instruments. The main dome contains a sixteen-inch f/20 Cassegrain built by the R.A.S. in the early 1960's. One auxiliary 'scope is a 6-inch f/15 refractor and there are some smaller instruments.

The big sixteen-inch is located on the second floor of the observatory, with the pier running down into a large footing deep underground. There is also an observing deck that gives a great view of the surrounding area and the starry skies.

Down on the first floor are a meeting room, members' room, and large library. Most importantly, there are indoor restroom facilities on this level.

Another dome houses a 14-inch Schmidt-Cassegrain telescope. Mark Schmidt, the Observatory Director, has taken CCD images during the latest Mars apparition with this instrument that are rated among the top 30% of those taken during this apparition. Some of his fine images are available on the Internet at the JPL Mars Opposition web site.

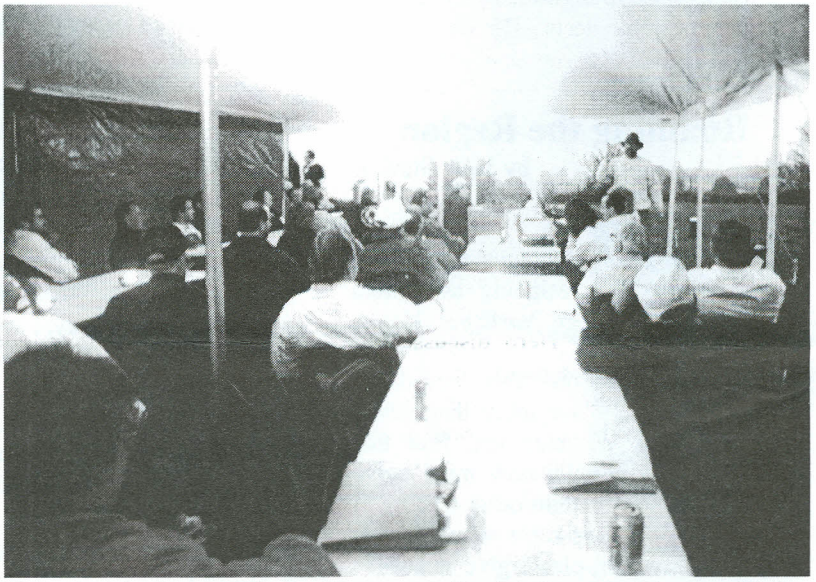
Also on the site are a roll-off roof building with a 12-inch Newtonian and a storage building. For the barbeque, tents were erected for food-service and seating areas. Shortly after 6:00 p.m., chef Adam Schimbeno served up the brats and sauerkraut. For dessert, there were brownies, cakes, and the famous Racine kringles.

Later in the evening, Richard Drieser, meteorite collector and Special Program Director, Yerkes Observatory, spoke on meteorites under the tent, protected from the cold east wind. He talked about various meteorites, and meteor craters. Asking what the first confirmed meteor crater was, he mentioned that it was confirmed by Gene Shoemaker, who, strangely enough, is married to Carolyn Shoemaker, the discoverer of more comets than any other living astronomer, including Comet Shoemaker-Levy 9, that crashed into Jupiter. The crater Shoemaker confirmed is known variously as Beringer Crater, Canyon Diablo Crater, or just Meteor Crater, east of Flagstaff, AZ.

Richard also commented on how some meteorites had so much amino acid that they actually have a smell. He then mentioned that he had one that smelled just like coffee, and wondered if there was any association between the smell and the coffee that spilled on it during his trip to the convention.

Though the event started with mostly sunny skies, as the sun set, an east wind picked-up and blew cold damp air in from Lake Michigan, shrouding the Observatory in a dense fog. Those who had brought telescopes regretfully put them away, and headed off into the mists to get some sleep.

The main event was held Saturday at the University of Wisconsin - Parkside's Greenquist Hall. Convention Chair Judy



Richard Drieser, meteorite collector and Special Program Director, Yerkes Observatory, addresses those gathered under the tent during the Friday night barbeque at the Modine-Benstead Observatory. His talk was on meteorites.

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Articles and ideas for articles about any astronomical topic of interest to amateur astronomers are invited and should be mailed to the above address or e-mailed to bstevens@mcs.net or jastevens@compuserve.com. *Northern Lights* is edited by Berton and Janet Stevens. All material is copyright 1997 by the authors and used with their permission.

McCrickard opened the meeting with a welcome to the more than 100 people attending the Convention. After opening announcements, Judy introduced Astronomical League Chair Barry Beaman who talked about A.L. activities and how the League and the Western Region has really grown in the last year. NCRAL Chair Bert Stevens then took his turn welcoming everyone. He thanked the Racine A.S. for their hard work.

Former R.A.S. President and Papers Chair Don Klemt introduced the first speaker, John Briggs of Yerkes Observatory, who spoke on "Astronomy at Sacramento Peak, New Mexico". Sacramento Peak has a large vacuum tower solar telescope that is in use every day by researchers from all over the world. Then John talked about the neighboring Apache Point Observatory where he is presently on deployment.

As a former amateur astronomer, John says he is constantly amazed at how professional astronomers are always trying to use expensive high-tech procedures to do such minor tests. He cited as an example, secondary mirror alignment, that could be done with a simple eyepiece at the focus that would allow an advanced amateur to simply "eyeball" the telescope collimation.

After a kringle break and the group photo, Herb Schmidt, an astronomy popularizer with the Racine A. S., then spoke on "Martian Tales". Herb discussed the mythology of Mars, and how the ancients viewed the blood-red wanderer. In more modern times, he talked about Tycho Brache's (pronounce it correctly!) observations of Mars and how they contributed to Copernicus's belief that the Sun is the center of our Solar System.

Herb then related a "tale" from an old Indian about Mars being one of two twin planets. The other twin planet broke up to form the asteroid belt between Mars and Jupiter. Two small "lifeboats" were left in Mars orbit: the moons Phobos and Deimos. He related that tale to the "Sidonean City" near the "Face on Mars". After all, these were Martian Tales.

Herb ended with the recently deceased Carl Sagan's quote on how wonderful it is to be living in a time when humankind reached out to touch the face of Mars with the Voyager spacecraft. He then remarked that he hoped that we would all still be here to watch humans set foot on the Red Planet.

After lunch, the NCRAL Council and Business meetings were held. Please see the complete minutes elsewhere in this issue for further information. Both before and after lunch, Joe Kis, Racine A. S., read a few of his astronomical poems, including one of his latest, "The Ubiquitous Photon".

Dr. Roger Kolman then told us about "Visual Observations of Variable Stars". Variable stars are sometimes old, sometimes young, but always unstable in their light output. Most of the variable stars are cyclic, dimming and brightening in a regular way. For some variables the period is very regular, such as the eclipsing binaries, others are somewhat regular, like the Cepheids. Another group is extremely irregular, like the long-period variables. Some variables only cycle once, like the Type II supernova. The change is so catastrophic that the star does not want to go through it again!

Finding a variable can be done by star-hopping, setting circles, or a computerized mount. Roger related a story about Leslie Peltier, the famous variable star observer, who visiting a professional observatory. One of the astronomers heard that he was visiting and wanted Peltier's autograph (which just proves that even professionals can be groupies). They got to talking and Leslie mentioned a particular star that he wanted to observe. The astronomer said that they would get the charts out and set-up the setting circles. Leslie, who had memorized more than a thousand variable star charts, snorted and said, "Setting circles are for amateurs!".

After the variable star is found, two constant stars, one slightly brighter and one slightly fainter than the variable in the same field are selected. The observer then uses the two constant stars to make an estimate on a linear scale of the brightness of the variable. Then just record the variable name, the two constant stars used, the time (U.T.), Julian Day number and your observation.

Once a month, you can send your observations to AAVSO headquarters and your observations will be collated with observations of other amateurs. Professional astronomers make requests all the time for data on variable stars, which the AAVSO provides.

For further information on the Association of Variable Star Observers (AAVSO) or variable observing you can write to:

Dr. Janet Mattie
25 Birch Street
Cambridge, MA
(WWW.AAVSO.ORG).

Greg Gonia was up next, talking about "Antique Telescopes in Wisconsin". Greg has been researching early telescopes in the State of Wisconsin. He has found a number of Clark refractors that were brought into Wisconsin. Just finding out about the telescope was an accomplishment, but then trying to find drawings or photographs became a real crusade.

One telescope, a 10-inch Clark (made in 1891) was located at the Underwood Observatory of Lawrence University in Appleton, WI, and is believed to be the first electrically powered telescope since there are early diagrams showing wires attached to the telescope, and there was a hydroelectric dam nearby.

When the Observatory was torn down, they took the telescope out through the slit. As they were lowering it, it slipped out of its sling and fell ten feet to the pavement, severely damaging the tube. Fortunately, the 10-inch lens had been taken out and placed in storage. After quite a number of years, Jerry Knuijt purchased the lens and the mounted it in his observatory.

Jerry's observatory has two piers, and since a slit design would not let both telescopes see the sky, he designed it to have the dome composed of two half-domes. One half-dome is slightly smaller

than the other, so they can be opened to provide a 180-degree view of the sky if desired. John Briggs claims this is one of the largest Clark refractors in amateur hands.

Other telescopes that Greg discussed included a 7-inch Loomis refractor (1890), 10-inch Elias reflector (1947), and three Clark refractors in the Milwaukee area, including two at the Milwaukee A. S. Observatory. The most well-known antique telescope in Wisconsin is, of course, the 40-inch Clark refractor (1897) at Yerkes Observatory in Williams Bay. Tours of Yerkes are available by calling Yerkes at (414) 245-5555 to see the Big Clark.

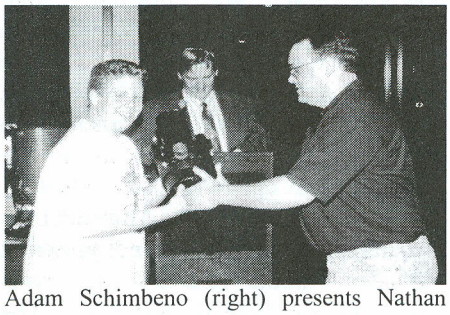
The final paper was by John Shibley of *Astronomy* magazine, talking about "Astro Bloopers". John described the process of taking astrophotos and the various things that the astrophotographer can do to produce a prize winning image. The most important tip is to plan your astrophoto session. Make an overlay for your star atlas that matches the field-of-view of your camera system. Then you can match the lens and orientation to the shape and size of the object.

Other tips include making sure that you can block the wind if you are outside by setting up in the lee of a building or your car. Watch that your mount is carefully polar aligned if you are making long time exposures. Use the poorer nights to locate hidden sources of light pollution, practice your techniques, or test a new film.

Some other tips included: If you find your guide star getting fainter, sneak a peak at the sky and see if a cirrus cloud-bank has moved into your sky. Don't shine your red-light on your lens to check and see if it has fogged over. Use Velcro to fasten down your equipment so it does not slip during the exposure. Be sure to put a terrestrial scene as your first frame on a fresh roll of film so the photo lab can align the cutter so as not to slice your frames in half. Be sure to keep at least adequate records of the frames you take. It is sometimes nearly impossible to identify a field that is inadequately documented. And finally, share your bloopers with other astrophotographers and the astronomy magazines. They always get the good ones, but they sometimes find the bad ones are instructive in their articles.

After the banquet, John Briggs was introduced as the Master of Ceremonies. John noted that if the government tried to provide the public education that amateur astronomers provided for free, it would cost billions and billions of dollars.

John then introduced Regional Chair Bert Stevens who thanked Judy McCrickard and the whole Convention Committee for a great event. Nathan Jones won the final door prize, a Meade 90 mm Maksutov.



Adam Schimbeno (right) presents Nathan Jones with the 90 mm Maksutov while Master of Ceremonies John Briggs looks on.

John then introduced Dr. Phyllis Pitluga of the Adler Planetarium who spoke on "Halley, Hyakutake, and Hale-Bopp and what we have learned about the Inner Solar System".

Comet Hale-Bopp's apparition can be divided into three parts. The first part started with the discovery that the main constituent of the comets tail was carbon monoxide, carrying off frozen water granules and dust with it. The comet seemed to be rotating on an axis with only a few "hot-spots" where the dust and gas were streaming out. This was about six to 7 AU from the Sun.

The second phase started when Hale-Bopp was about 4 AU from the Sun. The Sun's warmth was now strong enough to sublimate the ice particles and the blue ion tail began to form. Finally, the third phase began when the comet got down below 2 AU and hydrocarbons began to be expelled into the interplanetary medium and the sodium tail was formed.

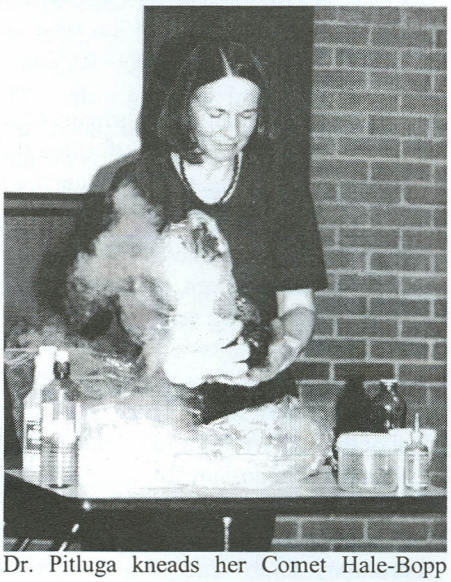
Observations of young solar systems have shown that the materials that formed the early solar systems are the same materials that form comets. While this is something that has been said many times, there has been a paradigm shift that comet have brought water and amino acids, the building blocks of life, to early Earth.

But comets are also the bringer of death. In 1980, Dr. Alvarez suggested a comet impact caused the global catastrophe that brought the end of the dinosaurs. While this suggestion was first met with incredulity, further research has brought an accumulation of evidence that is hard to refute. It is now almost universally accepted that a cosmic impact cause the mass extinction at the end of the Cretaceous period.

Since Comet Hale-Bopp came close to the Earth's orbit, there is a chance that there will be a meteor shower on January 6 of next year and for a number of years to come. Dr. Pitluga then made a "comet" with the precise composition of Comet Hale-Bopp.

Here is her recipe: In an open plastic bag draped over a large bowl, combine one cup water, ½ cup of silica sand, graphite and assorted minerals, a splash of hydrocarbons (corn syrup), and a splash of ammonia. Before Hale-Bopp this mishmash would have been well mixed. But observations of Hale-Bopp have showed that the composition has changed radically as different parts of the comet sublimated, indicated that the elemental parts of the comet are very unevenly mixed. Lastly, add one cup of dry ice and knead well. The "comet" will freeze to form a very dark, almost black, snowball that is almost exactly the composition of Comet Hale-Bopp.

John Briggs once again took to the podium and thanked everyone for coming. With that, the convention came to an end. The location for the 1998 convention is still undecided. Watch *Northern Lights* for more information.



Dr. Pitluga kneads her Comet Hale-Bopp cocktail. The end result did indeed look like a "dirty snowball".

Minutes of the Meetings of the N. C. R. A. L., June 7, 1997.

By Dr. Stephen H. Peters
Secretary/Treasurer

Regional Council Meeting.
The 1997 meeting of the Council of the North Central Region of the Astronomical League was called to order by Chairman Bert Stevens at 1:25 p.m. The Chairman established that, in accordance with Article 3, Section 2 of the Constitution, a quorum was present. The agenda for the business meeting to follow was established. The meeting adjourned at 1:30 p.m.

Regional Business Meeting.
The annual business meeting of the North Central Region of the Astronomical League convened at 1:30 p.m. with Regional Chairman Bert Stevens in the chair and Secretary/Treasurer Stephen Peters present. Eighteen of the 32 societies in the region responded to the roll call.

The minutes of the 1996 annual meeting, held at Rockford, Illinois on July 27, were approved as presented.

Reports:
Treasurer Stephen Peters presented the annual financial report, which was approved.

Chair Bert Stevens noted that the League dues increase was a very small amount for what members receive in return. He also asked those present to be watchful for possible recipients of the National Young Astronomer award. Recipients must be high school students and United States citizens.

Vice Chair Sharon Stauffer was not present and had not submitted a report. Regional Representative Marian Bachtell was not present and had not submitted a report.

Northern Lights co-editor Bert Stevens reported that the current subscription prices left an $85 profit with an expenditure of $1,100. Bert also made a plea for articles.

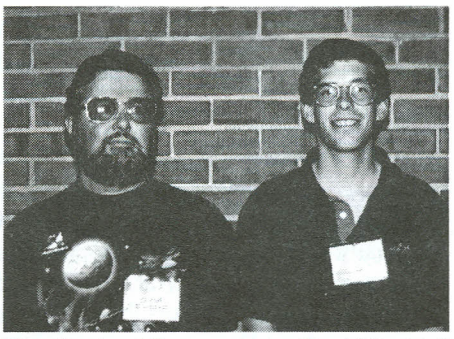
Dan Koehler, chair of the Midwest Light Pollution Conference, was not present to report on a possible future conference.

Unfinished Business and General Orders:
Frank Roldan, chair of the Nominating Committee, presented the slate of officers for the coming year:

Regional Representative, David Bachtell, Southeastern Iowa Astronomy Club (Burlington, Iowa). There were no nominations from the floor. Don DeWitt moved that nominations be closed and a unanimous ballot be cast for Dave. Seconded and carried.

Chairman, Bert Stevens, Chicago Astronomical Society. There were no nominations from the floor. Jim Fox moved that nominations be closed and a unanimous ballot be cast for Bert. Seconded and carried.

Vice Chairman, Don DeWitt, Neville Public Museum Astronomical Society (Green Bay, Wis.). There were no nominations from the floor. Jim Fox moved that nominations be closed and a unanimous ballot be cast for Don. Seconded and carried.



New Regional Representative David Bachtell (left) and new Vice-Chair Don DeWitt (right) just after their election to office.

Secretary-Treasurer, Stephen Peters, Marquette Astronomical Society, for reelection. There were no nominations from the floor. David Bachtell moved that nominations be closed and a unanimous ballot be cast for Steve. Seconded and carried.

Roger Kohlman moved that the Chair be authorized to find a site for the 1998 regional convention. Seconded and carried.

Bert Stevens announced that he and Janet wished to retire as editors of Northern Lights within the next year and asked for volunteers to take over.

The Chair announced that there would be no region award for 1997 because there was only one nomination, and it was so poorly documented that the committee could not determine if the award was deserved. He encouraged those present to start thinking about nominations now and preparing appropriate documentation.

The meeting adjourned at 2:01 p.m.

A Short History of a Telescope Restoration

by Paul R. Castle
Popular Astronomy Club

Does the name Criterion ring a bell? How about the name RV-6? Several months ago the Popular Astronomy Club took on the restoration of one of the workhorse telescopes of three decades ago. Here is

the story of tube assembly serial number 1946 and German equatorial mount serial number 1837.

The RV-6 Dynascope was made by the Criterion Scientific Instruments company of West Hartford, Connecticut. Ours was originally ordered by Dave Cave the science and math teacher at Rock Island High School of Rock Island, Illinois in the spring of 1964. Dave was an astronomy enthusiast and wanted to pass his interest in the skies on to his students. The telescope was ordered from the Sergeant Welsh Company, an education supply house.

The 6-inch Newtonian reflector arrived during the summer of 1964 but in the meantime Mr. Cave had transferred to another school. The new physics teacher, Charles A. Armstrong, became its caretaker. Over the next few years it was used only occasionally. Retired physics teacher George McMasters remembers several of his students using it for various projects. Cindy Kulhavy, later to become the Secretary of the Popular Astronomy Club, also remembers using it:

Sometime over the next thirty years the scope fell into disuse and disrepair. The electric drive motor had somehow become damaged and the scope was stored to gather several years of dust. One attempt was made to get a new motor as per the following undated note:

> Mike,
>
> I found one place that may have it. (The drive motor) You mail the old one to them and they will tell you if they have a replacement or not. They will also give you a price. Include your name, address and phone number when you ship it to American Time and Signal.
>
> -Dan

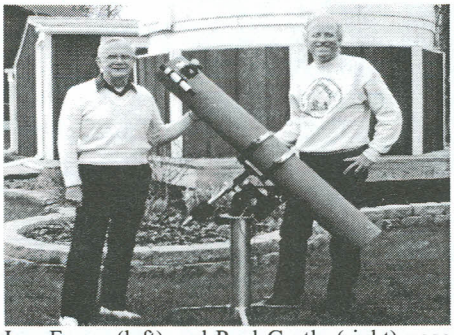
We made the assumption that by the time this note was written regarding the motor replacement, the Criterion company had already gone out of business so they were looking for another source. The search must have been unsuccessful for when we received the scope, it still had the damaged motor.

By 1996 it was decided to get rid of the Criterion for it was taking up storage space at the High School. Gary Wolber, the current physics teacher called Augustana College in Rock Island to see if they would be interested in acquiring the scope. Gary was referred to the head of the Physics Department, who declined the offer but suggested that the Popular Astronomy Club, which is headquartered at the college planetarium, might be interested.

He gave Gary the number of the club President, Paul Castle of Rock Island. Mr. Wolber was getting desperate by this time. If someone could not be found who would take the telescope, it would have to be junked and he was loath to do that.

Paul Castle was contacted and readily agreed to take the scope. Paul saw that all the pieces of the RV-6 appeared to be intact despite its slovenly appearance and decided to restore it. He spent the good part of the month of November with the project.

The 6-inch was in a sad state of disrepair but as far as Paul could tell all the components seemed to be there. Although he had seen these telescopes advertised in past years and knew they had a good reputation, he had never actually seen one.



Lee Farrar (left) and Paul Castle (right) pose with the restored Criterion RV-6.

Everything was disassembled, cleaned, and the paint was touched up as needed. The focuser was blackened with age and the rack-and-pinion was virtually frozen. Only when it was polished did Paul see that it was made of brass. WD-40 it restored it to good working order. The finder was disassembled, cleaned, and painted. The word "Criterion" on the tube of the finder was carefully masked so the name would remain. New cross hairs replaced the broken ones. The new hairs were contributed from my wife's head! New finder adjusting screws replaced the ones that were missing. All of the aluminum parts of the scope were heavily oxidized so they were polished. A great deal of the hardware was corroded. It was replaced where possible by stainless steel.

Lee Farrar, ALCor of the Popular Astronomy Club, had once owned an RV-6 in the early 1960's. He was consulted on the details of the telescope's construction. He also looked up an advertisement in an old *Sky and Telescope* so Paul could see what the finished telescope was supposed to look like. Lee knew a supplier where he might be able to get a new drive motor. Fortunately he found one that not only fit perfectly, but was even of the same vintage! Since there wasn't much call for a thirty-year-old drive motor, the supplier simply gave it to him. The drive unit was disassembled, cleaned, and a new gasket was cut for the clutch. It was then reinstalled, adjusted and the new drive motor bolted into place.

The mirrors were in good shape under all the dust. They were cleaned, reinstalled, and collimated. At this point the scope was finished with the exception of a missing pointer for the right ascension setting circle. The three eyepieces that came with the telescope, along with a barlow lens, solar filter and lunar filter, (these were options), were found a few months later in their original boxes. The Criterion eyepieces and accessories were in good shape and only had to be cleaned. The financial cost of the entire restoration project? $12.31.

The project was well worth the time and effort. The 6-inch Dynascope is back to a good as new condition and ready for its next thirty years!

★ ★ ★