

# SIRIUS ASTRONOMER

NEWSLETTER OF THE ORANGE COUNTY  
ASTRONOMERS

See our web site at <http://www.ocastronomers.org>

October 2002

*Free to members, subscriptions \$12 for 12 issues*

Vol. 29, No. 10



This spectacular "blue marble" image is the most detailed true-color image of the entire Earth to date. Using a collection of satellite-based observations, scientists and visualizers stitched together months of observations of the land surface, oceans, sea ice, and clouds into a seamless, true-color mosaic of every square kilometer. So the next time some satellite flies through the middle of your 90 minute exposure, consider this: you may be the one being photographed!

## CHAPMAN MEETING

The free and open club meeting will be held Friday, October 11th at 7:30pm in the Science Hall of Chapman Univ. in Orange. Featured speaker will be Dr. Edward J. Rhodes.

## STAR PARTIES

The next star parties at Anza are on October 5th and November 2nd. Due to recent problems with the Kuhn telescope the observatory may remain closed during the star party. Depending on the state of repair the observatory may be opened to allow members to view through the clubs 10" and new 12" LX200.

The new Silverado site (at Black Star Canyon) should be open on October 26th. Check the website, calendar, and Anza Webcam, for late updates on star parties and

## COMING UP

The Astrophysics SIG will meet October 18th, the Astro-Imagers' SIG will meet October 15th, the EOA SIG will meet October 16, the next Beginners' Class is November 1st, and the next general club meeting will be Friday, October 11th.

# President's Message

by Liam Kennedy

**The Kuhn telescope – the bad news and the good news.**

**The bad news.** The Kuhn telescope is currently out of action. The main control board burned out. The control board is a very critical part of the system, without it the telescope is utterly unusable. The board which burned out is one that we had only a few spare parts for – which have all been used over the years to fix other similar situations that have occurred.



Photo by Greg Pyros

We had an emergency board meeting on August 18<sup>th</sup> to hear from the experts on how we could best recover from this disaster. OCA Members John Hoot and Dave Radosevich gave presentations to the board on exactly what happened and how best to fix the problems.

**The good news:** The OCA board approved the selection of a brand new control system for the Kuhn. This control system, from a company called Comsoft, is used in other large telescopes such as ours. Along with the new control system will be new motors that will enable the telescope to have greatly improved tracking and pointing accuracy.

The control system is not the only thing that will be replaced. Dave Radosevich is also undertaking the task of re-machining various parts of the telescope. Over the years the telescope has developed some other mechanical faults that may even have contributed to the failure of the control system. If these problems remain unchecked we may find that any new control system we install will also fail.

Repairs to the telescope are now well underway. All of the new control system hardware and software have been ordered. At the September Star Party many who were there had a chance to help out with the renovations of the Kuhn. This included cleaning the telescope and the observatory.

For me, a very special part of the work carried out included the removal of the 22" mirror. For some time we had been debating getting the mirror re-coated. While the telescope is out of action it makes good sense to do such a thing anyway. I shot a video of the entire process. It is quite an amazing thing to watch. Dave Radosevich took charge of the mirror which is now delivered to a specialized mirror coating company.

By the end of the year (maybe even sooner) we should have the Kuhn Telescope back in action again, in an almost as-new physical condition, and with a new and much improved control system that will allow us to truly use the telescope as a first class scientific instrument and a platform for accurate astrophotography. This repair work, while absolutely critical, does not come cheap. In total the board has authorized approximately \$8500 for all the repair work described above.

There is no doubt that our club owes a debt of gratitude to many people who have helped provide critical knowledge and expertise. I would like everyone to recognize the amazing effort of Dave Radosevich. He has even put the repair of the Kuhn telescope ahead of his own personal project

to build a 40" Telescope on his property just north of our Anza site. Now that is dedication. Thank you Dave!

### **A new telescope arrives at the Anza observatory.**

Through the extreme generosity of John Hoot we now have a new 12" LX200 telescope on the south-west corner of the observatory. This new 12" Telescope joins the existing 10" LX200 on the south-east side. Even though our clubs 22" Telescope is out of action it is still possible for Star Members to book the observatory to use the LX200 telescopes. Thank you again John!

### **Observatory/Telescope Custodian**

Our existing custodian of the clubs telescope is Bob Gill. This is a post he has maintained for many years now. Bob wanted to give someone else a chance to take on the role. While the board will certainly miss Bob in this role – we would like to again thank Bob for all his hard work and dedication over the years. Thank you Bob!

I can also announce the name of the new Observatory/Telescope(s) Custodian. John Hoot has agreed to take on this position. John comes to the position with great credentials from running his own personal observatory in San Clemente and being intimately involved with the Kuhn telescope and the control system over the past few years. I know the clubs telescopes will be in very good hands.

### **Star Member Trainer**

Chuck Lodoza has held the position of Star Member trainer for more years than any of us can remember. Chuck also feels it is about time he allowed someone else to step into this role. I would like to again express the sincere thanks and deep appreciation of the club for all the effort and dedication Chuck has shown over these many years. Thank you Chuck!

For the time being we are putting together a group of "Star Member Trainers" to help with any new requests for Star Member training. However for the next few months we will be developing a new training program related to the Kuhn as the method of using the telescope will be completely altered with the new control system.

### **Liam Kennedy**

*"Every day we are connecting ever more photons of light from distant galaxies to the eyes, hearts, minds and imaginations of our members and others in our community."*

---

## From the Editor

Well September slipped by, the star party at Anza was covered in clouds and Sagittarius slips closer to the horizon. As the summer slips away, I am reminded by the fact that usually these monsoon type summers occur in two year cycles. OK, onto the winter nights!

By this time of the year, astronomers who really like the planets are getting excited. By Midnight, midmonth, Saturn rises and is in good viewing position about an hour later. Saturn is followed in the Winter sky by Jupiter, the largest of the Jovian planets. This year, Saturn's beautiful ring system will be nearly 100% illuminated and promises to be a spectacular view. As long as I have been in astronomy, I never tire of looking at Saturn. Does anyone? Dark skies are always the preference but these two planets are an easy target even in urban areas.

After sunset, M31, the andromeda Galaxy is high in the sky nearly overhead and always offers a beautiful wide field view. Drop you power down for this is a large object even in wide-field instruments.

If deep sky is your passion, what can be better than the nebulous regions in Orion and Monoceros to quench your thirst for splendor. On a really good night, try and resolve the fifth star in the trapezium region of M42! I have stayed up late enough this month to catch a good view of this and can tell you first hand, it's always worth the wait!

Darren W Thibodeau

## OCTOBER'S FEATURED SPEAKER

### Dr. Edward J. Rhodes from the Mount Wilson Observatory "Mount Wilson Observatory, Solar science research and technology"

Mount Wilson Observatory continues to be a solid platform for Solar Research. Dr. Rhodes will share the results of his in-depth research on the Sun at the Mount Wilson facilities. His research has been conducted using, in part, the 150 foot Solar Tower at the Mount Wilson Facility. This structure began operation in 1917 and has been in use since. The observing room is located at the base of the telescope, some 150 feet below the level of the objective lens. The solar image formed by the two flat mirrors and objective lens is 415-430 mm in diameter, depending upon the time of year. Due to the telescope's long focal length, it is safe to view the image of the sun with the naked eye. Every clear day, a solar observer creates a drawing of sunspots seen on the solar image. The magnetic intensity of each individual spot (measured to the nearest 100 Gauss) as well as the position of each spot group have been noted on each drawing. The database of daily drawings made at the 150-foot tower goes back to 1917 and contains close to 25,000 separate drawings.



**About Dr. Rhodes** – Dr. Edward Rhodes is currently a professor of Astronomy with the Astrophysics department at the University of Southern California. Additionally, Dr. Rhodes is an astronomer with the Space Physics Research Element at California's Jet Propulsion Laboratory. His educational background includes his Bachelor of Science, Masters and a PH.D. from UCLA. In addition, Dr. Rhodes has achieved degree status from both California Institute of Technology and Massachusetts Institute of Technology. Dr. Rhodes has written several publications covering solar research in depth and is highly specialized in all aspects of researching our own sun.

\*\*\*\*\*

## Magazine Subscriptions

Subscriptions to the Astronomy magazines are now due for renewal, if you subscribed for one year or like to subscribe at the club rate. You may also extend an existing subscription that does not end in December for one year at the club rate. Bring your check made out to the OCA to the meeting or mail it to:

Charlie Oostdyk, Orange County Astronomer, PO Box 1762, Costa Mesa, CA 92628.

Checks made out to the magazine publishers cannot be processed and will be returned to you. If you already subscribe, please provide the mailing label or the billing invoice with your check. One-year

member rates are as follows:

Sky & Telescope :	\$30.00	.....regularly	\$39.95
Astronomy :	\$29.00	.....regularly	\$39.95

The DEADLINE for subscribing at the club rates will be the October monthly meeting, October 11th.

Expiration notices will be sent by the publishers to all current club subscribers about November 1 even if you renew through the club. It takes the publishers a few weeks to process renewals.

## Image Gallery

The image gallery is a new color section that will be offered quarterly in Sirius Astronomer and allows individuals who dedicate the time and patience required to astronomical images the opportunity to share their work with the membership. If you have images you would like to share, please contact the Sirius Astronomer editor at 949-455-0323 to get details on how to submit your images.

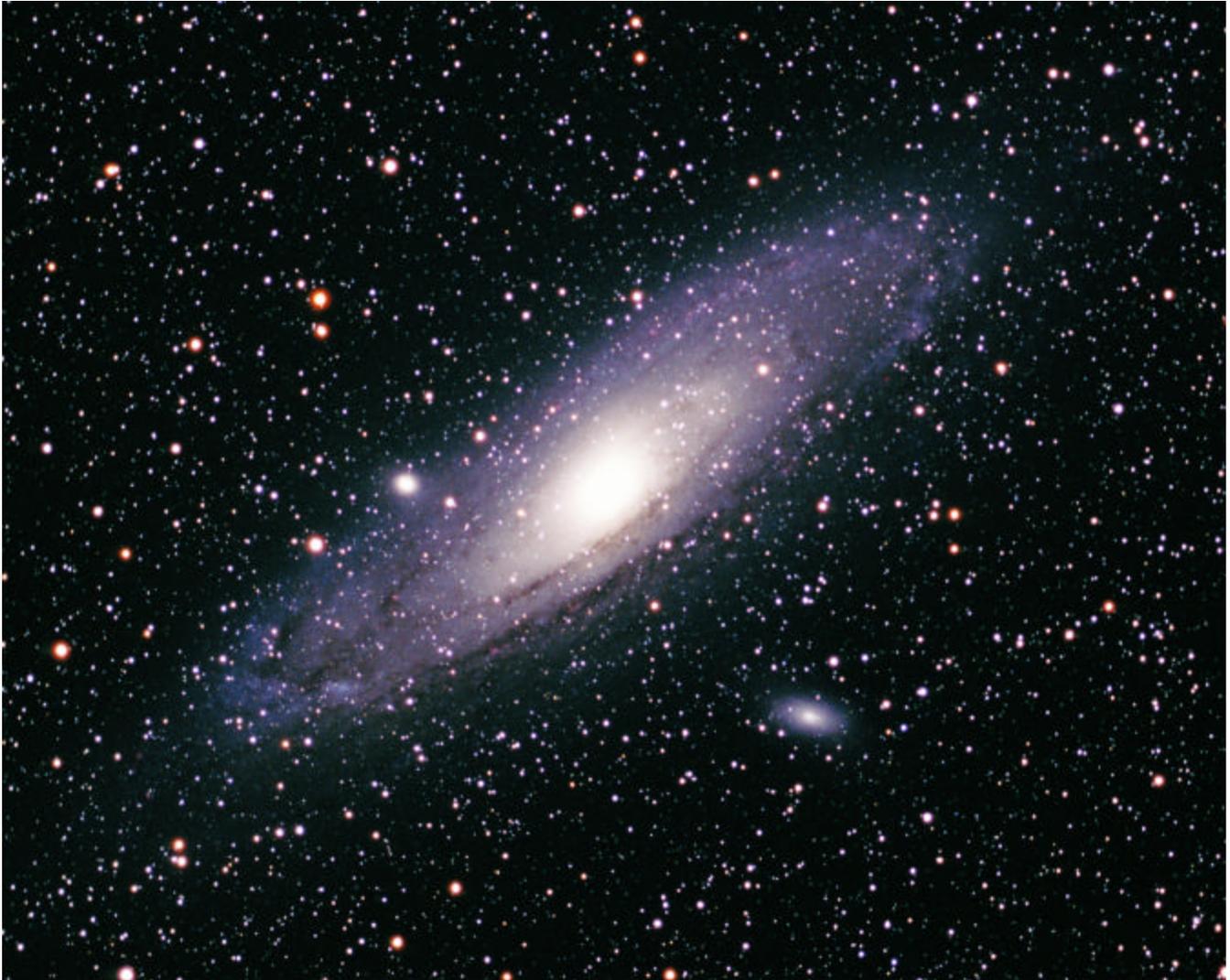


photo Courtesy of Jim Windlinger

During the winter months, the Andromeda Galaxy is high in viewing position. Jim Windlinger took this image on Kodak E200 film pushed 2 stops using a Borg 125 ED Apochromatic refractor and a Nikon F2 35mm camera. Guiding was done using an SBIG ST4 on a BORG 76ED APO. Jim's scope/camera setup are mounted on his own homemade German Equatorial Mount that you really must see. Jim can be found at most star parties on Mars Hill at the Anza site. However this image was taken at Grandview Campground, White Mountain California. The final negatives were scanned and assembled using RegiStar and retouching done using PhotoShop 6.0.

Located in the Northern Summer Sky near the constellation Cepheus, lies IC1396, one of the largest nebular complexes in the summer sky. Since it spans some three degrees of sky, it is best captured using wide field film techniques as in this example from David Kodama. (Top, next page)



photo courtesy of David Kodama

The bright yellow/red star, near the top of the nebular region, is mu Cepheus. This star is equal in diameter to the orbit of Saturn! The photograph was taken by David Kodama through a BORG 100ED Apochromat on Kodak E200 6 x 7 film and push processed two stops. Guiding was provided by an SBIG STV through a BORG 76ED APO. David's imaging setup is mounted on a Losmandy GM11 German equatorial mount. Exposure time was 90 minutes at the club's Anza site on August 10, 2002.

The image on the following page is from the AstroImage 2002 chairman, Garth Buckles. Garth took this photo of Rho Ophiuchus with Antares and M4 through a BORG F2.8 astrograph on Unhypered PPF 400 for 15 minutes. The camera used was a Mitsuboshi 6 x 9 vacuum back camera. Guiding was provided by an SBIG ST4 through a BORG 76ED APO. Garth's astroimage equipment is mounted on a Losmandy GM11 German Equatorial mount.



photo courtesy of Garth Buckles

## **Imaging in the Hydrogen Alpha band using a CCD** **By Greg Pyros, OCA Astrolmagers Group Chairman. All photos by the Author**

I started doing deep-space imaging with a Hydrogen-alpha (Ha) filter on my CCD camera earlier this year. When asked to write an article to help others get involved with it, I thought I could easily describe the two simple steps required: 1) get an H-a filter, and 2) take long exposures with it in front of your CCD camera. For some reason still unknown to me, that version of this article lacked the details, so I am hereby expanding upon it.

Let's start with the definition of H-alpha from [www.spaceweather.com](http://www.spaceweather.com) : [H alpha] "The first atomic transition in the hydrogen Balmer series; wavelength = 656.3 nm. This absorption line of neutral hydrogen falls in the red part of the visible spectrum and is convenient for solar observations."

If you don't understand all of that, don't worry, neither do I. All that you really need to get out of it is that the electromagnetic spectrum (from long to short wavelengths) goes like this: gamma ray -> x-ray-> ultraviolet -> visible light -> infrared -> microwave -> radio waves. The visible light portion that we see as light with goes from 410nm (violet) to 680nm (red). 1 nm (nanometer) = 1 billionth of a meter. Or, to really confuse you, 1 nm = 10 Angstroms (Å). So what they are saying is that deep in the red portion of our visible spectrum is a thin line centered at 656.3nm (or 6,563 Å, now that you know the conversion) that we are concerned with.



Ron Wodaski states on his web site: "Many nebulae emit strongly in the wavelength known as Hydrogen alpha. This is the light emitted by the most common type of excited hydrogen atoms. The atom absorbs some energy which kicks the electron to a higher energy level. When the electron falls back to a lower energy, it releases a photon with a wavelength of 656.3nm. Hydrogen alpha is just one such transition; other, less common transitions also result in emissions at specific wavelengths, but they are less common. Since the hydrogen-alpha emission is both common and limited to a single wavelength, narrow-band filters can be used to filter out all other light, and capture just the light resulting from this specific emission from hydrogen atoms."

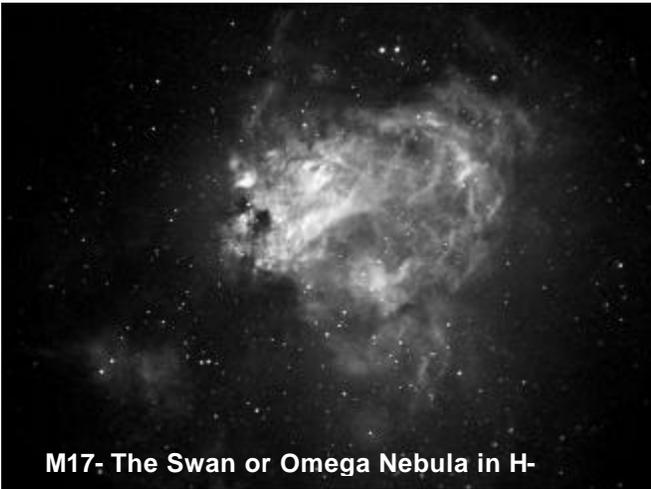


The Pelican Nebula in Hydrogen Alpha

Now we are getting somewhere. This says that we want to use a filter to get rid of everything both above and below the Hydrogen alpha wavelength of 656.3nm. Various companies make filters to do this, all with slightly different parameters. Most of the differences are in the width of the passband allowed through the filter. The narrower the passband, the more expensive the filter.

The filter I use has a 3nm total passband – this allows only 654.8 to 657.8 through, which is about the narrowest available for deep sky work. Other companies make 10nm and even wider passband filters. The trouble with a wider passband is that since it is allowing a lot of information through that is not Hydrogen-alpha, your CCD chip will start to get saturated with information outside the Ha by the time you get enough Ha data through to record it.

If you just pick up a Ha filter and look through it, most people are surprised to see that it is almost totally opaque. If you remember this, it is not surprising that it takes a minimum of an hour of total CCD exposures to start getting reasonable detail, and often two hours will just barely be enough. I will usually do a series of 5 or 10 minute exposures to reach this amount.



M17- The Swan or Omega Nebula in H-alpha

These H-alpha images are usually beautiful by themselves, or you can then take images through normal R, G, and B filters to add to them by using the H-alpha images as your luminance frames in an LRGB combined color image. (An example is M8, the Lagoon Nebula on the previous page) When you combine images, though, be careful of your focusing. Most Ha filters have different thicknesses compared to standard LRGB filters and you probably will have to refocus between filters.

The other issue that comes up when you have to refocus is that your images may be slightly different scales, and you will need to resize them prior to combining. A program like RegiStar makes this a relatively painless process, but it is another step you will have to go through.

If you have questions on this process and want to learn more about it, or any other types of CCD or film imaging, please feel free to come to our OCA Astromagers group meetings on the third Tuesday of each month, with directions listed on the OCA web site. I hope to see you there.

(more of Greg Pyros' images can be seen on his website at <http://www.gregpyros.com> )

# AstroImage 2002, a resounding success.

By David Kodama

Late August was welcomed with a sigh of relief from a number of club members because it meant that AstroImage 2002 had finally arrived. The hardworking committee had put in 10 months of planning to attempt to bring a completely new and rejuvenated imaging conference, and all indications are that it was a great success. It was a very happy ending to a year of great anxiety due to all of the changes incorporated into this year's conference – a site change, higher costs and correspondingly higher registration fees, expansion to 3-day format, change to an August event, pay-per-view internet streaming, CDRom proceedings, and much, much more...

## Friday Night Beginners' Session

The conference opened with a Friday evening session covering the basics of astroimaging for the benefit of those getting started in imaging or contemplating doing so. Judging by the number of badges picked up at the registration desk manned by Charlie Oostyk (a few things never change), most of the registered attendees were at the beginners' session. Perhaps this was curiosity about how this session be run, a desire to help beginners, or perhaps it was to make sure the speakers were kept honest!



In keeping with the one of the principles driving the conference, discussion was balanced between the traditional film and newer electronic imaging forms. This was originally intended as a session run by the members of the OCA's AstroImaging SIG. However, when author Robert Reeves (**Wide-Field Astrophotography**) volunteered to cover astrophotography at this session as well as a technical speaking slot on Saturday, it was a nice enhancement to the program as well as a big load off the OCA's SIG members. Greg Pyros from the OCA handled the CCD end of the presentation. The presentations were nicely complemented with equipment set up by OCA members as well as ample time to mix for one-on-one Q&A.

## Saturday Technical Presentations – something for everyone

Saturday was slated for the day of the main course for the conference, and in this sense remained true to the traditional AstroImage conference format. With eight technical talks plus a keynote speech to cram into a short day, conference chairman Garth Buckles did an excellent job of keeping the conference on schedule!

Topics and speakers were selected for balance among the sometimes divergent directions that astroimagers are heading. On the film side, Robert Reeves covered the black art of film hypersensitization (hypering), an old topic, but new to many and essential to master for anyone aspiring to master the ultimate technical challenge of tricolor astrophotography. Bill Fletcher nicely complemented this with a talk on Schmidt camera astrophotography, an-



other “black” art that produces spectacular widefield astrophotos. And finally, on the film side of the conference, Don Westergren from San Diego reported on the extensive testing he has done on the current films available for astrophotography. Don is guaranteed a lifetime of work if he wants it as the film manufacturers change their formulations as often as automobiles change their body styles!



On the CCD side of astroimaging, Jack Newton (also the keynote speaker) and Ron Wodaski, both authors, and both well known for pioneering work in CCD imaging, covered a topic of intense interest to all – digital processing of images. No doubt many attendees would have liked a whole week on the topic, but everyone had to be content with attempting to drink from a fire-hose! And to talk about getting those images for processing was Steve Mandel who was an early pioneer in wide field (i.e. with camera lenses) CCD imaging.

Another topic of interest to everyone who takes astroimages – how to achieve “true” color – was covered by Don Goldman. Don’s professional expertise and access to spectrophotometers as well as his interest in tri-color CCD imaging led him into a detailed analysis of the filters used by astroimagers as well as the techniques for assembling tricolor component images into a final “true” color result.

For a totally different aspect of astroimaging, Ron Dantowitz showed what can be done with video cameras. Attendees were all mesmerized by his presentation of images showing surface detail on Mercury (previously not imaged by the NASA probes sent there), lunar images with detail rivaling that captured by the last few seconds of the Ranger lunar impact probes, and spectacularly detailed images of the Mir and International space stations. The fact that the space stations images were done simply with a video camera and a 12-inch SCT amateur scope will no doubt encourage many attendees to go out and try it themselves!



And if Saturday was not adequately activity-packed for the attendees, since lunch was catered, there was still adequate time to visit with the speakers and each other on a one-on-one basis, browse through the gallery of images submitted by attendees, or to visit the vendors who happily reported a nice flow of attendees in the exhibits area. To top off the day, Dr. Tammy Smecker-Hane of the UCI Astronomy and Physics Department and some OCA volunteers hosted an open house at the UCI campus observatory.

And if Saturday was not adequately activity-packed for the attendees, since lunch was catered, there was still adequate time to visit with the speakers and each other on a one-on-one basis, browse through the gallery of images submitted by attendees, or to visit the vendors who happily reported a nice flow of attendees in the exhibits area. To top off the day, Dr. Tammy Smecker-Hane of the UCI Astronomy and Physics Department and some OCA volunteers hosted an open house at the UCI campus observatory.

### Sunday Sessions

While Saturday was reserved for “hard-core”, non-commercial astroimaging topic presentations, Sunday was opened up to workshops and product-oriented presentations by conference sponsors as well as “softer” (non-technical) astroimaging presentations. The Sunday session was a point of concern for the planning committee as it was uncertain how many attendees would have the interest and stamina to make it to the third round of presentations, but apparently virtually everyone had more than enough energy for Sunday too! And they were not disappointed either. Sponsor presentations covered products ranging from telescope pier designs to guidescope configuration to CCD imagers to image processing software.



Ron Wodaski followed his Saturday talk on advanced image processing by discussing a new technique he has developed to selectively process areas of varying intensity and contrast in an image. Attendees who thought they would be sitting back and relaxing on Sunday found that this presentation required as much attention as any on Saturday.

And finally, another "bonus" speaker was Imelda Joson, Image Gallery editor for Sky & Telescope Magazine. Imelda's talk, entitled "Astrophotography, Then and Now" reviewed the history of film imaging and left us with some musings of what the future holds for this type of imaging.

### Following Up

Though the end of the conference came and went exactly as scheduled under Garth's watchful eye, the work hasn't stopped there. As of this writing, the conference proceedings CDROM is being assembled with the presentations being provided by the speakers along with photos and other background material on the conference and speakers. Each of the registered attendees will be receiving this shortly. And by popular demand, a second CDROM, which will contain the video stream broadcast during the conference (approximately 13 hours of content), will be made available for a nominal cost, pending obtaining permission from the speakers. This will give everyone the opportunity to review the talks or to see it for the first time if they were not able to attend the conference.

What will the direction for the conference be in the future? That's not set in concrete, so you can get your 2 cents in at an online poll (see <http://www.ocastronomers.org/astroimage/>). You can also purchase copies of the AstroImage 2002 CDROMs as well as remaining caps and shirts there. See you at the next AstroImage conference! And in the meantime, come and join the AstroImage SIG, which meets on the third Tuesday evening of each month.

*You can also get **weekly email notices** of what's going on in the OCA by sending a request to me at: [kodama@alumni.caltech.edu](mailto:kodama@alumni.caltech.edu).*

# ASTRONOMER

NEWSLETTER OF THE  
ORANGE COUNTY ASTRONOMERS  
P.O. BOX 1762  
COSTA MESA, CA 92628

DO NOT FORWARD  
RETURN SERVICE  
REQUESTED

Nonprofit Organization
U.S. Postage
<b>PAID</b>
Garden Grove, CA
PERMIT NO. 15

**DATED MATERIAL  
DELIVER PROMPTLY**

**Handy Contact List**

President, Webmaster	Liam Kennedy	liam.kennedy@ocaastronomers.org	949-552-6187
Vice President	Barbara Toy	btoy@cox.net	949-499-3132
Treasurer	Charlie Oostdyk	charlie@cccd.edu	714-751-5381
Secretary	Bruce Crowe	bcrowe12@pacbell.net	714-971-8427
Trustee	Bob Buchheim	rbuchheim@compuserve.com	949-459-7622
Trustee	Carol Copp	ocaastrgirl@juno.com	714-871-3430
Trustee, Anza House Coordinator	Stephen Eubanks	SSEubanks@earthlink.net	714-776-7361
Trustee, WAA Representative	Tim Hogle	tim.hogle@jpl.nasa.gov	626-357-7770
Trustee	Tony Obra	tonykathyodieseldr@attbi.com	714-952-8779
Trustee	Gary Schones	gary378@pacbell.net	714-556-8729
Trustee	Russell Sipe	sipe@sipe.com	714-281-0651

**COMMITTEES, SUBGROUPS, AND FUNCTIONARIES**

Sirius Astronomer Editor	Darren Thibodeau	darren@mwscommunications.com	949-455-0323
Observatory Custodian	John Hoot	jhoot@ssccorp.com	949-498-5784
Anza Site Maintenance	Don Lynn	donald.lynn@opbu.xerox.com	714-775-7238
Astrophysics SIG, Fundraising	Gordon Pattison	glpbmp@cox.net	949-786-7079
Librarian	Karen Schnabel	karen@schnabel.net	949-887-9517
Membership, Pad Coordinator	Charlie Oostdyk	charlie@cccd.edu	714-751-5381
Beginner's Astronomy Class	Antonio Miro	tycmiro@aol.com	714-898-9677
Astrolmagers SIG	Greg Pyros	greg@gregpyros.com	714-708-3400 x12
Explore the Stars Coordinator	Richard Cranston	rcransto@ix.netcom.com	714-893-8659
Silverado Star Parties	Bob Buchheim	rbuchheim@compuserve.com	949-459-7622
Star Member Training	Liam Kennedy	liam.kennedy@ocaastronomers.org	949-552-6187
OCA Outreach Coordinator	Jim Benet	jimbenet@pacbell.net	714-693-1639
Telescope Loaner Program	Henry Fry	henryfry@hotmail.com	714-635-6056
EOA Coordinator	Ken MacLeod	kenmacleod@earthlink.net	909-674-8877

**OCA WEBSITE:** <http://www.ocaastronomers.org>  
**STARLINE 24-HR. Recording:** 714-751-6867  
**ANZA OBSERVATORY:** 714-763-5152