STAR STUFF

The Newsletter of the Ford Amateur Astronomy Club

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Editor: Jim Frisbie

In This Issue:

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

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http://www.boonhill.net/faac

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

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or email: w8tu@peoplepc.com

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

Officers:

President	Dan Kmiecik
Vice President	John Ford
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 in conference room 1491 in the Ford Credit building in Dearborn, Michigan

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.

SWAP & SHOP

For Sale: Vixen/Celestron Polaris Mount with polar scope, dual axis drive set, accessory tray and adjustable wood tripod. Tracks accurately and handles 14# payload. Excellent for small scopes or camera platforms. Asking $325. Contact: Jim Frisbie @ 734-453-1422

For Sale: Meade ETX125EC, 1 yr old, deluxe tripod, dew shield, hard case, 26mm plossl eyepiece, $ 1,150 obo. Contact: Tom Ellison, @ 248-549-7675

For Sale: Sky-Watcher 150mm Refractor OTA. Purchased new in July 2001 and used three times. Just a little too big for me. OTA has new adjustable objective lens cell. Optical quality excellent. Asking $495. Contact: Jim Frisbie @ 734-453-1422

For Sale: Televue Pronto with equatorial mount/motor. Like-new/excellent condition. Asking $1100. Contact: Thomas Blaszak @ Ofc: 313.323.9842 After hours: 313.277.3365

LETTERS TO THE EDITOR

We recently received this note from Bill Buckingham, VP Amateur Astronomers of Jackson,

> "On Wednesday, Jan. 9, 2002, the Lake Hudson Dark Sky Legislation was put to a vote in the Michigan House of Representative and passed. The bill now goes to the Governor for his signature. With this bill becoming law, the Lake Hudson State Park will permanently be designated a Dark Sky Site.
> Thanks you for all your support, phone calls and emails. We can make a difference!"

MINUTES OF THE DECEMBER 6, 2001 FAAC GENERAL MEMBERSHIP MEETING

by Don Klaser

The meeting was called to order at 5:00pm by president Dan Kmieick. Pizza & pop was enjoyed by all as the round table discussions ensued. Mike Bruno gave the treasurers report. Bob Fitzgerald stated that a school in Ann Arbor would like us to come out Wed Dec. 12 for an evening viewing session for students. See Bob if you would like to be involved with this. Bob advised the club that the hot line is still active, stay tuned for further developments. On Jan. 16, on Grosse Isle, the Conservancy Group would like us to come there and do our Astronomy 101 & help them set-up to do this program themselves for their students. Lake Erie Ice Daze is coming up on the 3rd week in January. More details are forthcoming. The Geminids Meteor shower is happening the evening of Dec. 13, with the maximum coming at 11:00pm est. Our election of officers will be held at our next meeting on January 24th please plan to attend this very important meeting. John Kirchoff of Ryder's Hobby in Livonia gave the presentation on new developments in Astronomical equipment.

A MESSAGE FROM THE PRESIDENT

by Dan Kmiecik

Thanks to all the members, especially the officers and many volunteers, who helped me during my tenure as president of the FAAC. These past three years, my first three in the club, have been both challenging and memorable. I've learned a great deal about astronomy and have thoroughly enjoyed myself. I hope the next president has as much fun and help as I did. Thanks to all for making the FAAC a great place for astronomy. Don't forget, Astronomy is FUN! Clear skies and in the words of the great Jack Horkheimer,
"Keep looking up!"

A VISIT TO PALOMAR

David Wright

Over the recent Thanksgiving holiday my wife and I traveled to San Diego. The main purpose of the trip was to introduce our nine-month old son to his great grandmother. In addition to visiting with family we also planned to do some "touristy things" as my wife would say, such as visit the zoo, go to the wild animal park, do some shopping and of course some sight seeing. Being an amateur astronomer, I couldn't pass up the opportunity to add a little "pilgrimage" to the Palomar observatory to that list.

San Diego is one of those cities where a visitor will find it hard to run out of interesting things to do. As a result it was the last day of our trip before we made the opportunity to make the visit. It was a cool (65 degrees or so) sunny day when we packed up our rental car and our son's diaper bag and headed north. Mount Palomar is at the far north end of San Diego County. It is an easy two-hour drive from down town to the summit of the mountain. But is a drive that is well worth it. As you head north you pass through some of the best scenery that the area has to offer. First you drive by the Pacific Ocean. Then through rolling hills that are the home to the Wild Animal Park and several local vineyards and citrus orchards. Finally you reach the mountains. It takes a little less than an hour and a half to reach the base of Mount Palomar. By this point you have already climbed 800 feet from sea level. The drive up to the summit takes another half hour. Its only about ten miles from the turn off at the base of the mountain to the observatory as the crow flies; but the county road up the side of the mountain twists and turns up a steep grade making the total distance you need to drive more than double that distance. By the time you reach the top, you're more than a mile above sea level. Wow!

We took the drive slowly. It is a very good idea to pay attention to the posted speed limits on the road up the mountain. There are many places where the only thing between you and a 3000-foot fall off of the mountain is a guardrail on the side of the road. The view is fantastic. On one side there is an incredible view of the valley below. On the other side there are sheer cliffs that rise above you for hundreds of feet. The entire time I drove, I kept thinking about the effort that that was required to bring the 200-inch mirror up this very same road. Eventually we reached a point near the summit where the road levels out somewhat at an altitude of about 5000 feet. Then the forest took over. The road continued to twist, but not as badly as before. Instead of cliffs and overlooks, trees surrounded the road.

Then it happened: the road made a turn to the left and there it was. A large white dome rose above the surrounding forest. There was a striking contrast between the greens and browns of the forest and the dome. And then it was gone, hidden once again by the forest as we continued our drive. Finally we reached the end of the county road, at an altitude of 5500 feet, still unable see the dome. A chain link fence with a pair of gates was directly in front of us. A sign on one of the gates announced that we were entering private property owned by the California Institute of Technology. Another sign directed visitors to enter the gate on the left and to park in the visitor's lot.

Even from the visitor's lot, the trees around us obscured the dome. It was not until we reached the end of the lot up near the visitor's center that the dome housing the 200-inch Hale telescope was visible again.

The Palomar observatory is home to three large telescopes. There is a 48-inch Schmidt Camera, a 60 inch Newtonian, and of course the famous 200-inch Hale Telescope. Each are housed in their own domes, but only the 200-inch dome is open to visitors. In fact the other two domes are not even visible from any of the paths open to the public. They are hidden from view by stands of trees that make up most of the landscaping around the site. The visitor's center houses a small museum and gift shop. Unfortunately they are only open on weekends (except in the summer months when they are open all week), so we were unable to visit either. The entry way to them however contains several posters and photographs describing the observatory, the Hale telescope and the evils of light pollution. I was especially impressed by the poster describing the area of southern California that creates the greatest impact on the observatory from a light pollution basis.

This seems to be a lesson that the San Diego city planners have taken to heart because I was very impressed my entire trip with the lighting. All the residential lighting that I saw was shielded or recessed downward directed floods. Nearly all highway lighting is low-pressure sodium lights in shielded fixtures. With almost no exceptions that I saw, any highway light that was not low-pressure sodium was shielded cobra-heads. I do not remember noticing any billboards. There were some exceptions to the good lighting of course. There are a couple of areas down town called the Gas-Lamp Quarter and Seaport Village where unshielded decorative lighting is used, and the businesses down-town generally used too much light to display their logos; but overall the attempt to control light pollution was impressive and much better than in the Detroit area.

Back to Palomar: The walkway past the visitor's center takes you to the directly to the visitors entrance to the dome. I made this part of the visit alone as my wife and son were cold and the site was not stroller friendly. The top of the mountain was an easy 10 to 15 degrees cooler than downtown. As I walked to the dome I passed what looked like a set of sheds connected by HVAC ducting. I learned later (from displays inside the dome) that this was the fourth instrument at the site. Officially know as the Palomar Test Bed Interferometer, this interferometer was built by Cal-Tech and the JPL to prove out the technologies that were used in the interferometer at the Keck telescopes in Hawaii and may be used on future space based interferometer missions. It is still used for astrometric-based extra-terrestrial planet search experiments today.

Then I went up the stairs and into the dome. The dome architecture clearly dates to the thirties. Once inside I was in an entryway. Directly in front of me, in a recess in the wall was a bust of the man the telescope is named after. Around the area are more informational displays. Another stairway led to the left up to the visitor's gallery in the dome.

Since Palomar is a working observatory and not a dedicated museum, the tour of the dome is self-guided. Not that there is much to be guided to. The exhibits and the Hale telescope itself are visible behind a plate glass wall that completely isolates the gallery from the dome floor. The gallery is fairly well lit, but the rest of the dome is kept dark, lit only by a few low-pressure sodium lamps, to keep the space near the normal nighttime ambient temperature. So, it is actually difficult to see or photograph the telescope.

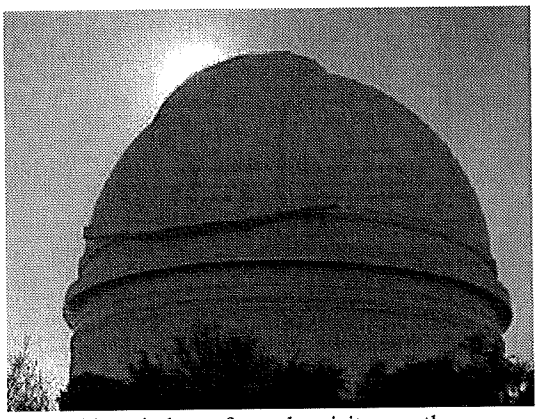
Only one word can describe the dome and the telescope: huge. The space under the dome is cavernous. I do not know the distance from the floor to the top of the dome, but looking up, the top of the dome was actually hard to see in the dark. It was also very quiet. I was the only visitor at the time and there was no one from the observatory staff working in the dome. Nothing in the dome seemed to make a sound other than my footsteps as I walked from one end of the gallery to the other. The telescope itself was pointed directly toward the zenith, the huge mirror down near the floor of the dome, to reduce the stress on the mount. The telescope is a frame construction, mounted on a gargantuan fork mount. The famous 200-inch mirror was invisible, hidden by the cassegrain focus equipment bay. An elevator was barely visible on the far side of the dome, obviously intended to take users of the telescope up the prime focus cage at the center of the aperture. I stood there for some time, observing the scope, feeling in awe of the effort and engineering required to create this magnificent instrument. For more than a little while I wished that the sun were down, that the telescope had an eyepiece instead of CCD cameras and that I could take her for a spin around the night sky...

After returning home, I did a little research on the history of the observatory. The observatory website (http://www.astro.caltech.edu/palomarpublic/) has a wealth of information about the telescope, the dome and its history and how to visit. Here are just a few of the things I learned:

- The 200-inch Pyrex mirror when cast in 1936, it took eight months to cool and weighed in at 20 tons.
- After grinding and polishing to the proper figure, the mirror weighed (and still does) an astonishing 14 tons.

- It took three diesel tractors two days to transport the mirror up the mountain.
- The dome is 135 feet tall and 137 feet in diameter. The huge shutters at the top of the dome weigh 125 tons each.
- Although it is no longer the largest telescope in the world, (nor the "best" in any measurable way), the scope is still actively used for research just as it has been nearly every clear night since first light was captured in 1949.
- The telescope was recently modified by the addition of an adaptive optics infrared camera in the cassegrain focus equipment bay.

I enjoyed the visit. I would recommend the experience to anyone with an interest in the history of astronomy. However, I would recommend going on a weekend and making an entire day of it. Take a pick-nick lunch, visit the telescope and enjoy the beauty of the mountains. You won't regret it.



200 Inch dome from the visitors path.

STARDUST (update)

by Robert Salhaney

Two years ago, in 1999, I wrote about the then recent liftoff of the Stardust mission to Comet Wild 2. The goal of Stardust is to collect interstellar dust and particles and return them to earth by January, 2006. Coma dust in the 1 to 100 micron size range will be captured by impact into ultra-low density aerogel and similar microporous materials. This will help us learn about the composition of comets and the Universe. Stardust will encounter Come Wild 2 around January 2004. Stardust will get as close as 150 km from the nucleus of the comet.

In January of 2001, Stardust made a fly-by of Earth. Where is Stardust now?

On December 24, 2001, the Stardust spacecraft will pass within a half a degree of the Sun as seen from Earth, interfering with communications, as expected, for a week before and after this time.

Why Comet Wild 2?

Comet 81P/Wild-2 is a fresh periodic comet. Until September 10, 1974, when it passed within 0.006 AU of Jupiter, its orbit lay between Jupiter and a point near Uranus. That encounter with Jupiter, at only 10 times the distance which fragmented P/Shoemaker-Levy 9 in 1994, brought it into the inner solar system, where its perihelion now lies just beyond the distance of Mars and its aphelion near Jupiter. During its first passage relatively near to the Earth (1.21 AU), the comet was discovered by Paul Wild on January 6, 1978. (a)

Since 1978 it has faded slightly, as might be expected, but is a very active and interesting comet for one that comes only within 1.6 AU of the sun. Bright ones such as Halley get much closer, and Halley is much larger than Wild-2 (8 x 8 x 16 km vs 4 km). (b)

Stardust is the fourth NASA Discovery mission to be chosen and follows on the heels of Mars Pathfinder, the Near Earth Asteroid Rendezvous (NEAR) mission, and the Lunar Prospector mission. Discovery is an ongoing program that is intended to offer the scientific community opportunities to accomplish frequent, high quality scientific investigations using innovative and efficient management approaches. It seeks to keep performance high and expenses low by using new technologies and strict cost caps. (c)

The mission is a collaborative effort between NASA, university and industry partners.

This is an exciting mission that I find very interesting to follow. Of course the activity will pick up in 2004 as Stardust collects data from Comet Wild 2. In 2006, when it returns to Earth, it will be interesting to see what scientists find in the aerogel.

For up to date information from the JPL, with charts, images, etc., be sure to visit:
http://stardust.jpl.nasa.gov/

Reference: (a), (b), (c)..JPL website

Only two more years to close contact.....

FAAC & THE NEW DETROIT SCIENCE MUSEUM's PLANETARIUM

by John Krichhoff

Ford Amateur Astronomy Club members helped kick off the grand opening of the New Detroit Science Museum's Planetarium on Friday December 7th and Saturday December 8th. Festivities Friday were attended by well over 1,500 patrons of the museum as well as the local press. Museum goers were treated to a special premier showing of the Digistar Planetarium and judging from the comments the system worked extremely well with no opening night glitches.

Attendees were also treated to a fine display of telescopes and binoculars courtesy of Ford Club members and Rider's Hobby of Livonia. Lee Schauman brought his Takahashi/Losmandy combo and wowed observers with a great view of the American flag on top of a building across the street (you could almost count the stitches in the seams). Richard Ernst brought along his Celestron 9 ¼ and with his AstroVid camera system was able to image individual lights on the Christmas tree atop the Penobscot Building a mere mile and a half away! Museum members kept Bino Bob Fitzgerald busy all night with his Fujinons and questions about his binocular stand. Dan Wellbaum and Alpha Mallory from Rider's were there to answer questions about the Meade, Celestron and Orion scopes that were displayed. Several lucky patrons were even able to sneak a quick peak at Jupiter as it eluded the grasp of the Michigan Nebula for a moment or two. The museum staff was very appreciative of our display and club members finished off the evening with a special invitation from the planetarium director to see the show.

Saturday's crowd was almost as large with many teachers present in the morning before the planetarium opened to the general public. The weather was a slight notch better and Bob Fitzgerald was able to show a number of interested parents and students a nice grouping of sunspots through his binoculars. Dan Wellbaum's collection of astrophotos were also a big hit for the second day in a row.

Thanks to everyone for their help in making our presentation a great success!

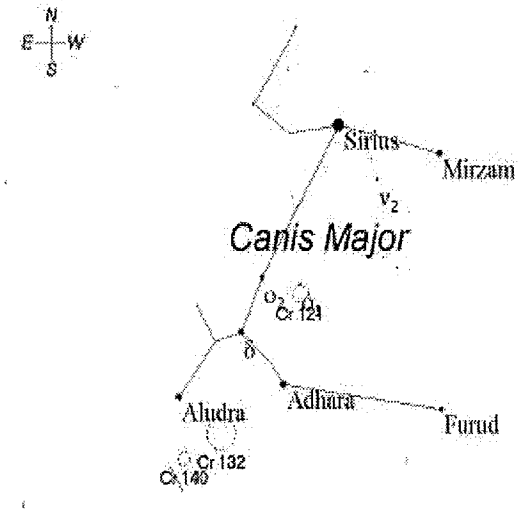
CONSTELLATIONS FOR THE BEGINNER

January — Canis Major

By Janice A. Kessler

Canis Major is a constellation in January found low to the horizon. Its brightest star, Sirius, is easily recognized and is one of the brightest stars to be seen. This constellation has many bright, double and variable stars. It is low to the horizon and many stars may be difficult to visualize.

Sirius or α Canis Majoris: Magnitude (–1.49). It is a double star.
Mirzam or β Canis Majoris: Magnitude 1.98. It is a double star.
Furud or ζ Canis Majoris: Magnitude 3.02.
Adhara or ε Canis Majoris: Magnitude 1.50. It is a double star.
Aludra or η Canis Majoris: Magnitude 2.45. It is a double star.
δ Canis Majoris: Magnitude 1.84.
Cr 140: Open cluster. Magnitude 3.5.
Cr 132: Open cluster. Magnitude 3.6.
Cr 121: Open cluster. Magnitude 2.6.
O1 or Omicron1: Magnitude 3.87.
O2 or Omicron2: Magnitude 3.02.

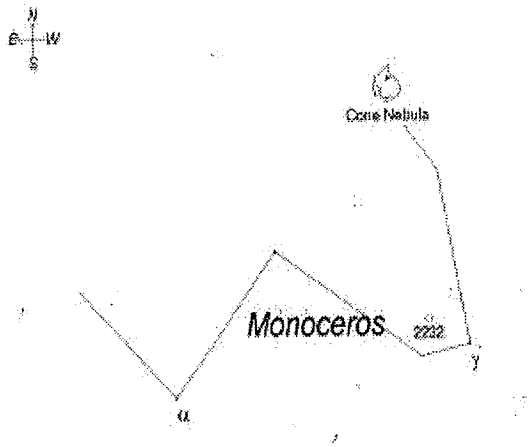


February — Monoceros

By Janice A. Kessler

Monoceros can be seen easily during the month of February towards the southwestern sky. Its stars include:

Cone Nebula or NGC 2264: Magnitude 3.9
NGC 2232: Magnitude 3.9
γ Monocerotis: Magnitude 3.98
α Monocerotis: Magnitude 3.93



All maps and facts are courtesy of Chris Marriott and SkyMap 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
January 24, 2002
General Membership Meeting
Agenda

- Circulate Sign-In Sheet
- Pizza and Pop
- Round Table Discussion
- Minutes of December Meeting
- Treasurers Report
- Business Items
  . Election of Officers
  . Old Business
  . New Business
- Main Program

A CALL FOR PAPERS!
Star Stuff is looking for FAAC Member written articles on Double Star Observing, Comet Astrophotography, or whatever else, for the February edition. Please submit articles by 15 Feb 2002 to Jim Frisbie, email: w8tu@peoplepc.com

Astronomical Calendar:
January

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

January 21	First Quarter 12:46 pm
January 23	Moon approaching Saturn (dusk to 3 am)
January 24	Moon-Saturn-Aldebaran triangle (dusk)
January 25	Moon approaching Jupiter (dusk to 5 am)
January 26	Moon near Jupiter (dusk)
January 27	Moon near Gemini Twins (dusk)
January 28	Full Moon 5:50 pm*(Wolf Moon)*
January 29	Moon near Regulus (8 pm to dawn)

February

February 1	First Quarter 9:02 am Jupiter-Saturn-Moon in slightly curved line (d to 1 am)
February 2	Moon near Jupiter (dusk to 2 am)
February 3	Moon 6° left of red Aldebaran, "eye of Taurus "Follower of the Pleiades" (dusk)
February 5	Moon near Gemini Twins (5 & 6 dusk)
February 8	Full Moon 2:12 am Moon near Regulus (dusk). During course of night, Moon's orbital motion carries it further of the star.
February 12	Moon near Spica (12 am to dawn)
February 14	Last Quarter 10:23 pm
February 15	Moon near red Mars; Antares 11° to lower left Mars (3 am to dawn)
February 16	Moon 7.5° upper left of red Antares (dawn). Now through mid-June, watch Mars grow brig and outshine its rival -- Antares.
February 23	New Moon 3:21 am
February 24	Moon 23.5° lower left of Venus in WSW (dusk
February 25	Moon 14° lower left of Venus (dusk)
February 26	Moon 11° left of Venus (dusk)
February 27	Moon 18.5° upper left of Venus (dusk)
February 28	Jupiter-Saturn-Moon in line (dusk to 11 pm)

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

Ford Amateur Astronomy Club
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