

Saguaro Astronomy Club

Metro Phoenix, Arizona

SACNEWS



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Comet Comments

by Don Machholz

A few faint comets have been found recently.

Periodic Comet Mrkos (1991k): Antonin Mrkos of Czechoslovakia photographed this, his thirteenth comet discovery, on Mar. 16. The comet was closest the sun last month at 1.41 AU and takes 5.8 years to complete an orbit. Although favorably placed, it will get no brighter than magnitude 13.

Comet Helin-Lawrence (1991L): Eleanor Helin, Kenneth Lawrence and P. Rose used the 18" Palomar Schmidt to discover this comet on March 17. It will be closest the sun next Feb., when it should be visible in amateur-sized scopes. Presently it is magnitude 14.

Periodic Comet Giacobini-Zinner (1991m): K. Meech and W. Weller recovered this comet at magnitude 22. It is still one year away from perihelion—which will occur when it is behind the sun—therefore it will remain faint.

Perihelion Date	On July 11.8 UT RA (2000)	Dec	Elong.	Est. Mag.
07-04.0	07h25.1m	+12°01'	10.1°	+7.0
07-05.0	07h25.7m	+12°41'	9.4°	+6.6
07-06.0	07h26.3m	+13°25'	8.7°	+6.0
07-07.0	07h26.9m	+14°15'	7.9°	+5.4
07-08.0	07h27.6m	+15°11'	7.0°	+4.7
07-09.0	07h28.2m	+16°18'	5.9°	+3.7
07-10.0	07h28.7m	+17°40'	4.6°	+2.3
07-11.0	07h28.8m	+19°30'	2.9°	-0.3
07-11.5	07h28.0m	+20°52'	1.7°	-3.4
07-12.0	07h16.0m	+21°33'	1.7°	-4.7
07-12.5	07h10.5m	+20°13'	3.4°	-0.7
07-13.0	07h07.3m	+19°13'	4.6°	+1.0
07-14.0	07h03.1m	+17°40'	6.4°	+2.9
07-15.0	07h00.3m	+16°28'	7.7°	+4.1
07-16.0	06h58.0m	+15°26'	8.9°	+5.0
07-17.0	06h56.2m	+14°32'	9.8°	+5.6
07-18.0	06h54.7m	+13°45'	10.7°	+6.2

It is unlikely that any comets from the Kreutz Sun-grazing group would be near the sun during the July 11 eclipse, but the table above lists predicted locations if one

Quick Calendar

Thunderbird Public Star Party — May 18
Riverside Telescope Makers Conference — May 24-27
Saguaro Astronomy Club meeting — May 31

is in the area. The positions are all for July 11.8 UT, (when the sun will be at RA: 07hr25m, Dec: +22.1°) while the variable factor is the perihelion dates for a comet on the sun-grazing orbit. An absolute magnitude of 10 is used.

Riverside Telescope Makers Conference

The 23rd Annual Riverside Telescope Makers Conference will be held May 24th through the 27th. It will be held at the Y.M.C.A. Camp Oakes which is eight miles east of Big Bear City on Highway 38 at Lake Williams Road. This location is about 50 miles northeast of Riverside in the San Bernardino mountains at an elevation of 7,300 feet. Find Highway 38 off of Interstate 10 in Redlands.

Due to the need to plan this Conference in advance, meal plans will be limited to the first 400 request and camping sites will be limited to the first 800 registrations for camping. There will be unlimited day use of the facilities.

Camping is \$31.00 per person while day use is \$13.00 per person (day use is included in lodging and camping fees). The conference grounds will open at 9:00 am on Friday, May 24th. The swap meet will be held on Saturday in front of the meeting hall. People who arrive for day use only, on Saturday, will be directed to monitored parking areas and driven into the conference area via regularly scheduled vans.

The printed proceedings of the conference will be prepared and sold by the Orange County Astronomer for \$14.00.

For more information either call and leave a message at (714) 948-2205 or contact Gene Lucas at 934-1889.

Bits and Pieces

Minutes of the March Meeting

President Paul Lind called the meeting to order at 7:30pm. He reminded the club that the next meeting was not until April 26. A. J. Crayon then presented the Deep Sky subgroup report. Steve Coe announced that the next novices' group meeting is April 28. The Tucson Astronomy Association is still interested in a trip to the Grand Canyon May 4-12. Anyone interested was asked to contact Paul Lind. Bob Dahl then presented the treasurer's report. Steve Coe will look into getting golf t-shirts with the SAC logo. Paul then summarized the Feb. 26 board meeting. A motion was presented to amend the by-laws to change the patron membership to \$100/year and give them 6 ads/year in the newsletter. This motion was passed with one dissension. For the Show-n-Tell, Steve Coe showed slides of his last star party at Buckeye with the departing club member Dan Ward.

The main speaker was Pera A. Aannestad from the ASU Dept. of Physics. His interest included studies of the interstellar medium, interstellar dust and infrared astronomy. His interesting talk was titled "Gases and dust between the stars."

The meeting was adjourned by Paul at 9:59. —*Phil Dahl, SAC Secretary*

1991 SAC Meetings	1991 SAC Star Parties
May 31	June 8
June 21 *	July 6
July 26 *	August 3
August 23	September 7
September 20	October 5
October 25	November 9
November 22	December 28
December 14 Party	

Public Star Party

Please try to setup before sunset for the Star Party at Thunderbird park. The star party is on May 18. See the Calendar for details.

Club Roster

It's almost that time of year again. The roster with names, addresses and phone numbers is about to be printed. This will only go to club members only. If for some reason you do not want to be included in this roster please let either Paul Dickson (Newsletter Editor) or Bob Dahl (Treasurer) know.

There will also be an opportunity to check the information before the roster is printed during the May meeting. Please make an attempt verify the information.

Directions to SAC Events

SAC General Meetings 7:30 PM at Grand Canyon University, Fleming Building, Room 103 — 1 mile west of Interstate 17 on Camelback Rd., north on 33rd Ave., second building on the right.

SAC Star Parties at Buckeye Hills Recreation Area — Interstate 10 west to Exit 112 (30 miles west of Interstate 17), then south for 10.5 miles, right at entrance to recreation area, one-half mile, on the right. No water and only pit toilets. Please arrive before sunset; allow one hour from central Phoenix.

SAC Deep Sky Subgroup Meeting at John & Tom McGrath's, 11239 N. 75th St., Scottsdale, 998-4661 — Scottsdale Rd. north, Cholla St. east to 75th St., southeast corner.

Skyshooting Comets

A Challenge for Astrophotographers

By Chris Schur
Part 2

In my last article I wrote about why average comets pose difficult challenges to astrophotographers to get a really clear shot. Although they may be fairly bright, they move quickly against the background starfield. Therefore conventional tracking methods cannot be used efficiently. This article will be about another aspect of comet photography, pushing your scope to its limits to capture the less significant members of this group of objects as well as the brightest in their class.

Small and Faint Comets

Let's start with the most common types of comet, the small and faint ones (visual magnitude less than 9). These occur at a rate of up to a dozen or more per year and this more frequent appearance allows a good deal of practice for improving techniques and equipment. If you keep this in mind you'll be ready for the brighter and more detailed objects which occur much less frequently. Large apertures such as ten inches or more are essential along with long exposures and good guiding. But this is where we encounter the first dilemma of would be comet photographers, comets don't sit still during your exposure and short exposures such as five minutes or less will either not record them at all or very faintly. But the longer exposures, fifteen to thirty minutes that are required to show them well, also trail them on the film, thus blurring all the fine details. The small size of these objects also requires a fine grained but slower film, thus aggravating the problem all together.

The situation is not hopeless however, because once we know the comet's daily motion, and direction of its movement by simply plotting up its current position on a

suitable atlas, we can easily compensate for its movement and hold it stationary on the film. This we covered in some detail in my previous article.

Assuming the comet is tracked properly, what can be expected on the film once a long exposure is printed up? Generally, a small round diffuse glow will be recorded, usually much brighter in the center and possibly a short fan-like extension of the tail. Don't expect the faint comets to always have a tail, most don't. Because of their low contrast and overall lack of color, color films have no advantage with these dim objects. Most photograph pure white, or at best with a slightly bluish cast.

Bright Comets

If you practice tracking and film processing you'll be ready when the really bright comets make their appearance. For some people, these are the reasons for living. And nothing can awaken public interest like a brilliant comet. While a bright comet — about third or fourth magnitude can occur every year or two, a really brilliant comet, say second magnitude or brighter won't come by more often than a decade or two. Most of the bright and brilliant comets have tails ranging from two degrees in length on past twenty degrees or more. Some, such as Comet IRAS-Araki-Alcock had no tail at all!

The coma will vary in size too, anywhere from a quarter degree up to two degrees or more in diameter. It can be seen that a variety of focal lengths must be used. The prime focus of the telescope will reveal only the head and inner coma, but since the internal details of bright comets are greater, one should consider a wide range of exposures on color film to record the comets heart.

Look carefully at the color contrast in the coma. Several comets in recent years revealed on color emulsions a beautiful sky blue coma with the leading edge a saturated emerald green color. Really active comets will have an overall green or turquoise colored coma that of course would never have been noticed on black and white films.

The tails are usually long and bright enough to record superbly with short to medium telescopes, making them suitable for less skilled astrophotographers to achieve some really spectacular photographs. You will find however, that comet tails are really low surface brightness objects, and while color films will record some blue or yellow tints to the gas and dust tails on really brilliant comets, most tails will be recorded best in the higher contrast black and white.

One final point with bright comets is that with fast 50mm or 135mm lenses, we often can get the comet setting against a distant scene such as a mountain or distant trees. Exposures under five minutes guided on the stars will not significantly blur the foreground and such scenes always make the most inspiring astrophotos. Magazines are always on the look out for such shots, especially ones with recognizable picturesque foregrounds such as a palm tree or famous land form.

Films for Comets

Below is a listing of B&W as well as color films I have

tried with good results. Your selection will be based on equipment and your specific needs.

1) The best color film I have tried so far is hypered Fuji Super HG 400 negative film. It has extremely fine grain, is fat, and a huge dynamic range for recording the large variations in brightness across the comets face. Its color response is remarkable; soft sky blues, emerald greens and straw colored yellows are recorded very well, with good color separation.

2) Unhypered Konika 1600 or 3200 are a second choice, but these faster films have much less color saturation and differentiation than the much higher resolution 400.

3) The best B&W film is hypered Kodak 2415, developed in D19. Its high contrast (gamma = 3.5-4) brings out tail structures like no other film. The combination of this film with a red filter such as the Wratten #29 allows good penetration of twilight to pick out the maximum details in the sungrazers. For small comets, it can't be beat. Its ultra fine grain and good speed make it a perfect match when used with a large newtonian and prime focus.

4 Novae and 1 Supernova Shining Brightly

By Gene Lucas

No, this isn't an ad for used Chevrolets! Variable star observers in England, Chile, the U.S., and Australia have reported discoveries of four bright novae and one supernova since March 25, in Hercules, Centaurus, Ophiuchus, the galaxy NGC 4527 in Virgo, and the Large Magellanic Cloud. Details of the discoveries, magnitudes and positions are given in the table below. Data is from the American Association of Variable Star Observers (AAVSO) *Alert Notices* 138 through 142.

All of these are presently visible in medium-size amateur telescopes (8" and larger) and are expected to fade gradually over the next few weeks to months (The LMC is not visible from the U.S.)

	Object	RA (1950)	Dec	Discovery Date - Mag	Latest Date - Mag	Nearby
(1)	N. Herc. 1991	18h44m12.5s	+12°10m51s	03/25 - 5m	04/18 - 12.7	VW Aql
(2)	N. Cent. 1991	13h46m37.1s	-62°54m00s	04/02 - 8.7(p)	04/19 - 12.2	RV Cent
(3)	SN1991T	12h31m36.9s	+02°56m28s	04/13 - 14.0m	04/19 - 12.7	NGC 4527
(4)	N. Ophi. 1991	17h17m14.0s	-26°43m27s	04/11 - 10m	04/18 - 10.3	NGC 4536
(5)	N. LMC 91	05h04m12.7s	-70°22m16s	04/18 - 12.3(p)	04/19 - 12.6	LMC

Notes:

- (1) Discovered by George Alcock (Yaxley, Peterborough, England) with 10X50 binoculars *from inside his house through plate glass window!*
- (2) Photo discovery by W. Liller (Vina del Mar, Chile) with PROBLICOM photo survey.
- (3) Discovered by S. Knight (E. Waterford ME) visually. Offset 25.7s E and 44.4s N of nucleus of NGC 4527.
- (4) Photographically discovered by P. Camilleri (Cobram, Victoria, Australia).

- (5) Discovered by Dr. W. Liller (Vina del Mar, Chile) with PROBLICOM photo survey. Not visible from the U.S.
- (p) magnitudes are photographically. Others are approximate visual magnitudes.

Western Amateur Astronomers 1991 Conference and Family Astro-Vacation August 7-11

The WAA will be taking in an entire history by not only looking back through telescopes, but visiting volcanos that last erupted 500 years ago. The Mammoth Lakes area is popular tourist attraction and is reached by Highway 395 which runs along the east slope of the Sierra Nevada. Lodging at the Kitzuhel group dorm will accommodate families and there are many attractions and activities in the area to keep non-astronomers busy.

Activities include: Bodie Ghost town, Mono Lake & Mono Craters, Devil's Punch Bowl, Obsidian Domes, Inyo Craters, Gold mine, Earthquake fault, Hayride, BBQ dinner, Campfire and sing-a-long, Children's star party, and Dark Sky star parties for the Perseid and the Upsilon Pegasid Meteor Showers.

The conference is afternoons on Thursday and Friday, all day Saturday, and Brunch Sunday. The conference will cover Astro-Hackers (Computers), Solar Eclipse reports, Meteor Showers, Comets, Solar & Lunar reports, Planetary reports, Deep Sky reports, Exploration Horizons.

Lodging is \$12 per person per night. The conference is \$20. For more information and registration call Margaret Matlack at (213) 696-9227. Or contact Gene Lucas at 934-1889.

Such-A-Deal

SUCH-A-DEAL is a place to advertise equipment, supplies, and services related to amateur astronomy. This is a free service for SAC members and friends. SAC is not responsible for the quality of advertised items or services.

For Sale—13" Coultter mirror, diagonal, and tube parts. Excellent optics. \$300. Call Dean Corn at 759-0749 after 6:00pm.

The following items for sale are being handled by Jeff Charles. He can be reached at 972-1878 during evenings.

Telescope—Celestron Super C8 w/ Starbrite Coating, Tripod, Wedge, Visual Back, Star Diagonal, JMI Moto Focus, Counterweights, Celestron Rich Field Adapter, Spectrum Multi Coated 2X Barlow lens and the following eyepieces: Celestron Ortho 7mm, Spectrum Ortho 12.5mm & 18mm, Celestron Plossl 26mm, and Spectrum K 40mm. \$1295.

Telescope—Celestron C80 Refractor with Celestron German Equatorial Mount and Battery Powered Pulsed Motor Drive with Drive Corrector, Star Diagonal, extension tube for straight through viewing, K25mm and Ortho 6mm eyepieces. Also includes a Celestron Comet Catcher with mounting rings and Ortho 18mm eyepiece. \$795.

Guider Versacorp Deluxe DiaGuider with adapter for Celestron SCTs. Multiple functions emulate a Star Diagonal, Off-Axis Guider and Manual Shutter. Includes T-thread Optidisc holder and 0.7x Telecompressor in Series 6 Optidisc cell. \$200.

Eyepiece—TeleVue 13mm Nagler Eyepiece. Includes case. \$195.

Eyepiece—Spectrum Ortho 6mm eyepiece. \$15.

Filter—Lumicon 1.25" Deep-Sky Filter. \$40.

Filter—Lumicon 1.25" UHC Filter. \$50.

Filter—Set of 2 Spectrum Filters (23A, 80A, Dbl. Pola.) with case. \$20.

Finder—Telrad finder with mounting bracket. \$30.

Camera—Canonflex 35mm SLR camera with removable eye level prism finder, case, light meter, Canon 50mm $f/1.8$ lens, Canon 135mm $f/3.5$ lens, Canon 200mm $f/3.5$ lens, Canon Bellows R, Canon waist level finder with magnifier, close-up lens, cable release, yellow filter, T-adapter, misc. adapters. \$250.

Video—GBC Low Light TV camera with C-Mount, power supply, and control box. Purchased new in Oct 1990. Never used. \$325.

Lens—12mm $f/1.2$ C-mount Auto Iris lens. Works with GBC camera. Purchased new in Oct 1990. Never used. In original box. \$85.