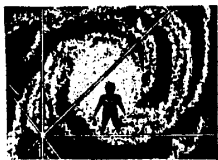


The Dark Sky Observer



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REPORT ON THE 54th ANNUAL STELLA- FANE CONVEN- TION

-Glenn Burke

This year during the winter, I thought it might be interesting to make the usual Stellafane trek an extended observing/astrophotography vacation. Roger Sudol, Jim Beirne, and Alan Koenig also thought it was a good idea and they joined the expedition. At first we toyed with the idea of camping in the Adirondacks, but Doug Kitteredge dissuaded us from that idea when he mentioned that most of the campsites there would probably be lit and surrounded by trees. We thought about different places until we found out that at Stellafane, the whole week before the convention was a "work week". Anybody could go up to



Stellafane the week before the convention and camp out at the site, if they helped the Springfield Telescope Makers clear land and get ready for the convention. Just before I wrote a letter to Dennis Di Cicco, who is involved in camping registration for Stellafane, to find out if our group could come up early. The answer was positive and our trip was on the way! Our trip became slightly more extended when one of our club members, Leslie Beebe, asked us to stop by Cape Cod on the way up to Vermont to visit her. Leslie works as a Ranger for the National

Parks Service at Cape Cod during the summer. Of course Cape Cod isn't quite on the way to Vermont so this side trip became a trip unto itself.

The morning of Saturday July 29 dawned clear. I arrived at the Koenigs house at quarter to five to pick up my traveling companion Alan. Roger was to meet us there at five o'clock after he picked up the intrepid traveler Jim Beirne. My car was packed with camping gear, clothing, and astronomical equipment. I was bringing my homebuilt, home ground, homebrewed 6 inch reflector to enter in the competition at Stellafane later that week. Roger was carrying my 14" scope in his Suburban, later to be known as the "Death Mobile". Five o'clock came and went with no sign of Roger. Then it was five thirty, no Roger. Finally at quarter to six the Suburban pulled in. Roger explained that he had simply fallen behind schedule. I however have my own suspicions (zzzzz). Finally we were off with our destination Race Point Visitors Center at the very tip of Cape Cod.

We arrived at Race Point early in the afternoon to my great surprise without a hitch. I have to give our navigator Jim Beirne a lot of credit. If I had to get us there we probably would have wound up in Nova Scotia. Leslie was there to greet us as she had been forewarned of our arrival. Back at the parking lot though unbeknownst to us, Roger's car battery was dying a slow and agonizing death powering his headlights for safety, that no one would ever see. Leslie got us down to the beach because all of the parking lots were full at that time of the day. The beaches were clean and the water was sparklingly clear. Perfect conditions for any beach goer. The only problem was that the water was a brisk 60 degrees. I having already been to Cape Cod, was used to water this cold and gradually was able to get in. Jim Beirne used to the waters of Maine was way out swimming away while I was only up to my ankles. Roger had a tough time getting in as he said this was the coldest water he ever felt. Eventually he did the only sane thing and flung himself into the icy deep. After our swim it was back to the parking lot to journey to the Beebe camping grounds. After we got to the cars did Roger discover the terrible secret his car held for him. After jump starting Roger's car, a scenario we would become quite used to in the following week, we went to set up camp.

That evening after attending Leslie's talk about Life Savers on old Cape Cod, we went out to do some observing and astrophotography. After Leslie brought us to what at first seemed to be a good site we took a look up. The sky was dark, but it was hazy. I don't

know if these conditions always prevail at the cape because it is surrounded by water, or if it was just due to the hot humid weather. Another problem we ran into was the light from Provincetown. There was also an airport near Provincetown with a blinking strobe, and there were several lighthouses nearby casting a beam across the sky in a cyclic pattern. Even with these problems we could still do some serious observing and astrophotography. But then cars started going past our site. These were fishermen going down to the shore to do surf fishing. They kept coming and going with lights blazing. This really discouraged us. Then it clouded over and we packed up.

The next day we went to the beach again and later in the day went on Leslie's tidal flats walk. Roger wore his rubber boots on the walk. He was quite a sight wearing shorts and a huge pair of boots but, his feet stayed dry. I had little fish swimming in my shoes when I was done. Jim and Alan wimped out by staying well away from the water during the walk and remained dry. Later that evening we toured the shops at Provincetown. When we got back to Leslie's cottage, Jim and I walked out into the dunes with my 11x80 binoculars and did a little observing. The sky for observing was really good. Andromeda and M-13 were great. If we could have gotten our scopes out there we could have done some great astrophotography. But trudging over the dunes with my mount was out of the question.

On Monday morning at Leslie's suggestion, we went on a whale watch. The boat took us out of Provincetown harbor around Long Point, the end of the Cape, and out into the ocean. The water was very calm, luckily for me, and it wasn't long before we saw our first whale. It was a finback whale. According to the naturalist aboard, the finbacks were rather shy and harder to see. This one surfaced shortly and cameras, not harpoons, shot incessantly. The next whales we saw were humpbacks. These whales were much more playful as they would roll around in the water slapping their huge fins up and down. These whales without fear would come up right alongside the boat. Underwater their white fins and underbellies glowed an eerie green as they sailed beneath the boat. At one point we saw the whales raising their whole head out of the water to look at the people in a small 16 ft pleasure boat. They were cavorting not five feet from the boat swimming around it and under it. I thought it was funny that while we were on a whale watch

looking at the whales, these whales were on a people watch looking at people. After seeing these beautiful creatures, I think they should get all of the Japanese and other peoples who still hunt whales, and put them on boats to show them what gentle animals they are killing to extinction to satisfy their petty need for exotic food. On Monday afternoon we broke camp and got ready for part two of our trip...STELLAFANE! I would just like to say though that Roger, Jim, Alan and I really appreciated Leslie's hospitality and we enjoyed our trip to the Cape.

We arrived at the Stellafane East camping site at around 9:30 in the evening and we set up in darkness. We met a fellow named Jim from Amateur Astronomers Incorporated from Cranford N.J.. He showed us the best place to set up. After we were set up we looked through Scott Milligen's 10" polar disk mounted newtonian. I had the best view of Saturn I have ever seen through that scope. Scott was a professional optician and he had ground the mirror himself. Jim and I both agree that we should have been shooting that night, but were just too tired after our trip up so we retired early. The next morning after breakfast, we got introduced around and we started right in clearing land of brush. We got our site all cleared out by the afternoon. Alan found out that they had a bonfire going down at Winnebago Wallow and he went down to see if he could be of assistance. We didn't see him for the rest of the day. The sky Tuesday night was in and out and not ever really that good. Jim got to take a few shots, but as usual I spent most of my time bumbling around trying to get my equipment working right and I only took one shot. I did get a chance though to see comet Brorsen Metcalf. Jim from A.A.I. told me that it would be near Algol that night. I looked around that area with the 14" and I found it. It was visible even in the finder so I estimate at that time that it was about 8th magnitude. At peak in September, it could reach 5th magnitude. Wednesday morning it was back to work. During the day we worked mostly with the president of the Springfield Telescope Makers, John Martin. He was a really nice guy. His dedication to making Stellafane go each year is unbelievable. All year long before work on weekends and days off, he is at Stellafane east with others clearing land, bulldozing land, chopping trees and many other things. He actually put up his house as collateral when his club purchased the new land for Stellafane! That afternoon we actually cleared out a brand new camping area. It made us feel

good because we created a site that will be used in years to come, and we did it along with members of A.A.I. Wednesday night was a washout, but not uneventful. After we had once again jump started Roger's car we went into town to do some laundry. As Roger peeled out of campsite we felt the back tire go flat. It had actually come off the rim. So we went to put on the spare. After we got it on it looked very low on air. But we thought we could get to town with it. Not 200 feet down the road, we heard from the back of the car sssss.....sssssss.....ssssss and soon to the spare was flat. We then loaded up the regular tire into my truck and brought it down to the gas station and pumped it up. We put it back on Rogers car and went to the local department store and bought a tire repair kit. We plugged up the tire and pumped it full of fix a flat. It held. The death mobile earned its name.

Thursday it was time for final preparations before the convention started. We ran string, put up signs, made barricades and other things. We put in all the polls and ran the line that fenced off the road leading up through the field to the hill. That night Jim, Alan and Roger went to the Howard Johnsons hotel room we had reserved for that night to take hot showers and use the pool. I stayed at our site to protect it from people who were sneaking in early for the convention the next day. I went and used the shower we had been using all week. It consisted of a hose with a sprinkler attachments on the end, hung between two trees with a wooden skiff for standing on. The water which came directly from the well was colder than the water at Cape Cod. When I arrived back at the site, I could here bagpipe music drifting through the hills. It seemed as if I had been transported to the Highlands of Scotland. Apparently somebody there liked bagpipe music. Our group arrived back at about ten o'clock with my dinner, a pizza. I was really starving because at that point we were running low on food so I had been forced to have a box of dry frosted flakes for dinner.

At last Friday morning came, and we waited anxiously for the rest of our club to arrive. We had taken up a lot of campsite area and some people were starting to grumble that so few people had so much are. But at around 11:00 our group showed up and tents sprouted up like mushrooms after a rain. Dennis Koenig was really impressed by the nice spot we had picked out. It was a much shorter walk to the hill. Then after our group arrived, Tom Gill from Wisconsin arrived. He is the man who does the club's

t-shirts and hats. The Koenigs had become quite good friends with him over the phone the past year or two, but most of us didn't know the man behind the t-shirt. Ruth invited him to camp with us when he got out here, so he and a friend of his and his son camped at our site. I'm glad he did. Tom has a really great personality, and is really into astronomy. For those of you who know him, he kinda reminds me of Mike Lynch, one of our members who moved to Texas. It was nice to have our reinforcements arrive as we had run out of virtually every foodstuff. I had already been to the hill before the other conventioners arrived, to set up my scope. Alan also had set up his radio telescope. After a filling and for a change not Spartan dinner, we all went up to the Friday night talks under the tent. There were some good talks but I left before they were over so I could get some sleep so I could get up early for the swap tables. It was raining that night, no chance of observing.

Saturday morning was wet and cool and it did not bode well for the convention. The swap tables were running though so, I got to them early. This year they were held at the campsite and not at the hill. Thankfully it was held in a clearing in the trees which kept out some of the water. The first thing I saw was a 20 mm type II Nagler for 250 dollars. It was nice, but just a little more than I wanted to pay for an eyepiece. As I turned around, on the table behind me I saw a big lens. It was a Kodak 300 mm F/2.5 Aero Ektar lens. Jim Beirne and I had been looking for these lenses all over. The guy was selling it for 125 dollars. I saw a few other people looking at it so I quickly went over and snatched it up. That was my big acquisition this year, I just didn't see much else I really wanted. Of course as I heard later after the rain stopped a lot more stuff came out, things I would definitely had bought, but by that time I was back on the hill.

After leaving the swap table I stopped by the Rockland Astronomy club's site for a while and talked to Bill Thys. Then I went back to our campsite. I was totally soaked. But the rain was letting up and the sky was brightening. Soon patches of blue could be seen in the northwest. By the time I got up to the hill the sun was out. The haze was gone and the sky was sharp and clear. Scopes were unwrapping all over so Alan and I got up to the clubhouse to register our scopes. There were many nice scopes on the hill this year. A pair of 10" binoculars on a dobsonian mount were very interesting. The mechanism for aligning them and

setting the interocular spacing was unique and the craftsmanship was excellent. In the back of the clubhouse was a lovely 12" newtonian reflector on a massive German equatorial mount. It was put together by three machinists. John Vogt as usual had the 30" there but he also had with him a 12" trischiefspiegler. One guy had a scope on a polar disk mounting. The drive was interesting. On the polar disk was a long bolt curved to the diameter of the disk. Driving this long curved bolt was another straight bolt. In the front next to my scope Alan Green had a 17" dobsonian scope that had been molded almost entirely from plastic. It was an open tube design and weighed only about 80 lbs. One scope I found exceedingly interesting was built by the Vermont Astronomical Society. It used a 600 mm Aero Ektar lens as its optics. Its images were crisp right to the edge of the field. The guy that had the solar telescope from last year had it hooked up to a television camera this year. You could see the sun on a monitor in hydrogen alpha light inside the porter turret telescope building. I could see all sorts of markings on the sun as well as a few solar prominences along the sun's edge. It was awesome!

During the day Alan's radio telescope really made a hit. This telescope looked like a radio and played music but inside was a little copyscope. People thought it was really humorous and that night at the judging, Alan tied for the first place award in the junior division. The 12" machinist's delight telescope won an award as well as the 10" binoculars. Merit awards were also given out. Unfortunately I didn't win anything, but I've got another idea for next year. None of us won anything in the raffle this year. After Walter Scott Houston's annual Shadowgram, Roger Tuthill gave his talk. His talk was o.k. but his 1973 eclipse film was boring. People cheered when the film broke and Tuthill decided to end it there. And it's good that he did because the sky was clear and the Milky Way was out. I had a line of people by my scope and I went from object to object. They then announced registration for the optical judging and I entered my scope. The judges came by and said although I had a slightly turned edge, the figure was very smooth and was well corrected. For this being my first mirror, this made me feel very good. After this I did a little more observing with my scope as the rest of our club members went to see through the other scopes. Clouds came in at about one o'clock and I packed up and went back to my tent.

permanent record of this beautiful performance of nature.

The moon slowly reappeared over the next hour, although we had closed down and left the park a few minutes before the moon left the umbra. By then, the moon was no longer a thing of beauty to astronomers. It was, once again, an ugly, blinding, cold hearted orb that screws up clear nights.

The moon left the penumbra at 1:53. I doubt anyone from the NJAG bothered to watch that long. I know I was asleep.

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HOW TO MAKE YOUR OWN TELESCOPE FROM SCRATCH.... NO PRESERVATIVES ADDED

Nothing is more satisfying than looking through a telescope you have built yourself. I have made a couple, but until recently, I had not ground my own mirror. That is until I completed my 6 inch reflector. The first time I looked through the eyepiece of that little six incher was memorable. The fuzzy shapes of M-81 and M-82 adrift among a sea of glittering stars was awesome. I had seen them bigger and more detailed before in my 14, that wasn't what had me so entranced. The fact was that I was seeing the images of galaxies millions of light years distant collected by the mirror I had made myself. To start out with, that 6 inch was only a flat pyrex disk no more able to produce an image than a dinner plate. But with patience, perseverance, and a little TLC, it was transformed into a precise parabolic reflector. This is the allure that drives the amateur telescope maker. Knowing that the equipment you are using to probe the depths of space was produced with your own hands. It sort of makes you feel a little closer to the universe.

Another benefit that telescope making has, is that it allows you to really become familiar with the way a telescope works. For example, many telescope owners know that their telescopes' mirrors are parabolic, but less know what the reason is for having it curved in this particular way. When trouble arises with one's telescope, the ATM has a leg up on others by his familiarity with a telescopes proper operation. Becoming an ATM is rather easy. All it requires is a

little patience, some reading, and access to some hand tools. Now many people cringe when they hear the phrase:"All you need is a few simple tools." This usually translates to a machine shop, a crew of workers, and discarded jet aircraft engine parts. But in the construction of the telescope I will detail, there will be no need for anything but saws, hammers, and the like.

There are many, many different types of telescopes one could construct, but lets consider something simple enough for the person with all thumbs to build, yet useful to the person who owns a top of the line commercial instrument. The 6 inch reflector is the perfect beginning instrument. It is powerful enough to view all of the Messier objects, and many of the NGC in some detail, yet small enough to be easily taken out at a moments notice. The first thing needed for this enterprise, is a work area. This can be a basement, spare room, or free corner. What you also need to get is a telescope making book such as Neale E. Howard's Standard Handbook of Telescope Making, or Richard Berry's How to Build a Telescope, or Sam Brown's All About Telescopes. Howard's and Berry's books are available through Willmann and Bell or a good bookstore. Brown's book which is very good is available through Edmund Scientific. All of these books have sections on mirror grinding which you will want to read before you plunge into this project. But let's take a look at mirror grinding.

For your first mirror, it would be wise to buy a mirror grinding kit. These kits usually contain two glass disks. One of these will become the mirror, the other one will be used as a tool to shape the mirror. Also included is a graded series of abrasives which you will use to generate the curve of the mirror and smooth it. You will also get a hard block of pitch which will be used to polish the mirror. For a 6 inch kit you'll probably pay between 40 and 60 dollars. But this is much less than the 120 dollars you would pay for finished 6 inch f/8 parabolic mirror! Before starting to grind you must become familiar with a few of the most important concepts of mirror making. In grinding the mirror you will choose which one of your glass blanks will become your mirror. This one will be the top disk as you start grinding. The fixed bottom disk is the tool. Abrasive is sprinkled on the tools face and you will grind against it with the mirror blank. With equal size blanks, it is the natural tendency for the top disk to become concave and the lower disk convex.

This is how the curve is produced on the mirrors surface. The depth of this curve is called the sagitta. If you held a straight edge across the surface of the mirror and measured from the center of the curve up to the straight edge, you would have the sagitta. Knowing this depth, you can figure out the focal length of your mirror. The formula is:

$$R=r^2/2s$$

r=radius of mirror S=sagitta R=radius of curvature

If you solve this equation, you will find the radius of curvature. The curve you grind into the mirror is spherical. If you imagine your mirror in cross section, The curve will approximate an arc of a circle. The radius of curvature is the radius of the circle that this arc is part of. To find the focal length of your mirror, divide it's radius of curvature by two. Knowing this formula, you can plan ahead what focal ratio you want your mirror to be. Remember that the focal ratio is the focal length of the mirror divided by the diameter of the mirror. For your first mirror it is probably easier to try grinding something in the range of f/8. The parabolizing this mirror will be fairly easy since the parabola you will need to grind departs only slightly from the spherical surface you will initially grind. Faster mirrors such as an f/5 are harder to figure into parabolic shape, but provide much shorter wide field instruments. Figure out what you want your mirror to be and you will be ready to begin grinding. More on that next month.

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SEPTEMBER NIGHT

by Sara Teasdale

We walked in the dew, in the drowsy starlight
To the sleepless, sleepy sound
Of insects singing in the low sea-meadows
For miles and miles around:
With a wheel and a whirr the resistless rhythm
Trembled incessantly;
Antaries was red in the sky before us,
And behind us the blackness of the sea.

VOYAGER APPROACHES GRAND FINALE

by Roger Sudol

On August 25, 1989, Voyager II will reach the conclusion of the extended limb of it's mission of planetary discovery. This conclusion will be with it's close flyby of the mysterious planet; Neptune.

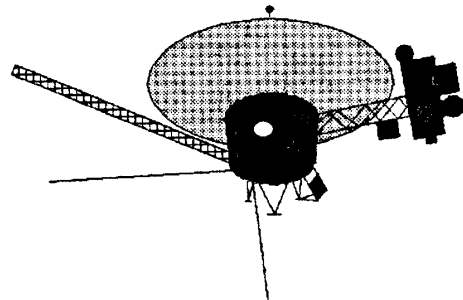
Voyagers I & II both started their missions in 1977. Their primary mission: to explore Jupiter and Saturn, their rings and planets. They completed their missions with great success, sending back spectacular images of the planetary systems. Voyager II however, achieved more than originally expected. It has already explored Uranus and now is only days from Neptune.

Currently traveling at a speed of 43,000 mph from earth, Voyager II is the fastest moving man made vehicle. It will also be the first man made object to leave the Solar System, carrying the Search for Extra-Terrestrial Intelligence plaque.

Voyager II has already sent us some interesting information concerning Neptune. Faint arcs near Neptune, similar to Saturn's rings, have been known about for some time. Voyager II has confirmed that at least one of them is actually a very tenuous, but full ring. Images of Neptune cloud cover show a gigantic grey storm, much like Jupiter's red spot. Also, very high, thin, white clouds float above the planet's main cloud cover. The number of moons circling Neptune is five, only two of these were discovered by telescope. Voyager is responsible for finding the other three.

What else will Voyager find out? By the time you read this you will (probably) already know.

More Next Month!



LOOKING AHEAD

The next meeting of the North Jersey Astronomical Group will be held on September 13, 1989 at 8:00 in the Rifle Camp Park Observatory in West Paterson New Jersey. Business meetings, as always, are open to the public, so bring a friend.

There will be three regular meeting/observing session this month. They are on September 6, 20 and 27 at the Rifle Camp Park Observatory.

The special public night for the month of September will be focused on the planet; Saturn. It will be held on Friday, September 1. All members are urged to attend.

There will be two traditional public nights this month. They will be held on September 8 and 15. All members are urged to attend.

Anyone interested in attending the 1990 Stellafane Amateur telescope makers convention in Vermont on the last weekend in July should contact Glenn Burke.

FOR SALE

80 to 200 mm f/4.5 Macro Zoom Lens, Pentax K Mount, Like New, \$75.

call Mike Koenig at 478-7699

Books on the Sky:

Adventures in Celestial Mechanics, Szebehely.

The Moon Observer's Handbook, Price.

The Constellations, Motz & Nathanson.

Encyc. of Astronomy & Astrophysics, Meyers ed.

call Roger Sudol at 471-9451

The Dark sky Observer is a publication of the North Jersey Astronomical Group. All members are invited to write articles for the newsletter. Anyone interested in writing for the DSO, please contact the editor at a meeting or through the mail.

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