STAR STUFF

The Newsletter of the Ford Amateur Astronomy Club

September 2002
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Editor: Jim Frisbie

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STAR STUFF is a monthly publication of the Ford Amateur Astronomy Club, an affiliate club of the Ford Employee Recreation Association.

Ford Amateur Astronomy Club
P.O. Box 7527
Dearborn MI 48121-7527

http://www.boonhill.net/faac

Submissions to STAR STUFF are welcome Please write to the address above or contact the editor:

Jim Frisbie
via tele #: 734-453-1422
or email: w8tu@peoplepc.com

Dead line is the 15th of each month for the following month of publication.

Officers:

President	Don Nakic
Vice President	Ken Anderson
Secretary	Don Klaser
Treasurer	Mike Bruno

General Meetings:
The Ford Amateur Astronomy Club holds regular general meeting on the fourth Thursday of each month (except the combined November/December meeting held the first Thursday of December) at 5:00 PM at the Family Service and Learning Center, 18501 Rotunda, Dearborn, MI 48124.

Observing:
The Ford Amateur Astronomy Club observes at Spring Mill Pond within the Island Lake State Recreation Area near Brighton, Michigan. The club maintains a permit for after-hours access. Weather permitting, the club observes on Friday nights, Saturday nights, and nights before holidays.

Club Information:
Observing schedules and additional Club information is available by calling the Observing Hotline at: (313) 390-5456 or via the Ford Intranet: www.be.ford.com/astro/faac.html
or the public Internet: www.boonhill.net/faac.

Club Membership:
Membership in the Ford Amateur Astronomy Club is open to Ford employees and non-employees. Write or call for an application.
Annual - New Member: $25; Renewal: $ 20 (before Jan 31 of each year)
Lifetime - $ 150

Membership includes:
A subscription to the STAR STUFF newsletter and the quarterly newsletter the REFLECTOR published by the Astronomical League.
Discounts on ASTRONOMY and SKY & TELESCOPE magazines, after-hours access to the observing site and discounts at selected area equipment retailers.

Magazine Discounts:
Do not send money to FAAC for SKY & TELESCOPE or ASTRONOMY magazine subscriptions. We have a form that you send in with your subscription directly to the publisher to receive a $10 discount. Pick up a form at the next meeting, or contact a club officer.

EDITORS NOTE: CORRECTION – *The caption under the image of Don at EMU in August Star Stuff, page 3, should read: " Don Nakic, his brother John, George Korody, and Don's wife Ann, all checking out the 10" Astro Physics refractor at EMU.*

SWAP & SHOP

For Sale: 6" Celestron Dobsonian Star Hopper. Like new and always stored in original wrapping $500 or best offer Contact Ed Augustyn (734)-641-8336

MINUTES OF THE AUGUST 22, 2002 FAAC GENERAL MEMBERSHIP MEETING

by Don Klaser

The meeting was called to order by Pres. Don @ 5:00 pm. Introductions ensued as everyone helped themselves to pizza & pop. Mike Bruno gave the treasurer's report. There was no secretary's report. Gordon Hansen gave a presentation for our scholarship program; a check for $300.00 was given to Brande Williams, who will be attending MSU in the fall. Pres. Don lead a discussion on the idea of having an FAAC Library. Don also mentioned the idea of having an image processing group within the club; a sign-up sheet was passed around. Ken Anderson spoke on our up coming Star Party job assignments: registration & sales tables, programs: Astro 101, light pollution talk, etc. Bob MacFarland & George Korody gave a talk on West Nile Virus & the situation @ Island Lake & Kensington. George Korody gave a presentation about a recent close encounter with an asteroid.

TREASURER'S REPORT AUGUST 22, 2002

by Mike Bruno

Balance on hand:	Checking	$ 843.60
	Savings	$1,987.05
Included in above	Scholarship	$ 430.13
Cash Available		$2,400.52

A MESSAGE FROM THE PRESIDENT

by Don Nakic

As you may already be aware, the method I chose to record images from my telescope is with a CCD camera. In the past few weeks I've met a number of people who expressed an interest with CCD imaging but were put-off by its complexity. I would like to take the time to let everyone know that CCD imaging is not as difficult as it appears.

When I first purchased my Schmidt-Cassegrain telescope, I knew right away that I wanted to get involve with imaging. At this time, I had no preferences on the imaging medium. After extensive research, I decided that the CCD camera would meet my needs for lunar, planetary, solar, and deep sky imaging. The basic level of equipment needed, in addition to a telescope and CCD camera, is an equatorial wedge, illuminated reticle, computer (preferably a laptop), and access to a power supply. Additional equipment I found to be extremely helpful is a flip mirror, electric focuser, dew heater, and a photo-enhancing software package such as Adobe Photoshop or Picture Window.

In preparing to take images, I begin with getting the telescope polar aligned as accurately as possible. A good polar alignment is good enough for imaging objects that require short exposures (less than 30 seconds) such as stars, star clusters, bright nebulas, moon, planets, and our Sun. For deep sky imaging, exposure times are longer (greater than one minute) and this requires a more precise polar alignment and more accurate movement in the telescope's Right Ascension drive. To achieve a precise alignment, the drift alignment method is commonly used. This involves making adjustments to the equatorial wedge in both azimuth (while looking at a star in the South) and latitude (while looking at a star in the East or West). You will find that a 9mm illuminated reticle helps with centering and tracking stars during this procedure. Next the telescope's RA drive needs to be adjusted such that it moves accurately. Typically there are slight imperfections in the gears or in their alignment relative to each other that cause the RA's drive to speed up and slow down. This movement can be programmed out through the telescope's periodic error correction routine with your updates retained in its non-volatile memory. If everything is done correctly you can take at least an eight-minute exposure, at least that is the furthest I've gone, without star trails. For those interested in film imaging, you can mount a camera on the scope, piggy-back photography, and take some spectacular images too. And that's it!

Regarding the additional equipment, you can use a flip mirror to assist with centering images and an electric focuser to achieve very good focus without image shift. Also, when your images are recorded you may want to use photo-enhancing software to refine the image to pull out details that are important to you. This is common practice for most all images, including images recorded by Hubble!

Once you get started into imaging, CCD or film. there is no limit as to what you can do and learn. Also, there is a wealth of knowledge from fellow FAAC members to help you in your journey. Have fun with recording those photons!

OBSERVATIONS

by Greg Burnett

[This article was first published in Star Stuff, *the newsletter of the* Ford Amateur Astronomy Club, *in September, 1997.]*

It's two o'clock in the morning. A ghostly fog bank hovers over the pond, threatening to drift up the beach in our direction. My book of charts is already soggy; the open page swollen, bigger than the rest. A mosquito bite on my knuckle reminds me I am prey. I hear one buzzing around my ear, searching out that inevitable tiny spot missed by the DEET. The night enfolds, like a damp, woolly blanket, but provides no warmth. Movements become slow-motion, voices muffled, shadowy hands groping, as if underwater. Not much can be seen beyond my LEDs, except the looming glow of the horizon, and... "What am I doing out here?" ...oh yes, the stars!

Distant campfires of ancient tribes. Stitch-holes in the fabric of the Universe, where the fires of the gods shine through. Great suns flung out across the howling abyss, their magnificence enfeebled by vastness beyond our imagining. But we go there,... tonight,... every night. We go far above the clouds, soaring beyond the rills and grabens of the Moon, through star-fog and smoke where new suns are forged, into the cores of great swarming clusters of mighty suns, even to the glowing gates of whirling galactic star-cities, where all we can dream becomes true.

That's what I'm doing out here. Going where we go on these nights, in the company of good friends, hoping for that magic moment when, cosmic forces converging before us, the Universe once again whispers some deep secret, and we are there to listen.

THE MEADE ETX 70 AT

by Clayton Kessler

This interesting little scope was purchased to provide an airline portable wide field scope to observe with while in Arizona. I spent some time looking at the alternatives for a "lookin' through" scope to use while my 4" refractor and G11 were working hard taking astrophotos. I researched many alternatives, 8" dobsonians, 4" f5 short tube scopes, a 6" or 8" reflector mounted on my existing SVD mount. All of these had something going for them – but also had many drawbacks. The most common was the physical size. None of these would fit aircraft "carry on" luggage. It would be possible to build an 8"

or even a 10" carry on dobsonian telescope but it would not be a small chore. It would take a lot of careful work to craft a scope of this nature.

I was Christmas shopping up at one of the local malls when I drifted into a store that specialized in science and nature items. I noted that the store was stocking up on Celestron telescopes and the Meade scopes were all on sale. A little conversation with a salesman confirmed that a "brand change" was taking place. I took careful note of the 60mm and 70mm ETX style refractors that were on display. These scopes had an identical focal length (350mm) and while they would never be high powered planetary scopes I suspected that widefield views would be quite nice. I popped an eyepiece into the 70mm version and took a look at a light fixture out in the mall. As you would expect the achromat design of this refractor showed color fringing on a bright light source. On the other hand, the view was fairly sharp across the whole eyepiece. Hmmmmm.....

I must admit to some curiosity about the mount. The ETX mount included the "Autostar" computerized controller. This, if it worked, would make it quite easy to find objects and also opens up the possibility of tracking satellites with this thing. I have never owned a "GOTO" telescope before and this intrigued me quite a bit. A couple of weeks after Christmas I stopped by the mall again and purchased a 70mm sample of this scope.

To those of you familiar with the ETX90 the telescope controls are no mystery. The focus knob is in the back and moves the front lens cell in and out to achieve focus. This worked well but it was somewhat hard for my fat old fingers to reach in and turn this knob. Fortunately "Scopetronix" makes a focus knob extension that replaces the stock knob and is very easy to use. There is a "flip mirror" to allow mounting a camera in the back of the scope. I think this will work well for terrestrial photography but the mount is not robust enough for astrophotography with this scope. The computer control works on 6 "AA" sized batteries that are supposed to power the system for 20 hours.

The scope came with a 25mm MA and a 9mm MA eyepiece yielding 14x and 38x respectively. While these are not Naglers, they offer a reasonable amount of magnification to use with this little beast. One small complaint, they are not even close to parfocal! It took many turn of the focus knob to change them. After the first time I focused with the 9mm and slid the barrel of the 25mm out until rough focus was obtained. I need to try some parfocal eyepieces with this, maybe some Edmund RKE's will work well.

On my arrival in Arizona the weather was not the best. I arrived about a day or two after the new moon and by the time the rains stopped (4 days later) there was too much moon for astrophotography. For a while I did not think I would get to use this little scope. Fortunately a night spent at Roger Tanner's Rita Ranch observatory gave me the opportunity to put this thing through it's paces. I borrowed a Bogen photo tripod to set the scope on and it proved to be a very sturdy support for this mount.

The setup of the computer control was straightforward – I just followed the instructions on the hand controller (I don't need no stinkin' manual!). The scope has you center two stars in the FOV. I thought it was somewhat odd – I had to slew the scope up 10 degrees or so to center each star. Then I realized I had the "position" set as "Ann Arbor Michigan" instead of "Tucson Arizona". I decided to leave this setting alone and see if the scope could cope with this "casual" setup. I got an alignment complete message so I set the scope to slew to M42 which was high in the east. The ETX 70 AT is not as loud as the LX200 scopes – but you can tell that they come from the same family. Once the slewing stopped and the scope "beeped" me to indicate it was finished I peaked into the eyepiece. M42 was almost dead center. Even with the bright moon I could see a lot of nebulosity. A quick change of eyepieces to the 9mm showed the four trapezium stars resolved at 38x. Not Bad.....

Now for something a little harder – a planet. In order to slew to a planet the scope must know what day and time it is. This is set as a part of the initial setup. I told the scope to find Jupiter and after a little growling – presto! The banded planet and it's moons. This scope will never be a high power planetary scope but I could easily see the four moons and the major belts on the planet at 38x. Saturn clearly showed it's rings – although Cassini's division was absent with the supplied eyepieces.

I have to admit being impressed with the performance of this inexpensive GOTO mount. As an experiment I slewed to M44, the beehive cluster. I then left the scope to track by itself in Alt-Az mode for about 2 hours while we hunted and killed a "pizza". During that 2 hours the beehive barely moved from dead center of the eyepiece field of view. In fact everything that I asked it to slew to ended up in the field of view. This included a couple of trips across the sky to look at M31 and the double cluster. Like the LX200 it is easy to center an object and re-synchronize the mount to refine your alignment. On this moon washed night the dimmest object that I could see was M104 – the Sombrero Galaxy. It was just a dim oval patch but it was there in direct vision. On a darker night I suspect that most or all of the Messiers will be possible with this scope.

Conclusion: This is looking to be a very nice scope. The size of this scope is such that it can be placed in a small duffel bag and carried onto an airplane. I am impressed with the ease of use and performance of the GOTO mount. As long as one does not expect to use high magnifications this satisfies the requirements for a "grab and go" scope for an experienced observer. In my opinion this also represents a fine scope for a beginner – as long as one does not expect to use high magnifications. I suspect that – atmosphere permitting – 100x will be the max usable on this system, and this will be a rare night indeed. On the other hand I am anxious to try my 7mm and 4.8mm Naglers in the scope. I suspect they will be very nice at 50x and 73x. As the weather warms I will try to get out to Island Lake some weekend if anyone is interested in getting some eyepiece time with this interesting telescope.

QUICK AND CHEAP SCOPE ACCESSORIES

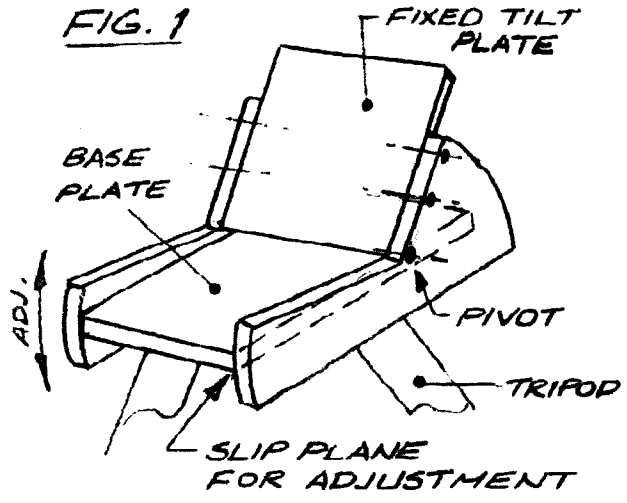
by Tony Licata

Recently I purchased a Nexstar 11 GPS telescope by Celestron. It is a giant step up from the homemade 6" newt I had been using since my teenage years. There's nothing like a new telescope to breathe life back into an astronomer's spirit. What once was a passion for me, had long since taken a back seat to other goals in life. I thought I'd just do it. "I'll buy the best thing I can afford." I thought. "Then maybe I'll be content for a while." As anyone in the hobby knows however, once the deed was done, having cleared the acquisition through the proper channels, (the wife), I soon realized how many more accessories I would need to really be up and running.

Now begins the dilemma! Yes, I now have the best scope I can afford, but when I suggested that I might need some other stuff to my wife... Let's see, how can I say this? ... She said "NO"...so to speak. So I thought, I could just make as many of the things I need as possible, and do it all as quickly as possible, so as not to be noticed doing astronomy by day. Please understand, I realize the words "quick" and "cheap" are not always viewed in positive terms, but they have a place in my home. Besides, I've been learning things in the process.

I wanted to try some imaging with this scope, so most of the things I made are with this end in mind. First I needed a wedge. Steel was my first choice for the material and still is, but I do not have the tools to work in steel. To get me by, I chose a three quarter inch oak board, which I found for $12.00. I designed the wedge to be as compact as possible, which added to it's strength. Though it is adjustable, it does not look like it because adjustment is not done in the usual way, and the mechanism for this is hidden in the design. What I mean is, the tilt plate does not tilt at all. It is fixed to the sides, which are designed to straddle the tripod as the base plate does the tilting.

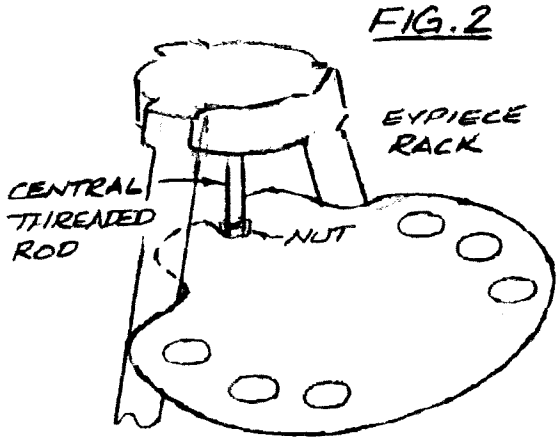
FIG. 1



From some of the remaining oak stock, I made a piggyback mount for my camera. I had a broken camera tripod from which I borrowed the camera retaining screw and retrofit it to the mount. I got a great deal on a 200mm f3.5 lens on Ebay which I "sniped" for seven bucks. (Secretly, I harbor guilt over this so I confess it here.) With this rig, I am up and running doing piggyback work for just pennies.

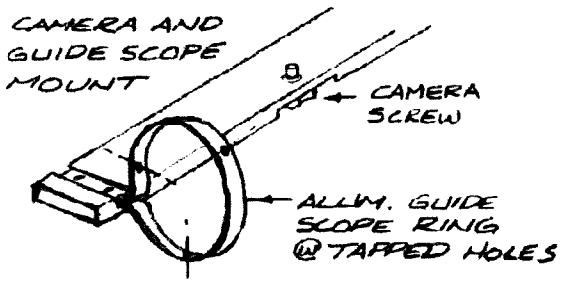
Next, I made an eyepiece rack from leftover 3/16" ply I had sitting around. It is secured to the tripod of the telescope by a nut on the tripod's central threaded rod. From the same stock I made a "hat trick" board which hangs conveniently from a hook I made to fit on the same threaded rod of the tripod.

FIG. 2



I still needed, a guide scope and mounting rings, and a polar alignment scope. I found a Firstscope 60 for $65.00. Yes, this was over budget, but I bought it on line secretly at midnight, and later agreed to cut my own hair for a while to make up for it. (Not really). I thought it's black Celestron tube would match the Nexstar nicely. Yes, I care about sissified things like that. For the mounting rings I bent some 1/8"aliminum strips around the mail box post and fashioned them to cant off to the side from routed slots in the piggyback bar. With some tapped holes and ¼-20 nylon screws, the guide scope is steadily secured.

FIG. 3



To polar align, rather than buy an alignment scope, for now I just use a circular piece of cardboard on which I pasted the polar region of a star chart over a time wheel I found in another book. I plotted the field of view of my spotter scope around the NCP of the chart. By placing the current date and time at the top, I am able to quickly estimate the position of the NCP while polar aligning through the spotter. This is not the best way to do it of course, but we are not talking about best practices here, just quick and cheap. Besides it's been working.

So, until my next tax return, my astronomy program is moving forward ever so inconspicuously. I have had a great time doing all this too. Best of all, it hasn't cut into the family's budget much, and none of these simple wooden parts took very much time to make. The total cost for all this was no more than a hundred bucks including the guide scope. That's cheap considering what the retail cost of a wedge, dovetail system, Guide scope with mounting system, plus the eyepiece tray and 200mm camera lens would be. Yes, "quick" and "cheap" can be good things, especially when applied to a learning curve like the one I am on. For example, I may not really want to manually guide with a scope in the long run, but at least I will not waste money learning that. Or let's say I spring for $200.00 and buy the polar alignment scope. Then Celestron updates their electronics to make the need for this obsolete. (I hear they are). Plus, for the present time, I am not shut down waiting for the perfect set-up. Like this, mistakes along the way will be quick and cheap instead of costly and time consuming. Of course, if my telescope breaks off that wooden wedge (Ouch), I may eat my words. But I hope not.

RIDDLE OF THE MONTH

Submitted by Pat Korody

When do you see sunshine at night?

NASA's Space Place

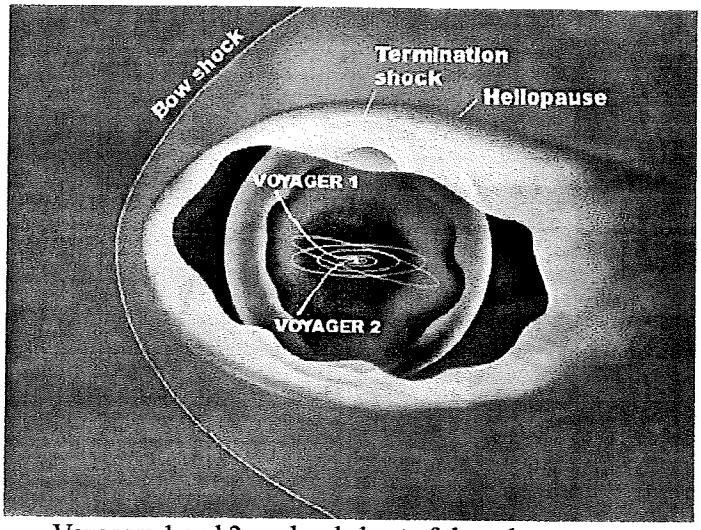
Seeking the Edge of the Solar System

In September and August, respectively, 2002, the Voyager 1 and 2 spacecraft will observe their 25th anniversaries in space, continuing to perform long after their original mission to visit the Jupiter and Saturn systems. After Voyager 1's encounter with the two gas giants, it was aimed upward out of the plane of the ecliptic. Voyager 2, after its visit at Jupiter and Saturn, was given two more planetary destinations, Uranus and Neptune. It completed its "grand tour" of the outer planets in 1989. It was then aimed downward out of the ecliptic plane.

Now, at about 85 AU, Voyager 1 is the most distant human-made object. Round-trip light time is 24 hours. Voyager 2 is at about 68 AU. Their mission now is to study the heliosphere, the vast bubble of space within the Sun's influence, and the heliopause, the boundary of the solar system with interstellar space. At the heliopause, the outward pressure exerted by the solar wind balances the inward pressure of the interstellar wind. The region where solar wind particles begin piling up against the heliopause is the termination shock, where the solar wind should drop from about 1,500,000 kilometers (nearly 1,000,000 miles) per hour to 400,000 kilometers (250,000 miles) per hour. Voyager 1 is already detecting a slowing of the solar wind from the pressure of inbound interstellar particles leaking through the heliopause.

No one knows exactly how much farther Voyager 1 must travel to reach the termination shock or the heliopause. Dr. Ed Stone, Voyager Project Scientist since mission inception, estimates that the spacecraft could reach the termination shock within three years. Once there, Dr. Stone predicts it will still have about 5 billion to 8 billion kilometers (3 billion to5 billion miles) and 10 to 15 years to go before actually crossing the heliopause into interstellar space. Because the heliosphere expands and contracts with the level of solar activity and the inward pressure of the interstellar wind is uncertain, it is very difficult for scientists to estimate the actual extent of the heliosphere.

Read more about the Voyager mission to find the heliopause at http://voyager.jpl.nasa.gov/ . For children, go to http://spaceplace.nasa.gov/vgr_fact1.htm to read about the Voyagers' grand tour of the outer planets and find out the secret code they use to send pictures back from space.



Voyagers 1 and 2 are headed out of the solar system in search of the heliopause, the region where the Sun's wind stops and interstellar space begins.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

SPACECRAFT ARE RACING TO SOLAR SYSTEM'S EDGE

by John Noble Wilford

The following article from the New York Times was submitted by Don Klaser and has been included for those readers interested in more detail on the Voyagers

Twenty-five years ago, in the late summer of 1997, two identical spacecraft took off on missions of exploration deep into the outer solar system.

In a departure from an earlier practice, the spacecraft were not given fanciful names from mythology. like Mercury or Gemini or Apollo. They were called simply Voyagers.

Their grandeur had to be earned. And so it was, through their own unexpected durability, the ingenuity of engineers and scientists on the ground and - in no small measure -nature's unending capacity for surprise, diversity and breathtaking beauty.

Both visited Jupiter and Saturn, and Voyager 2 kept on to Uranus and Neptune. Their missions, the longest and most scientifically bountiful of the Space Age, came to epitomize planetary exploration.

"We were on a mission of discovery;" said Dr. Edward Stone, a physicist at the California Institute of Technology who was, and still is, the Voyager chief scientist. "But we didn't appreciate how much discovery there would be."

Both spacecraft are still cruising on, transmitting data far beyond the sun's outermost planets and closer to the true edge of the solar system, where interstellar space begins.

Voyager 1 climbing at 38,540 mph above the plane in which the planets orbit, is now 7.9 billion miles from Earth, more than twice as far away as Pluto. Voyager 2's speed is 35,158 mph, dipping below the planetary plane, and its distance 6.3 billion miles.

The two 1-ton spacecraft are pulling away from the sun's gravitational grip and, Stone said, "will just keep going forever into interstellar space.

Flight controllers at NASAs Jet Propulsion Laboratory reported on Monday that the Voyagers show every sign of being able to function long enough for one more significant discovery: the heliospere, where the solar system ends and the rest of space begins.

No one is sure where that is. The heliosphere extends far beyond the orbit of the outer-most planet (usually Pluto, but sometimes Neptune) to the farthest reach of the sun's magnetic field

The heliosphere is a kind of pressure bubble blown by a supersonic wind of electrically charged particles streaming from the solar atmosphere. At the point where the wind is unable to push back the inter-stellar medium any further, there should be a turbulent boundary. Scientists expect the Voyagers to observe a sudden drop in the solar wind, down to subsonic levels, and record chaotic magnetic forces. They should also begin to see interstellar particles, accelerated In the turbulence.

In all likelihood, scientists say the heliosphere's boundary moves inward and outward with the varying strength of the solar wind over the 11-year cycle of the sun's maximum and minimum atmospheric flux. The heliosphere's last maximum expansion was presumably at the peak of solar activity two years ago. "We are after a moving target," said Ed Massey, the Voyager project manager at the Jet Propulsion Laboratory.

The Voyager 23-watt transmitters are on all the time, but deep space antennas on Earth tune in to their weak signals and record data only a few hours a day. New commands are radioed no more often than once a quarter. At those distances. roundtrip communication with Voyager 1 tales more than 23 hours, and more than 18 hours with Voyager 2.

Each new batch of data is examined for hints that the spacecraft may be approaching the heliosphere's edge, but nothing has turned up yet. Some scientists think the boundary crossing will occur in about three or four years, when the spacecraft reach a distance of 9.3 billion miles - 100 times the distance between Earth and the sun. "We're in a race to get out-side the heliosphere before the spacecraft run out of electric power - in about 2020," Stone said.

Dr Bradford Smith, who was leader of the Voyager photographic Interpretation team, remembered that, from the beginning, everyone on the project "realized the potential was there for a good first look at the entire outer planets."

Inspired by the prospect, engineers designed the hardware for the long haul. Onboard computers were built to be reprogrammed often during the flight.

In 1990, as its last act of planetary observation, Voyager 1 turned its camera on the receding scene of its triumphant journey and snapped a sequence of pictures of most of the sun's family. A mosaic of the pictures showed six of the nine planets in orbital array like diamonds laid out on black velvet. From 3.7 billion miles out, Earth was barely me size of a single pixel, or picture element.

The Voyage's are expected to survive millions of years of interstellar travel, steadfast as ever. But silent, their computers and radios dead and the sun receding into cosmic insignificance, the two spacecraft will have long since lost touch with their makers and the home they left behind in 1977.

ARE YOU INTERESTED IN ASTRONOMICAL IMAGING?

A special interest group (S.I.G.) is being formed within FAAC to permit members to share experience and ideas and to learn about astronomical imaging equipment and image processing techniques. This will not be an instructor/student type seminar. Instead, it is planned that group members would share their knowledge with others and learn from others in the group by demonstration and presentation in an informal setting. It is expected that there would be hands-on imaging and processing sessions as appropriate and at appropriate locations. The time, frequency, and location of the meetings will be based on the size and desires of the group.

If you are interested in participating in this group, please sign

up at an FAAC General Membership Meeting or contact George Korody at (248) 349-1930 or E-mail at gkorody@comcast.net. Please advise if you would be willing to help in plan meeting activities.

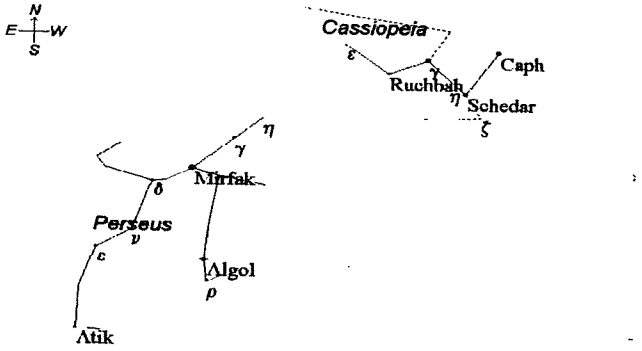
CONSTELLATIONS FOR THE BEGINNER

By Janice A. Kessler

September – Cassiopeia and Perseus

The month of September is a good time to observe the constellations Cassiopeia and Perseus. Both are in the northern sky. Many will find the "W" shape of Cassiopeia very familiar. Their bright stars are:

Star #	Star Letter	Name	Constellation	Mag
37	δ	Ruchbah	Cassiopeiae	2.68
11	β	Caph	Cassiopeiae	2.27
18	α	Schedar	Cassiopeiae	2.23
45	ε	epilson	Cassiopeiae	3.38
27	γ	gamma	Cassiopeiae	2.47
17	ξ	zeta	Cassiopeiae	3.66
24	η	eta	Cassiopeiae	3.44
33	α	Mirfak	Persei	1.79
26	β	Algol	Persei	2.12
44	ξ	Atik	Persei	2.85
45	ε	epilson	Persei	2.89
41	ν	nu	Persei	3.77
25	ρ	rho	Persei	3.39
23	γ	gamma	Persei	2.93
15	η	eta	Persei	3.76
39	δ	delta	Persei	3.01



All maps and facts are courtesy of Chris Marriott and SkyMap Pro 4.0.

All maps were designed to be viewed from Southeastern Michigan at Midnight around the 15th of the month. If you are at another location or viewing at another time, you may not be able to see this constellation.

FAAC
September 26, 2002
General Membership Meeting
5:00 pm to 6:30 pm
Agenda

- Introductions	Don Nakic	20 min
- Reports: Treasurer's Secretary's	Mike Bruno Don Klaser	5 min
- Old/New Business	Don Nakic	10 min
- Upcoming Events	Don Nakic	10 min
- Star Magnitudes	Greg Burnett	15 min
- Eclipses	Ken Burtin	30 min

ASTRONOMICAL CALENDAR 2002

September

All times are Eastern Standard Time or Eastern Daylight Saving Time whichever applies.

September 21	Full Moon 9:59 am *(Harvest Moon)*
September 23	Equinox 12:55 am
September 26	Venus at greatest brilliancy (dusk)
September 27	Moon near Aldebaran (12 am to dawn)
September 29	Last Quarter 1:03 pm Moon near Saturn (12 am to dawn)
September 30	Moon right of Gemini Twins (dawn)

October

October 1	Moon below Gemini Twins (dawn) Venus very low in WSW half hour after sunset. What day will you see it last in evening sky?
October 2	Moon near Jupiter (dawn)
October 3	Moon near Regulus (dawn)
October 4	Mars returns to morning sky but at its dimmest. Binoculars needed to spot it low in E before sunrise. Today Mars 10.5° below Moon hour before sunrise.
October 5	Mars 6° upper right of Moon, with Mercury

5° below Mars low in E at dawn. Use binoculars to spot planets. Mercury brightens rapidly after today.

October 6 New Moon 7:18 am

October 8 Moon 9° above Venus 30 min after sunset.

October 9 Mars within 3° to upper right of now brighter Mercury low in E (Oct 9 -11 dawn)
Antares 6° lower left of Moon (dusk)

October 13 First Quarter 1:33 am

October 21 Full Moon 3:20 am *(Hunter's Moon)*

October 24 Moon left of red Aldebaran (10 pm)

October 25 Moon near Saturn (10 pm to dawn)

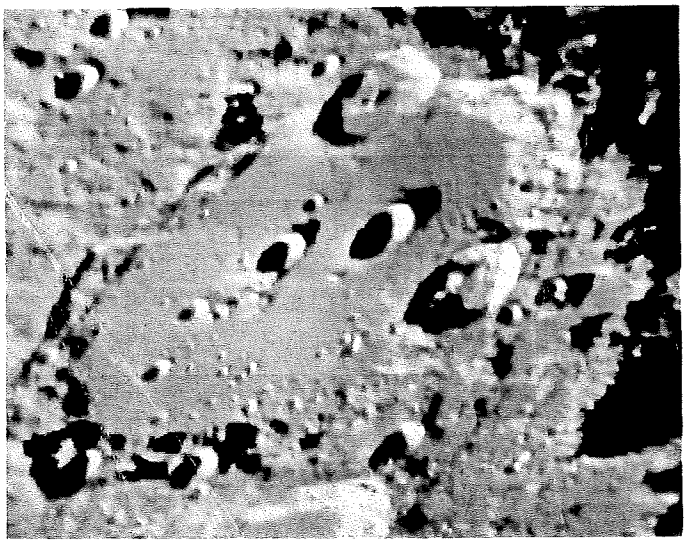
October 27 Daylight Saving Time ends.
Moon near Gemini Twins (11 pm to dawn)

October 29 Last Quarter 12:28 am
Moon near Jupiter, with Regulus 14° lower left of Jupiter (Oct 29 & 30 dawn)

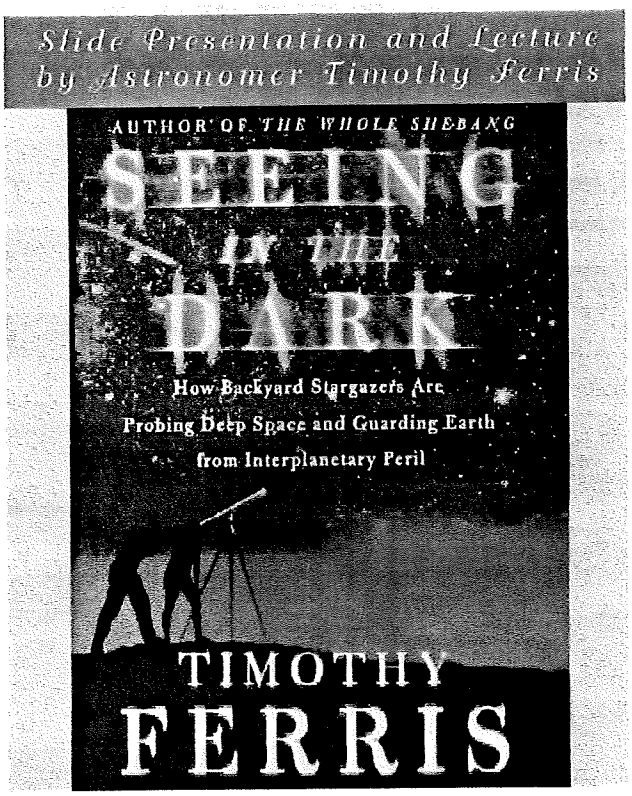
This information was obtained from the Henry J. Buhl, Jr. Planetarium in Pittsburg, PA.

FAAC CALENDAR

Activity	Date	Time	Contact
- General Meeting	Sep 26	5 pm	
- FAAC Board Mtg	Oct 10	5 pm	
- Beginners Night	Oct 12	6 pm	
- General Meeting	Oct 24	5 pm	
- FAAC Board Mtg	Nov 14	5 pm	
- General Meeting	Dec 5	5 pm	
- Lake Erie Ice Days	-	-	-



Clavius by Jim Frisbie



TUESDAY, SEPTEMBER 24 7:00 p.m. Friends Auditorium
Main Library In partnership with The New Detroit Science Center and the Wayne State University Library System
5201 Woodward Avenue Detroit One block North of Warren

Timothy Ferris has written eight books on science, three of them enduring best-sellers: "Coming of Age in the Milky Way" (nominated for a Pulitzer Prize), "The Mind's Sky: Human Intelligence in a Cosmic Context", and "The Whole Shebang: A State-of-the-Universe Report". His latest book, which will be released in September, is "Seeing in the Dark: How Backyard Stargazers are Probing Deep Space, Charting Cosmic History, and Helping Save the Earth from Interplanetary Peril". As one of the world's most popular science writers, Professor Ferris has also produced and narrated two PBS television specials regarding the creation of the universe. Copies of "Seeing in the Dark" and other titles will be available for purchase and signing.

THERE IS NO CHARGE TO ATTEND THIS EVENT, BUT RESERVATIONS ARE REQUIRED. PLEASE PHONE 313-833-4048 OR EMAIL MDORAIS@DETROITLIB.MI.US

If you have a small telescope and would like to join Professor Ferris for a brief "star party" after the lecture and booksigning, you are welcome to do so. We will be stargazing from the grounds of the Detroit Public Library.

RIDDLE OF THE MONTH ...Answer

When you see Moonlight.

The moon has no light of its own, It shines because it reflects the sunlight that hits its surface.

Ford Amateur Astronomy Club
Star Stuff Newsletter
P.O. Box 7527
Dearborn, MI 48121-7527