

It's Spring! ...

By Doug Brown, President FPOA

...and with the warming spring weather, we're all looking forward to more comfortable observing. It is amazing how quickly the spring constellations are going by, seemingly at twice the speed of the fall ones. In fact, if our time reference is astronomical twilight, they progress about 65% faster per month in spring than in fall. Two months ago at twilight the Winter Hexagon was at the zenith, while now it rests on the horizon. In fall at twilight, the Summer Triangle is overhead in late August, but two months later is still at 45° altitude.

2008 Program

Our 2008 Star-B-Q and annual meeting will be August 2. Dave Samuels already has a line on some nice raffle prizes, and AANC will be taking a more active role this year, so it promises to be a good one. If you're in Greenland or Mongolia for the total solar eclipse the previous day, we'll understand if you don't make it. Those of us at the SBQ will console ourselves with the new crescent moon about 2° from Venus.

We've already started our public programs for the year, so be sure to let Ron Dammann know how you can help out. You'll want to do so early, if you are planning to use the Challenger.

See elsewhere in this issue a summary of the 2008 calendar or visit fpoa.net.

NASA Meteor Research Program

Dr. Peter Jenniskens approached FPOA last year about the possibility of establishing a meteor camera station at the Observatory. Dr. Jenniskens is a Research Scientist with the Carl Sagan Center at the SETI Institute and works on mission projects at NASA/Ames Research Center in Moffett Field, California, and on research topics that relate to interstellar and interplanetary matter. Over the years he has organized a number of meteor observing campaigns, including ones at Fremont Peak. He is an expert on meteor showers, known for identifying the parent body of the Quadrantid shower: a minor planet called 2003 EH1.

NASA recently awarded Dr. Jenniskens' research team a grant for this project. As described in their proposal, "the primary goal ... is to test the hypothesis that the disintegration of mostly dormant comets is the dominant contribution of dust to the zodiacal cloud. The new insight came from our recent discovery that most major meteor showers have associated weakly active or dormant comets." To do

FPOA Programs: 2008

Saturday Evening Programs

May: 3, 10, 31
June: 7, 26
July: 5, 12, 26
August: 2, 9, 23, 30
September: 6, 20, 27
October: 4, 25
November: 1

Solar Programs

May: 3
June: 7
July: 5
August: 2
September: 6
October: 4
November: 1

Special Programs

May: 10: Astronomy Day
August: 2: 23rd Annual Star-B-Q

Note: Please check <http://www.fpoa.net/schedule-2008> for changes or updates to this schedule

so, they will develop and a system of 30 frame/second low-light-level video cameras (+6 to +0 magnitude) and software to extract time of arrival, geocentric radiant, and speed of meteoroids. This system will be deployed at Lick Observatory, Fremont Peak Observatory, and possibly a site near Mercy Hot Springs, in a 3-year observing program. After determining orbits for these objects, they will trace them back in time and evaluate how the dispersion among the orbits changes, in order to estimate the formation epoch of the meteor streams and estimate the frequency of fragmentation events among parent bodies.

We expect to be able to mount the station visibly on the Observatory with nearby signage describing its purpose. It would form an excellent basis for public program presentations, research projects by the Hartnell interns or other FPOAS members, or a *Sky and Telescope* article. Dr Jenniskens promises to cite FPOA as he has in other papers and his book, *Meteor Showers and their Parent Comets* (Cambridge University Press, 2006).

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It's Spring! ... (continued from page 1)

Internship Program

The Hartnell internship program will be continuing this year. Dave Samuels has been developing research projects for the interns to carry out, as described in the Fall issue of the *Observer*.

Membership

If you haven't renewed, now is the time to do so—a membership application is included in this issue of the *Observer*. So, send in your renewal today and be sure to get involved!

CCD Imaging—Chapter 5 “How I Got Too Big For My Britches”

By Frank Dibbell

Through this past year I have made dramatic (well for me it was) improvement in my ability to take images of extended objects such as galaxies and nebulae through my Orion StarShoot CCD camera. You find out very quickly how important polar alignment, a good steady mount, and drive accuracy are when you undertake such endeavors. And then I learned about “periodic error”. Apparently, even the best drive motors suffer this. I don't claim to fully understand such things (being retired now I claim a right to NOT have to figure everything out anymore!). At any rate the existence of periodic error in a drive motor requires one to have software that can calculate the periodic error in your drive, and compensate for that error during autoguiding.

It is then I realize that my little Takahashi EM-10 mount does not possess the capability to autoguide, having been made before the era of “go to” and such. But the mount is sturdy and steady, and the drive motor's periodic error is low enough that I can take exposures of 90 to 120 seconds without seeing the effects of the error. Well, about 1 out of 3 frames will be bad, but that still leaves two of three frames being useful for stacking. And a call to Takahashi informs me that my EM-10 mount is upgradeable – for the mere price of \$1,700 they will make it “go to” and autoguide capable.

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From The Observing Room...

By Ron Dammann

Another observing year has started with the Challenger telescope working well except for the digital circles which have decided not to play well with the Observing room computer. The Software Bisque interface BBox is suspect at the present time and being checked out.

Since our first Public Program on April 5th we have had visitors enjoy views of Saturn, Mars, the Orion Nebula, Nova Cygni 2008 #2, globular clusters, planetary nebula and galaxies.

We always have a need for FPOA volunteers for our Special and Public Programs so if you would like to volunteer some time please contact me at schedule@fpoa.net. We have Special programs on Friday evenings in May on the 9th, 23rd and 30th for school groups. Public programs also need staffing and FPOA members can help out using the Observatory telescopes or their own telescopes on Saturday evenings throughout the Program season til October 25th. You do not need the Observer class membership to help out on these evenings, just some free time.

Celestial events in the near future include observing Mercury the second week in May about 45 minutes after sunset in the north-northwest, Mars passing to the north of the Beehive cluster on May 22nd and Neptune being occulted by the Moon just before midnight the night of June 22nd. Subscribing to the Sky And Telescope AstroAlerts (<http://www.skyandtelescope.com/newsletters>) emails is always a good way to keep abreast of late breaking celestial events like nova and supernova.

Challenger telescope Certification Training is available this Spring. If you are interested in becoming trained to use the Challenger telescope, please email me at schedule@fpoa.net so we can determine a day that is suitable for a small number of members to be trained.

A neutron goes into a bar and orders a beer. After finishing, he asks the bartender what he owes. “No charge”, said the barkeep.

PROPOSAL TO CLOSE 48 STATE PARKS

Governor Schwarzenegger's proposal to close 48 state parks – including Fremont Peak - is still pending. Recently, he wrote to two Republican legislators, “So far, all I have heard from the Legislature is, ‘Do not cut this program or that program,’ No one has come to me with ideas or solutions — only complaints”.

While few people believe that the parks really will be closed, there's always the possibility that the unthinkable could occur, especially if no one does anything to oppose it. Thankfully, many are organizing to actively oppose cutting state park funding.

A good place to checkout what's happening and, possibly, get involved in writing letters opposing the park closing proposal is the website of the California State Parks Foundation:

http://ga3.org/campaign/KeepStateParksOpen?qp_source=web

CCD Imaging—Chapter 5 (continued)

Any way, did I mention “dark frames”? I didn’t? I am sure I said something in Chapter 4... Oh well, you see, when you expose a CCD chip to light for a long period of time (long being greater than one second), it heats up, and this heat causes pixels to get excited, and appear as stars on the image. A dark frame is nothing more than a CCD image exposure taken with the lens covered, so you are taking a picture of the dark. Thus, only the excited pixels get recorded. The resulting image is called a dark frame. It is useful because you then use software that came with the camera to subtract this frame from the picture you took. It’s great stuff – it gets rid of all those little “false stars”.

Unfortunately, with my little set-up I can only take unguided exposures of about 90 seconds max. I can take 20 or 30 exposures and then “stack” them, using the software that came with the camera, but a 90 second exposure does not give me the pixel depth necessary to get really faint detail. So I need to autoguide. It is then I discover that not only my mount, but the Orion StarShoot camera itself is not set up for autoguiding. I need a second CCD camera. Or a CCD camera with two CCD chips in it. I get highly suspicious that astro-imaging is really a scam to make certain people rich. Since I am hooked, I seriously consider coming out of retirement in order to find a job so that I can now support this habit, er, hobby.

It is then I read a review in *Sky and Telescope* about Santa Barbara Instruments “One Shot” Color CCD, the ST-4000XCM. This baby has it all – one shot color, a large CCD chip for imaging, a secondary CCD chip for autoguiding, and a nice Pelican case for storage and travel. And all for only \$3,100! This is the camera that will be my salvation.



Two images taken with my Orion StarShoot. The top is Comet Holmes, 10—90 second images stacked; the bottom is M27, the Dumbbell, 10—90 second images stacked. Both photos processed using MaximDL Essentials and finished with Adobe PhotoShop.



Yes, the Orion StarShoot was nice – it helped me learn the basics, but I was now ready for the BIG TIME. Time to take those gorgeous photos you see in *Sky and Telescope*. Time to image with the Big Boys.

Stay tuned till the next issue to see how wrong I was...!

From The Log ...

By Dave Samuels

(From time to time Dave formats entries in the log for reprinting in the Newsletter. He chooses entries that reflect the flavor of the work and activities that occur there. - Ed.)

7 July 2007 Sat.

Returned repaired and cleaned diagonal for 5" Challenger refractor. Cleaned up Observatory. Laura Clark does presentation on "Galactic Gas Jets". Research from 2 wk course at Duke University/ PARI observatory. Excellent presentation!

Hartnell interns Angelica, Miguel, and Mark help out on pad with 16" Dob. Joseph Brandt, Bob Fingerhut run Challenger. Objects: Venus, Saturn, Jupiter, M13, M57, M4, M22, M16, M17, M51, M101, etc. 40 visitors tonight. Closed at 2:30am. 60F degrees. Windy earlier.

-Ron Dammann

28 July 2007 Sat.

Arrived 18:30 hrs. Everything ok. Found half of the variable polarizing filter on 22mm Panoptic eyepiece - other half in storage box.

Setting up for occultation of star by (27) Euterpe asteroid in Capricornus. Dave Samuels and Gene Kahn assembling CCD equipment on Challenger. Removing Binocular mount from observatory for counter weight repair.

- Ron Dammann, Director of Instruments.

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Carter Roberts 1946—2008

Carter Roberts of the East Bay Astronomical Society passed away recently. Though he was more active at Chabot Observatory, we "old timers" know that it was Carter and Don Stone who single-handedly nailed up all the wood shingles on our observatory back in 1986.

He was very much a supporter of the cause, and many of us know him for his resolve and dedication to any cause he believed in. Fortunately, FPO was one of those. He was a field researcher for the USGS, an avid steam train fanatic, and most of all, a dedicated eclipse chaser.

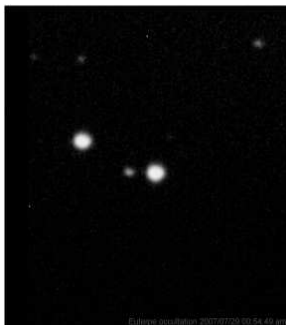
His dry humor and *bulldoggishness* will be missed.

- Denni Medlock

From The Log ... (cont. from p. 3)

Dave Continues imaging:

(27) Euterpe asteroid occultation failed because we were unable to acquire it in time with small sensor CCD. 20Da Canon resolved it well. Tracked it for 1.5 hours afterward. Imaged M57 and Moon with 20Da, [but wind buffeting wouldn't allow longer than 10 second exposures).



This is asteroid "(27) Euterpe" the night of an occultation about an hour after the event for about an hour and a half. This was taken with the Challenger 30" f/4.8 scope prime focus with a Gene Khan's Canon 20Da camera at prime focus (no eyepieces or bar-lows). It is 24 x 30-second shots taken at 1600 ISO. The other bright star above and to the left of

the asteroid is the star that blinked out for a few moments as the asteroid passed in front of the star (This is what they call an occultation - like an eclipse). By accurately measuring the time the star is out we can determine a very precise size of the asteroid. When several amateurs combine their data, a profile of the shape of the asteroid can be ascertained.

11 August 2007 - Star-B-Que

Doug Brown estimate of 230 people attending. Many non-members present. Doug, Pat, and Donn re-elected. Dave Samuels, Rick Mazzuella, Michael Connelly and William Hudson on pads. Observed only a few objects because of the number of people. Jupiter, M13, NGC7662, M57, M51, NGC253, NGC288 globular.

Closed at 3am

- Ron Dammann

13 October 2007, Sat.

Ed Huston does two presentations to 50 cub scouts plus 20 extra visitors. Paul Bradshaw, Dave Samuels, and Ron Dammann on telescope pads with telescopes while Miguel R. and Mark L. run Challenger. Good night. Ed also does constellation viewing with guests. Weather OK, but dew heavy at beginning of evening. Good later on. 50F at 2am. Objects observed Jupiter, M57, M13, NGC253, 1005, M77, M45, M32, etc. etc. Mars showing north polar cap and Syrtus Major. M42 beautiful as ever and steady showing trapezium stars E and F. Very nice night.

Ron Dammann

17 November 2007

Ron Dammann opened the observatory.

Dave Samuels and Rick Morales. Peter Jenniskens arrived late to take pictures of two meteor showers occurring at the same night. Viewed Comet 17P/Holmes and Mars through 30". Also attempted to resolve the E and F Trapezium stars of M42. They were visible, but not quite as easy as through the AP155 of one of the members (Dave...)

Dave Samuels took some shots of the comet, which has exhibited that it is growing in size. Mars showed good detail, though it was difficult to catch on camera.

Fremont Peak Observatory Association

PO Box 1376, San Juan Bautista, CA 95045

Officers and Directors - 2008

President:	Doug Brown <i>doug_brown@amat.com</i>	408-314-2844
Vice President:	Dave Samuels <i>samuels_david@emc.com</i>	
Secretary:	Mark Levine <i>tatamark@pcwi.net</i>	831-636-3898
Treasurer:	Rick Morales <i>rickmorales@charter.net</i>	831-623-4081
Directors:	Donn Mukensnabe <i>dmuk@hawaii.rr.com</i>	808-885-0739
	Pat Donnelly <i>pmdonnelly@duke-energy.com</i>	864-885-4015
	Loren Dynneson	831-443-8631
	Ed Huston <i>ed.huston@ngc.com</i>	831-623-4878
Dir. of Instruments:	Ron Dammann <i>ron.dammann@lmco.com</i>	408-255-1863
Publisher:	Frank Dibbell <i>fpoa@sbcglobal.net</i>	916-933-2414
Membership & Newsletter Distrib:	Bob Black <i>bob-black@comcast.net</i>	650-592-2166
Directors Emeritus:	Kevin Medlock Denni Medlock <i>epoch@majornet.com</i>	

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FPOA on the Internet

Phone Number:	831-623-2465
Email Address:	schedule@fpoa.net
Website:	www.fpoa.net
Reservations/Events:	members.fpoa.net/ical.html
Members Only Page:	members.fpoa.net
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EMAIL DELIVERY OF THE OBSERVER

Dear FPOA Members,
We have been delivering notification of the *Observer* via email for the past several issues. This obviously saves the Association postal expenses, and assures the quickest delivery to you. However, several of you no longer have valid email addresses, due to ISP changes, moves, etc. If you would like to continue to receive, or begin to receive, notification of the *Observer* via email, please send your current email address to fpoa@sbcglobal.net