San Francisco Amateur Astronomers

c/o Josephine D. Randall Museum
199 Museum Way, San Francisco 94114

President	Toney Burkhart	668-9691
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BULLETIN FOR NOVEMBER 1988

Date: WEDNESDAY, NOVEMBER 16

Time: 8:00 P.M.

Place: Auditorium, J. D. Randall Museum
114 Museum Way, San Francisco

Speaker: DR. DALE P. CRUIKSHANK
Research Scientist
NASA Ames Research Center

Subject: TRITON, PLUTO and CHARON

Dale P. Cruikshank is a planetary astronomer who received his Ph.D. at the University of Arizona in 1968. He has been employed in the Astrophysical Experiments Branch at NASA Ames Research Center since January 1988. Prior to that, he spent nearly 18 years at the Institute for Astronomy, University of Hawaii, in Honolulu. He conducts a program of observational studies of planets, satellites, asteroids, and comets, using the telescopes at Mauna Kea Observatory in Hawaii. His particular interests lie in the compositions of the rocky and icy surfaces of small solar system bodies, and in the study of the tenuous atmospheres of Io, Triton, and Pluto, using large telescopes to obtain infrared spectra of these bodies. He has been especially active in tracing various types of meteorites to their probable parent bodies among the asteroids, and in studying Neptune's satellite Triton. He is involved with the Voyager spacecraft science investigations, is a team member on the Comet Rendezvous Asteroid Flyby (CRAF) mission, and is connected with the Space Infrared Telescope Facility (SIRTF) project at Ames. At the moment, he is finishing up some proposals for observations with the Hubble Space Telescope.

NEW MEMBERS

Once again, it's a pleasure to welcome new members Jeff Cobb and Joseph Tobin to the club. We hope to see you often at meetings and star parties, and invite you to participate in the activities and functioning of the club.

NOTES FROM YOUR TREASURER - by Chelle Beard

I have noticed that some of our members are very nice about sending their dues before renewal letters are sent. But some problems have arisen due to this, especially in regard to magazine subscription fees. Please contact me before sending your fees if you haven't received a letter from me. Fees for the magazines are as follows:

Sky & Telescope - $16
Deep Sky - $8
Telescope Making - $8
Astronomy - $14

Contact me for midyear prorate. (415)878-4965

STAR PARTY REPORT - MARS WATCH '88 - by Irving Hochman

MarsWatch '88 once again attracted a large and enthusiastic turnout at Rock Springs on October 8 for the lecture and slide show in the Mountain Theatre. That was followed by a viewing session through many telescopes brought by SFAA members for their own and the public's enjoyment. It was comfortably warm, the sky was clear, the seeing reasonably good. The Milky Way was dazzling and more than 500 people stayed to marvel at the views of Mars, Jupiter, Saturn in addition to the Andromeda Galaxy, Globular Clusters, Nebulae of all kinds and many other gems. Although we were well represented by members who brought telescopes and binoculars, it was disappointing not to see more of our own members. After all, observing the night sky is what the SFAA is all about, with or without equipment. Naked-eye viewing on a clear, dark night on Mt. Tam can be just as inspiring and satisfying as looking through the 200" at Mt. Palomar, and a whole lot more available. So don't miss any more of these great opportunities to enjoy the wonders of observational astronomy! Reserve the dates and come to the Star Parties.

NEXT SFAA STAR PARTY: ROCK SPRINGS, MT. TAMALPAIS

The regular star party this month is on Saturday, November 12, at Rock Springs on Mt. Tamalpais. We will meet at 5:30 pm at the Shoreline Shopping Center in Mill Valley and sashay up the mountain together. If you need to know how to get there, call one of the numbers listed on page 1 of this bulletin.

When you leave the star party, don't forget to turn on your headlights BEFORE you leave your parking place. SAFETY FIRST!

NEED A RIDE? REACH OUT AND ASK SOMEONE

Do you need a ride to meetings or to the monthly Mt. Tam star parties? Simple. Place a "Want Ad" in the Bulletin. Just drop a note to either Irving Hochman or Jim Shields. Indicate that you need a ride, supply a telephone number and a cross street nearby. If, on the other hand, you can provide a ride to someone in need, please check the want-ad section of the Bulletin each month. Not only will you be doing someone a favor, you'll have a chance to make new friends.

BOARD MEETING

The next meeting of the SFAA Board of Directors will be on Wednesday, November 9 at 8 pm. in the library of the Josephine D. Randall Museum. All members are invited and encouraged to attend Board meetings. Why not come to the next meeting and contribute your ideas and suggestions?

SFAA NOMINATIONS FOR DECEMBER ELECTION

The Nominating Committee has submitted a slate of candidates for SFAA offices. These names will be placed in nomination at the November 16 general membership meeting, and additional names of SFAA members in good standing may be submitted from the floor. Nominations will then be closed, and the election will take place at the December 21 general membership meeting.

The names submitted by the Nominating Committee are:

____ President - Toney Burkhart
____ Vice Pres.- John Muhilly
____ Secy/Treas. Chelle Beard

Members of the Board of Directors:

____ Bob Levenson
____ Robert Michaud
____ Lisa Puls
____ Jim Shields
____ Bill Cherrington
____ Mary Engle
____ Irving Hochman

If you are unable to attend the December meeting to vote in person, use this as an absentee ballot. If you choose to nominate others for these offices, write their names in the space below. In any case, return this ballot by mail to:
Chelle Beard - 32 Penhurst Avenue, Daly City 94015

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The Universe According To Hawking

by Bill Sorrells

A Brief History of Time
by Stephen Hawking
Bantam Books, New York, 1988
198 pages; $18.95

On a fine day last April, when the physicist Stephen Hawking visited the University of California at Berkeley, the crowd outside the lecture hall (which was actually Zellerbach Auditorium, a 2500-seat concert hall) swelled to such proportions that it was impossible to get near the doors half an hour before they opened. When the doors finally did open, people literally *ran* to the seats near the front to get the best view. Within a few minutes the entire hall was filled to capacity, and the overflow, which was considerable, had to watch on a TV screen in another nearby auditorium.

The subject of Hawking's talk was pretty esoteric: black holes and cosmology. Why would the appearance of a physicist result in such a high level of excitement? Why would such a seemingly arcane lecture generate a response more fitting of a rock star? And the answer is: Hawking is no ordinary physicist, and the extraordinary reaction was as much due to his celebrity status as it was to his topic.

Indeed, the fact that he was giving a talk at all is part of the reason for the fascination. For Hawking, you see, *can't* talk; nor can he walk or even move, except for slow turnings of his head, a strange leering grin, and a few twitches of a finger which he uses to drive his motorized wheelchair and operate his computer. Hawking is probably the world's most famous victim of Lou Gehrig's disease (amyotrophic lateral sclerosis, or ALS) since the great Iron Horse himself, and much of the world's fascination with Hawking is as much due to his achievement in the face of his disability as with his scientific achievements alone. Even as a medical specimen, Hawking is amazing; he is probably the longest surviving ALS patient known. A typical ALS patient survives only about three years after diagnosis (Gehrig was dead just over two years after his last game), but Hawking has been holding on since the mid-1960's, and every day he makes both medical and scientific history. No wonder he is besieged by near-groupies when he makes a public appearance; no wonder he has been featured on the cover of ***Newsweek*** (June 13, 1988); and no wonder his book, "A Brief History of Time" has been holding down first place on the bestseller lists for months now. Even if he were a mediocre scientist, Hawking would be a star. But, he is *not* a mediocre scientist, he is a great one.

How does a man who can't talk or write give speeches and write books? By computer, that's how. Hawking's wheelchair has been permanently equipped with a speech-synthesizing machine (made right here in the Bay Area, in fact) which serves as his outlet to the world. As a list of words scrolls up his screen, he chooses the ones he wants with a flick of his finger. If he wants a word not in the computer's vocabulary, he can spell it out letter by letter. When a sentence or paragraph is composed, he makes a few more flicks, and a tinny, rather Irish sounding voice speaks his thoughts. And when Hawking speaks, people listen.

To be sure, the Berkeley lectures were actually pre-recorded and played back from a disk - not composed on the spot; but this didn't bother the audience in the least, as long as their hero was there to do the button pushing. And he did answer (slowly!) questions at the end of the session. Canned or not, the Hawking lecture was an event never to be forgotten by anyone who was there.

For those who were not there, "A Brief History of Time" contains the complete texts of his talks, plus much more. (Each of his three Berkeley lectures was really a near-verbatim excerpt from the book) Neophyte readers who are convinced that advanced ideas in modern physics are beyond their understanding, or who believe that no egghead physicist could possibly write a book on a comprehensible level, will be delightfully surprised. Hawking takes us on a tour of both the universe's history and the history of our understanding of it. In a breezy ten pages, his opening chapter takes us from Aristotle to Einstein by way of introduction, then in the next two chapters he backtracks a bit to explain several fundamental concepts in more detail. By page 53, he has taken care of the expanding universe, and is introducing us to quantum theory, followed shortly by quarks and subnuclear particles. Then, with the joy of a dolphin splashing in the waves, he leaps to the remote reaches of the universe to explain black holes, the origin of time itself, and the ultimate fate of the universe. In his conclusion, he speculates on the possibility of a complete, unified theory which would explain *everything*. "Then," he boldly declares, "we would know the mind of God."

Readers must beware of taking Hawking too literally when he delivers such solemn intonations. His numerous references to God in this book are clearly metaphorical, and woe betide the careless reader who thinks otherwise. In the question period at the end of one of the Berkeley talks, a questioner wanted to know if he thought the Big Bang was set in motion by God, and whether this was a viable scientific explanation for the universe's origin. Hawking gave his quickest response of the afternoon: an almost instantaneous "NO!"

The very idea that science may one day learn literally everything there is to know may seem like the ultimate in hubris to many people, and they may be right. But it is undeniably true that this chutzpah has brought Hawking to a deeper understanding of the world than anybody else has ever had, and who can say it hasn't been worth it? Hawking's ultimate goal may be no more than a mirage on the horizon, but the quest is taking us through some wonderful territory. For that we should be thankful.

Bill Sorrells is president of the Peninsula Astronomical Society in Mountain View. He is a well-known amateur astronomer and is the discoverer of Comet Sorrells 1986. This review is reprinted with his permission from the October PAS bulletin, "PAS nite skies".

MARSWATCH DIARY - by Jim Shields

January 1988: I've been hearing a lot about the coming opposition of Mars, but I don't expect much. A lot of people are going to be disappointed if this gets as much hype as Halley. Mars has always looked like a tiny orange marble to me (fig. 1). How can the A.L.P.O. observers see anything?

July 17, 1988: I spent some time at Fiddletown studying Mars with my 17.5" Dobsonian and a 7" off-axis mask. It doesn't look too bad at 417X with a 4.8mm Nagler. I'm surprised I can use so much power. (It's probably a bit too much.)

Mars is beginning to get interesting (fig. 2). Its disc has grown to ten times its normal size and shows a pronounced gibbous shape. (I didn't even know that Mars goes through phases like Venus, even though it's further from the Sun than Earth.) The south polar cap is a very bright, pure white that contrasts beautifully with the dark fringe that surrounds it. The dark triangular patch near the center of the disc must be Syrtis Major!

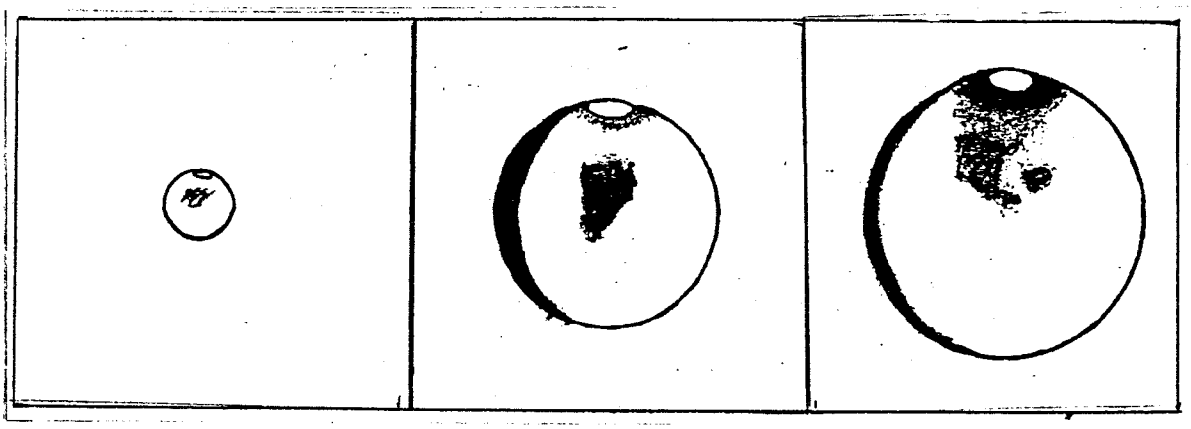


Figure 1 Figure 2 Figure 3

August 13, 1988: Mars is one of the big hits at the Sierra Nevada Field Campus; we've looked at it almost every night for the last week. Both the terminator and south polar cap are shrinking (fig. 3). The southern hemisphere is quite a bit darker than it was last month; the "wave of darkening" that signals the coming of Martian spring in the southern hemisphere is spreading north.

Solis Lacus--"the Eye of Mars"--should be near the central meridian in the early morning hours. Sure enough, there's a dark detached spot in just about the right place. (It's better with a red filter.) Using a blue filter, we think we can just make out some clouds along the limb. I wish I could have a look at an experienced planetary observer's drawings to see what I'm missing!

September 11, 1988: Mars is nearing opposition; it's wonderful this month from Fiddletown! Its disc is huge (fig. 4) and surface markings stand out sharply. There's Solis Lacus again, but much darker, and the lumpy streak to the west must be Mare Sirenum. Three hours later the full extent of Mare Sirenum comes into view. It spreads halfway across the disc and Mars resembles a banded planet like Jupiter.

The south polar cap has melted to half its former size and almost the entire southern hemisphere has darkened. The dark areas have a pronounced greenish cast. It's no wonder that the great observers of the past thought that this was vegetation. Too bad they were wrong. It's summertime on Mars!

Now I understand the particular fascination that the Red Planet exercised upon Percival Lowell and others like him. Mars is alive, even if there are no daffodils there, with seasonal changes and weather patterns that remind us of Earth.

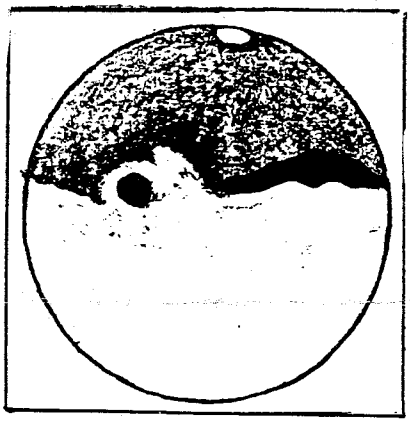
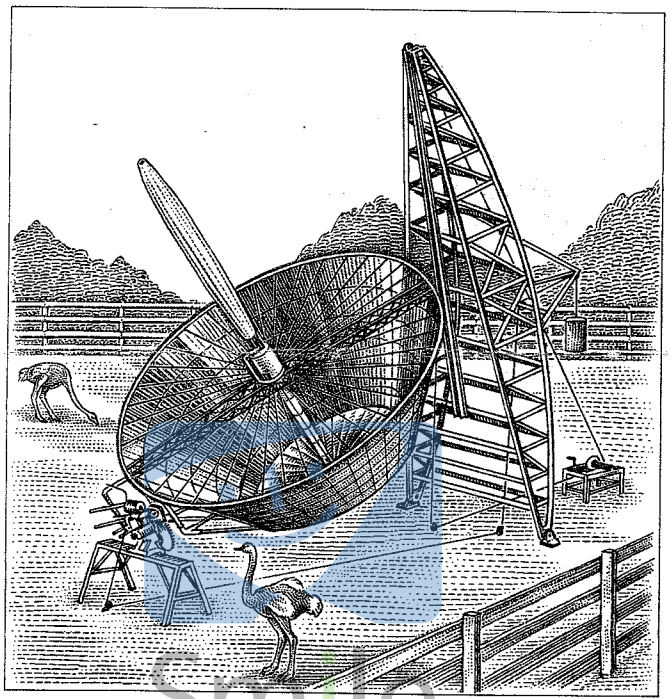


Figure 4



1901: An Early Solar Collector

As long ago as the late 1800s inventors were struggling to design giant "solar motors," the granddaddies of today's photovoltaic solar collectors. In 1901 engineer Aubrey Eneas publicly tested a prototype solar reflector at an ostrich farm in Pasadena. The reflector was made of 1,800 small mirrors, measured 33.5 feet in diameter, and weighed 8,000 pounds, and it was mounted on a clockwork-driven tower that allowed it to follow the sun from east to west. The mirrors collected enough heat and light to boil 100 gallons of water in a reservoir built into the collector; resulting steam, in turn, drove a 15-horsepower engine. Wrote one awestruck reporter who attended Eneas's demonstration: "Should a man climb upon the disk and cross it, he would literally be burned to a crisp. And a pole of wood thrust into the magic circle flames up like a match."

AN 8" DOBSONIAN TEACHING TELESCOPE - by J. Douglas Wolfe

In August 1988, J. Douglas Wolfe was awarded a Certificate of Merit by AANC at its annual dinner. The award was for an "Excellent Portable 8" Teaching Dobsonian", set up for naked-eye astronomy. The judging took place the previous week at the AANC Annual Picnic and Contest on Fremont Peak with Paul Zurakowsky as judge. The following article clearly describes the ingenious and effective method developed by Mr. Wolfe for teaching observational astronomy to beginners.

We all join in congratulating our fellow member for this considerable achievement and for AANC's recognition. -Ed.

Most clear nights I operate my 8" Dobsonian telescope for the public. Pointing out sky objects for beginners, I found it hard to be sure that other people were looking at the object I was talking about. I needed a foolproof way to identify particular stars, rather than just saying "See that bright on over there?".

I sent to 'Sky & Telescope' for their ESSCO constellation charts (Sky Pubs./Cambridge, nos. SCO01 & SCO02). I found that they mounted handily on the side of my telescope tube, just below the eye-piece. I laminated the charts between 2 sheets of clear acetate with 3M Spraymount. The acetate allows me to mark the charts with watercolor pens. The equatorial chart is attached with 2 strips of Velcro. The polar chart is mounted to a pin on the top of the tube and spins like a planisphere. The scale is large (15°/inch) and marked with transit lines for 8 p.m. every night.

Here's how it operates: First I point out the Big Dipper, since most people know it, and then find Polaris. Then I ask the group to turn its back on Polaris. Now they know what it means to face south. Then we locate the current meridian on the chart and see what bright star is near transit. At this point it is crucial that everyone in the group knows exactly what star we are talking about. I simply put the star in the Telrad finder, which projects a red bullseye on the star. Each person takes a moment to check the Telrad and now we have an unmistakeable 'landmark' in the sky. From there it is fairly simple to proceed to the main constellations in the area. The group has quickly gained a few simple elements of naked-eye astronomy.

This seems like a simple idea, but the point is that it works. I've seen lots of telescopes with star charts on them, but they are mostly decorative. The ESSCO charts cost 30¢, and with a little ingenuity I've been able to make an accurate and versatile astronomy tool.

This monthly calendar is available with membership in the Astronomical Society of the Pacific, 390 Ashton Ave., San Francisco CA 94112.

ABRAMS PLANETARIUM

SKY CALENDAR NOVEMBER 1988

An aid to enjoying the changing sky

Use this scale to measure angular distances between objects on diagrams below.

0° 10° 20°

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Planets: Jupiter is the brilliant all-night "star". Not far from the Pleiades, Jupiter rises in ENE in twilight Nov 1-20, and is already up at sunset rest of month. **Mars** is fading but is still very bright. Look in ESE to SE at dusk. At midmonth, Mars is due south within 4 hours after sunset. **Saturn**, in SW at dusk, is getting lower and setting earlier, only about 2 hours after sunset at midmonth. **At dawn: Venus** is brilliant in ESE to SE; **Jupiter** in W to WNW. **Mercury:** See diagrams Nov 1-14.		1 Moon at Last Quarter, 90° (¼ circle) west of Sun in morning sky. Look before and after sunrise.	2 Morning: Mercury 4° N of Spica. Venus. Mercury, Spica, ESE	Mornings: Moon Wed Nov 2; Regulus high in SE; Moon Thurs Nov 3	4 Morning: Venus, Spica, Mercury, ESE	5 The long-period variable star Mira (Omicron Ceti) is expected to reach maxium brightness in early December. Watch its brightness rise, then fall in next few months. To locate Mira, use center page map from any year's Dec *Sky & Telescope*.
6 Venus, Moon. Morning: Spica, Mercury, ESE	7 Venus. Morning: Spica, Moon, Mercury, ESE	8 Venus. Morning: Spica, Old Moon rising in ESE (use binocs), Mercury	9 New Moon 9:20 a.m. EST (6:20 a.m. PST). **Calendar diagrams** show sky from lat 40° N in mid-twilight (¾ hour after sunset or ¾ hour before sunrise), except Nov 26-27.	10 Venus. Morning: Spica, Mercury, ESE	11 Evening: Look early! Saturn, Young Moon, TEAPOT, SW	12 Evening: Saturn, Southernmost Moon, TEAPOT, SW
13 Evening: Moon occults 3rd-mag Tau Sgr; visible from central U.S. Saturn, TEAPOT, SW	14 Morning: Venus, Spica, Mercury, ESE	15 All of U.S. except far West: Using telescope, watch Moon's dark limb occult 5th-mag Eta Capricorni. **Times—MST:** Denver 5:48 pm; **CST:** Austin 6:49 pm; Chicago 7:07 pm; **EST:** E. Lansing 8:11 pm; Boston 8:25 pm; Miami 8:35 pm.	16 Moon at First Quarter, 90° east of Sun in afternoon and evening. At dusk, note 3rd mag star Delta Capricorni (Deneb Algeidi, the Goat's Tail) just W of Moon.	17 Predawn darkness hours: Peak of Leonid meteor shower. Evening: Moon's dark side occults 4th-mag λ Aqr. **Times—PST:** Los Angeles 5:57 pm; **MST:** Denver 7:15 pm; **CST:** Austin 8:08 pm; Chicago 8:32 pm; **EST:** E. Lansing 9:36 pm; Boston 9:49 pm; Miami 9:50 pm.	18 Morning: Venus, Spica, Venus 4° N of Spica, ESE	Evenings: ESE to SE. Moon Sat Nov 19, Moon Fri Nov 18
20 Morning: Venus, Spica, Beta Librae, ESE, Alpha Librae	21 Jupiter nearest Earth. Jupiter is now 4.03 a.u. from Earth. Its disk, 49 arcseconds across, is easily detected with 7x binoculars.	22 Evening: Jupiter at opposition, 180° from Sun and up all night. Moon, Pleiades, Jupiter, ENE	23 Morning: Moon very close to Pleiades. Evening: Pleiades, Full Moon, Jupiter, ENE, Aldebaran	24 Evening: Pleiades, Jupiter, Moon, ENE, Aldebaran	25 Northernmost Moon sets far N of W over two hours after sunrise this morning, and rises far N of E near end of evening twilight tonight.	Four hours after sunset: Castor, Pollux, Moon Sat Nov 26, Moon Sunday Nov 27, ENE
27 Morning: High in west. Pollux, Castor, Moon	28 Morning: Spica, Venus, Beta Librae, Alpha Librae, ESE, SE	29 Morning: Moon, Regulus high in SSW. **Don't miss Wednesday morning's spectacular event involving Moon & Regulus!**	30 **From most of U.S., Moon occults Regulus in predawn hours. From parts of Southwest, Moon narrowly misses star. Details: Next box right.** By morning midtwilight (from central U.S.) Moon is already E. of star. To see event, look earlier! Moon, Reg			

Morn of Nov 30: All events described here are best seen **with optical aid. (1) Spectacular predawn graze** of Regulus by S limb of Moon, near San Francisco at 1:58 am PST, along line crossing CA, NV, AZ, NM, and TX, near Austin at 4:50 am CST. Star flashes on & off as lunar mts & valleys cover & uncover star. **(2) Most of U.S.**—everywhere N of above line—**sees occ'n of Regulus** as it is covered by Moon's bright limb and later reappears at dark limb. **Times** (all a.m.)—**PST:** Vancouver 1:26-2:36; **MST:** Denver 2:53-3:58; **CST:** Kansas City 4:06-5:25; Chicago 4:10-5:36; Winnipeg 3:52-5:12; **EST:** Miami 5:58-7:13; Atlanta 5:30-6:53; E Lansing 5:14-6:41; Washington 5:32-6:58; Boston 5:40-6:56; Toronto 5:22-6:45; Montreal 5:32-6:46. From E Coast, star disappears in twilight & reappears around sunrise. **(3) From the Southwest, Moon narrowly misses star (no occ'n).** Example: Los Angeles at 2:05 am PST.

Magnitudes: Venus −4.0; Jupiter −2.8 to −2.9; Mars −1.8 to −0.8; Mercury (Nov 1-15) −0.8 to −0.9; Saturn +0.6 to +0.5; Uranus 5.7 to 5.8; Neptune 8. **Motions:** **Sun** goes 30° E, from Libra into Scorpius Nov 22, and into Ophiuchus Nov 29. **Mercury** is 17° W of Sun Nov 1 and passes 4° N of Spica Nov 2. Mercury closes to only 9° W of Sun by Nov 15, and reaches superior conjunction (beyond Sun) on Dec 1. **Venus** goes 32° E, from Virgo into Libra. See Nov. 18. In Nov, Venus closes from 36° to 30° W of Sun. **Mars** goes 6½° E in Pisces; in late Nov, it aligns with E side of Great Square of Pegasus. **Jupiter** on Nov 1 is 6½° SE of the Pleiades. Jupiter retrogrades (goes W) 4° in Taurus, ending month 5° S of Pleiades. **Saturn** goes 3° E, ending 5° NW of Lambda Sagittarii, top of the Teapot. **Telescope: Jupiter** reaches its greatest angular size this month, 49" (arcseconds) across. **Saturn's ring system** in early Nov is 35" across, and tilted 26.8° from edge-on. **Mars' gibbous disk** on Nov 1 is 18" across, 95% illuminated; on Nov 30, 13" across, 90% illuminated. At month's end, Mars' south pole is tipped toward Earth by its greatest angle, 25¾°. But it is midsummer there, with only a tiny remnant polar cap. **Venus' disk** shrinks from 14" to 12", while fraction lit grows from 79% to 86%.

Robert C. Victor, Jenny L. Pon, Robert D. Miller
ISSN 0733-6314

Extra Subscription: $6 per year, starting anytime, from ***Sky Calendar,*** Abrams Planetarium, Michigan State University, East Lansing, Michigan 48824

DEEP SOUTHERN OBJECTS - by Steve Gottlieb

I've always had a fascination with trying to pick off southern deep sky objects as they briefly appear near the meridian. Even with a major obstruction such as Fremont Peak blocking the southern horizon, I got a kick out of catching a glimpse of IC 4406, a planetary nebula located at 14h22m -44°09'(2000), as it rose high enough to appear for just two minutes before disappearing behind the peak.

At a latitude of 38° north declination, an object located at 52° south declination will transit the meridian on the observer's theoretical southern horizon, excluding the positive effect of atmospheric refraction. In actual practice such an observation is rarely possible. Near the horizon numerous factors - natural and artificial obstructions. haze, poor seeing and atmospheric extinction - combine to dim and bloat stellar images. The effect on extended objects such as galaxies is even more extreme, as they fade into the murky background.

Nevertheless, with perseverance quite a bit can be accomplished down to within about five degrees of the horizon. In reviewing my observing notes, I realized that many of my deep southern objects were logged at Digger Pines, which has an ideal unobstructed southern horizon. Generally, I limit my searches to 45° south declination, with some exceptions, so there are probably several more southerly objects that a systematic observer might add to the following list:

PLANETARY NEBULAE

Although IC 4406 is the best I've done at Fremont Peak, I've pushed further south at Digger Pines. NGC 5882 in Lupus (15h17m -45°39') is a small tenth magnitude planetary which is striking with an OIII filter in my 13.1" scope. Further south in Telescopium is IC 4699 (18h19m -45°59'). This compact planetary is nearly stellar and requires blinking with a UHC filter to confirm. My best to date is the obscure planetary Peimbert-Batiz 2 in Vela (8h21m -46° 22'), observed with my 17.5" scope from Fiddletown. Due to its very low elevation this 13th magnitude planetary appeared closer to 15th magnitude.

GLOBULARS

Certainly the most famous southern globular cluster is the magnificent Omega Centauri (NGC 5139), located at 47°29' south declination. At Digger Pines this object can be easily located with the slightest optical aid. Generally I find the telescopic view somewhat disappointing; this mighty cluster is often reduced to a fuzzy ragged snowball with a few bloated stars around the periphery. Ah, but in periods of exceptional steadiness, the outer regions are well resolved with numerous stragglers in my 13.1" scope and the large mottled disc is plastered with a covering of faint pinpoints of light.

A more severe challenge would be the pair of globular clusters, NGC 5927 in Lupus and NGC 5946 in Norma, both located at 50°40' south declination. Has anyone viewed these globulars from our latitude?

GALAXIES

The most popular galaxy below 40° south declination is NGC 5128 (Centaurus A), a well-studied peculiar radio galaxy. Although it lies at 43° south declination, its wide dark dust band is quite evident from Digger Pines, cleanly separating the dominant southwestern hemisphere from the northeastern section.

Heading further south, I've observed NGC 7213 in Grus (22h09m -47°10'). The field of this small round 11th magnitude galaxy is a snap to locate. The galaxy is situated just 16 arcminutes southeast of 2nd magnitude Alpha Grus. Alpha is the southernmost star in a large prominent triangle of stars near the southern horizon on these fall evenings.

OPEN CLUSTERS

The open cluster NGC 6193 in Ara (16h41m -48°46') is notable, as its brightest star (h4876) is a pretty double separated by ten arcseconds. I viewed this cluster in my C-8 from Fiddletown in July 1982 and, in addition to the double, noted several fainter stars in the cluster visible with averted vision.

NGC 5460 is a bright large scattered cluster in Centaurus (14h08m -48°19'). I resolved 30-40 stars in it, including several doubles, with my 13.1" scope from Digger Pines.

So just what is the deepest southern object visible from our latitude? Well, if we include stars, the winner is probably Canopus, the brightest star in the constellation Carina and second only to Sirius among all stars. At 52°42' south declination Canopus actually culiminates five degrees below the horizon at Digger Pines but, thanks to atmospheric refraction, it does appear briefly, at best a scant 24 arcminutes above the horizon. I've followed Canopus for about an hour on crystal-clear winter evenings skirting the horizon a full 36° south of Sirius!

SFAA MEMBERSHIP BENEFITS

Membership dues of $15 per year include the monthly SFAA Bulletin and free entry to all club activities, such as lecture meetings, star parties, summer picnics, etc. In addition, you may obtain subscriptions to SKY & TELESCOPE, ASTRONOMY, DEEP SKY and TELESCOPE MAKING (any or all) at greatly reduced rates. For more information, please contact Chelle Beard, SFAA Treasurer, 32 Penhurst Avenue, Daly City 94015. Phone: 878-4965 evenings.

Your dues are the lifeblood of the club. Please pay them on time to ensure uninterrupted receipt of the Bulletin and the magazines.

HELP WANTED

Now's the time for all SFAA members to start thinking about whether or not they're willing to contribute actively to the success of the club, or are just going along for the ride. A handful of club members - people like Toney Burkhart and Bill Cherrington - have always taken care of the lion's share of the work involved.

There are many ways you can help out. The club is holding its annual elections in December; how about running for officer or director? Serving on the Board of Directors simply does not require all that much time and effort. Come to the Board meetings once a month and bring your ideas; that's all that's required.

Another thing the club needs badly is a permanent Bulletin editor. Mostly, the job consists in attending club activities, keeping your eyes and ears open, and writing up what you find out. (Didn't you always want to be a reporter?) You don't need any special equipment, not even your own typewriter; you can use the club's. You can count on the active support of Irving Hochman and Jim Shields, as well as other club members - people like Steve Gottlieb and Jack Coe - who regularly contribute material to the Bulletin.

Even if you don't feel you can make a continuing commitment, you can still help make the club a success by:

- Participating in club activities.
- Contributing articles and announcements to the Bulletin. All of you have something to contribute. You've had a look or two at Mars lately, haven't you? Take a few minutes to write down your impressions and send them along.
- Bringing your binoculars or telescope to the star parties at Mt. Tam and showing the public the night sky.
- Letting other club members know what you're doing in astronomy by participating in "show and tell" at the December meeting.

Contributions to the Bulletin should be on astronomical topics and generally should run no more than two typewritten pages, or about 500 words. It's nice if you can type them (so the editor won't have to). Don't worry too much about your style (or lack of); we're not competing with Astronomy magazine. Send your articles to: SFAA Bulletin, C/O Jim Shields, 190 Chilton Avenue, San Francisco 94131. The deadline for the next issue remains the 18th of the prior month.

CLASSIFIED ADS

Members' ads are free and will run three times. Please notify the Bulletin editor if an item is sold so the ad may be deleted. This service is provided monthly on a space-available basis.

WANTED: Four to six-inch reflector, complete scope or mirror only. Call Douglas at 386-1876. (2)

FOR SALE: 17½" Dobsonian and 10" Meade DS10 with eyepieces. Call Toney 668-9691 after 6 pm until midnight.(2)

San Francisco Amateur Astronomers
c/o Josephine D. Randall Museum
114 Museum Way, San Francisco 94114