



San Francisco Amateur Astronomers

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

President:	Irving Hochman	641-0770
Vice President:	Bob Levenson	468-3592
Secretary/Treasurer:	Chelle Beard	878-4965
AANC Representative:	Nancy Cox	826-2217
Bulletin Editor:	Jim Shields	585-4088
Public Relations:	Douglas Wolfe	386-1876

BULLETIN FOR SEPTEMBER 1989

Date: WEDNESDAY, SEPTEMBER 20

Time: 8:00 P.M.

Place: AUDITORIUM, J.D. RANDALL MUSEUM

Speaker: DR. IMKE DE PATER
DEPT. OF ASTRONOMY
UNIVERSITY OF CALIFORNIA, BERKELEY

Topic: JUPITER AT RADIO WAVELENGTHS

Dr. de Pater will be talking about Jupiter's zones and belts - surface markings that we're all familiar with in our own telescopes - but with a new twist. Her's happens to be a radio telescope!

Dr. de Pater is an associate professor of astronomy at UC Berkeley. She got her PhD in Leiden, the Netherlands, in 1980. After a postdoctoral position at the Lunar and Planetary Laboratory in Tucson, she came to Berkeley in 1984. She works mainly in radio astronomy of planets and comets, involving their atmospheres, magnetospheres, surfaces and cometary emissions.

MT. TAMALPAIS STAR PARTY REPORT - by Ray Cash-Le Pennec

July 29 was a fine night on Mt Tamalpais. "Neptune Watch" was well attended by the public, as witnessed by the lines behind members' telescopes afterwards. Saturn, M13, M15, M51, M81, M82, the Ring, Dumbell, Lagoon, Trifid, and Swan nebulae were some of the more spectacular sights. I had the unexpected pleasure of showing a woman M51, the "Whirlpool Galaxy", her first glimpse of the galaxy her son is researching for his PHd work at Cal-Tech. I enjoy the public's reaction to the stars - It is always challenging to explain what we're seeing - to impart knowledge, if you will - while sharing the common experience of awe and beauty.

Some folks really went to great lengths to attend the star party : my buddy Don Raymond came all the way from Pinole to gaze through my scope ; a couple from Lake County drove up - trailer in tow - with their 17½ inch Dobsonian ; most amazing of all, fellow member Tom Kellogg rode his bicycle up Mt Tam. from his home in the City!

SEPTEMBER STAR PARTIES

Labor Day weekend should be a fun time to visit the Fiddletown observing site. We're expecting a pretty good turn-out on Saturday, September 2. (Don't forget the star party the weekend before at Mount Tam.) For more information about Fiddletown, call Jim Shields at 585-4088 or Steve Gottlieb at 525-7968.

The September star party at Rock Springs is on Saturday, the 30th. There'll be a talk before in the Mountain Theatre by Dr. Jacqueline Davidson of NASA-Ames Research Center on airborne astronomy. Bring your family, friends, telescopes and binoculars along and plan to spend the evening. When you leave the star party, remember to turn on your headlights BEFORE you leave your parking space. SAFETY FIRST!

MOON FESTIVAL IN JAPANTOWN

In traditional Japanese culture the viewing of the moon ranks with snow and cherry-blossom viewing as one of the most favored settings for declarations of love and poetic outpourings of the soul.

This year the custom is being introduced at Japantown with a celebration of the Harvest Full Moon beginning at noon on Friday, September 15, on Post Street between Webster and Laguna. The moon will be greeted at sunset by Taiko drums and a music concert at the Peace Plaza. The festival continues on Saturday and Sunday between 10 a.m. and 6 p.m.

To add to the poetic inspiration the SFAA is providing telescopes for a closer look at the lunar surface. We'll also be setting up sun telescopes during the daytime. If you want to help out, please call Bob Levenson at 468-3592.

THE BERNAL HILL SIDEWALK ASTRONOMER - by Tom Kellogg

Saturday, July 29th, at Mount Tam was a fine star show indeed! It was the second time I've attended. Once again I travelled there by bicycle and slept under the stars.

This city dweller develops a deep, aching hunger for being immersed in God's nurturing wilderness. The oohs and ahhs I was gasping through the long journey through the forest and up the mountain were all utterances of the profound joy I was feeling.

But this was THE ULTIMATE SET-UP: to bathe in all this wilderness for three glorious hours; then to rest while listening to a fine lecture on sunsets at each of the nine planets; then to walk over to a spread of dozens of fine scopes and go galaxy hopping to my heart's content!

There were just a few of us left when I walked over to my sleeping bag to drift off into a truly heavenly sleep. The milky band of light was gloriously brilliant but the humorous thing was I didn't have the foggiest notion of the names or faces of the people I'd spent the evening with.

Here's my latest from the New Bernal Journal:

This is a wonderful time of year for me in terms of watching the sky. It was in August of my 20th year that I first attended a planetarium in Rochester, N.Y. A few weeks later I left home to attend a college in Kansas where my physics professor fed my new-found interest with stories and facts about the stars during our frequent star show outings. I soon bought Peterson's Field Guide To The Stars & Planets, and I was on my way to a long friendship with our heavenly neighbors.

The Big Dipper, along with Arcturus, have now moved toward the west. So also has the "window" (which I mentioned in the last issue of the Bernal Journal) through which we can see outside of our own galaxy to other galaxies many millions of light years away. The dust clouds and star clusters of our own galaxy, "The Milky Way," have now moved high overhead, with a vast array of "near by" spectacles which are astounding in size and grandeur. Viewing such collections of dust and stars (gigantic nuclear reactors) is humbling and at the same time reassuring in the infinite nature of the universe. It's comforting to know that there's a power greater than we humans that is creating such a beautiful, harmonious universe to live in.

Looking east from the Big Dipper and Arcturus the first bright star you see is Vega in the constellation Lyra (the Harp). Vega is 58 times brighter than our Sun (think of a 100 watt light bulb compared to a 5,800 watt search light). It is 27 light years away and its diameter is 3 times that of our sun (our Sun's diameter is 1 million miles). Our solar system is moving toward Vega at 43,200 miles per hour! Lyra is a small constellation consisting of Vega, a fainter star just east of Vega, and four fainter stars that form a parallelogram south east of Vega. Between the bottom two stars of the parallelogram is a famous nebula called The Ring Nebula of Vega, or M57. "M" stands for Charles Messier, who used a 3 1/2" telescope in the pre-electricity dark sky of Paris from a tower observatory at the Hotel de Cluny to catalogue over 100 false alarms in his search for comets back in the 18th Century.

Planetary nebulae have the appearance of a dim planet with a disc shape, and are generally of two types: the remnants of a dying star or the gathering of gas that will form a new star. The Ring Nebula of Lyra is the doughnut-shaped leftover from a dying star, but you'd need a large telescope to see the hole in the middle. It's actually a sphere of gas that's 2,790,000,000,000 miles in diameter or 30,000 times the distance from the Earth to the Sun.

I could go on for pages about the beauties of our nighttime sky show.

I hope that you'll borrow a book from our Bernal Branch Library on stargazing, and then come join me and my telescope on almost any clear night at the top of the Eugenia Street stairway.

IN THE GOOD OLD SUMMERTIME - by Jim Shields

Summer's always a great time for astronomy! Neptune Watch at Mount Tam July 29 was a huge success, with long lines of people at every telescope.

That same night half a dozen club members gathered at the Fiddletown observing site for a quieter evening. Rick Decker was busy collimating his 20" binoculars and Mary Engle was anxious to have a crack at the Henize planetaries from Steve Gottlieb's article in last month's Bulletin (continued this month on page 7). They turned out to be a real challenge.

It was a lot easier to find Comet Brorsen-Metcalf, especially by using Don Machholz' ephemeris from the August issue (updated this month on page 5). Easily visible in binoculars after midnight, the comet was a surprisingly bright, large, diffuse circular patch of light near Algol in the constellation of Perseus. It's expected to brighten even more in September and should be a real treat in the morning sky. Be sure to look for it!

A day or two later several SFAA members headed for the hills--the Sierra Nevada Field Campus of San Francisco State--for a week of astronomy as it should be done: in a beautiful natural setting under a vast dark sky! The observing was so good that Douglas Wolfe even discovered a wonderful string of bright open clusters in the southern reaches of Scorpius. The brightest cluster appears on star charts as H(arvard) 12 but is better known as THE DOUGLAS CLUSTER after the first person to fully appreciate its extraordinary beauty.

By the end of the week the new comet had begun to develop a tail. Two new SFAA members--Vivian Molyneux and Tom Considine--were putting their observational skills and knowledge of the sky to good use by showing off the summer Milky Way to the many campers and local residents that stopped by our star party.

The observing highlight of the week for me was working with Steve G. to explore one of the most famous galaxy clusters of them all: Corona Borealis (Abell 2065). The cluster contains around 400 galaxies (of which we found five) within an area of the sky equal to the apparent diameter of the full moon. Its brightest members are about 16th magnitude and are barely detectable (I wouldn't say visible) with averted vision in a 17.5" scope. They do give a definite impression of being extended objects rather than "fuzzy stars".

Standing on a high mountain pass at midnight, looking deep into the abysses of space and time, is an incredibly exhilarating experience. The next day I was back in the middle of civilization, stuck in a traffic jam, trying to get home.

By Don Machholz

A returning comet has recently been recovered while yet another sungrazer has been seen crashing into the sun. Meanwhile, Periodic Comet Brorsen-Metcalf is putting on a great show in the morning sky. September will be our last month for a good view of the comet- in October it will be rather close to the sun and dimming rapidly. Our next chance will be in about 70 years.

Periodic Comet Lovas 1 (1989p): T. Seki of Japan recovered this comet on July 7 at magnitude 17. It has an orbital period of 9.1 years, and will be closest the sun in October at 1.7 AU. It should get to magnitude 15, and maybe a bit brighter, by then.

Comet 1989q (SMM 9): The Solar Maximum Mission Satellite, only a few months before it is due to enter the earth's atmosphere, has discovered its ninth comet. This one attained magnitude -2 and did not reappear from near the solar vicinity. It was likely a member of the Kreutz Sungrazer Group, and it hit the sun on July 8.

Periodic Comet Brorsen-Metcalf (1989o): Recovery details were discussed last month. Why wasn't it found earlier? It was about 15 degrees off course, so outside the narrow regions normally covered by the large professional instruments. But it was also quite faint, and beyond the magnitude reach of amateur scopes covering this larger sweep area. Additionally, it was diffuse, showed low surface brightness, and it may have brightened rapidly shortly before recovery.

EPHEMERIS

Periodic Comet Brorsen-Metcalf (1989o)

DATE (UT)	RA (1950)	DEC	RA (2000)	DEC	ELONG	SKY	MAG
08-22	07h29.3m	+38°07'	07h32.7m	+38°01'	43°	M	6.7
08-27	08h15.0m	+34°09'	08h18.1m	+34°00'	37°	M	6.4
09-01	08h52.1m	+29°39'	08h55.2m	+29°27'	33°	M	6.1
09-06	09h23.5m	+24°53'	09h26.4m	+24°40'	29°	M	6.0
09-11	09h51.2m	+20°01'	09h54.0m	+19°47'	25°	M	6.1
09-16	10h16.3m	+15°13'	10h19.0m	+14°59'	23°	M	6.3
09-21	10h39.6m	+10°34'	10h42.2m	+10°18'	20°	M	6.9
09-26	11h00.9m	+06°14'	11h03.5m	+05°57'	18°	M	7.5
10-01	11h20.5m	+02°16'	11h23.1m	+02°00'	17°	M	8.1
10-06	11h38.5m	-01°18'	11h41.0m	-01°35'	17°	M	8.7
10-11	11h55.0m	-04°31'	11h57.6m	-04°48'	17°	M	9.3

SEEKING COMETS



How rapidly do comets brighten near the time of discovery? This question is of some importance to the comet hunter, for if comets brighten slowly, then a specific area needs to be swept only occasionally. A comet beyond the magnitude (brightness) threshold of the observer may well stay beyond reach for several weeks.

PLANETARY NEBULAE IN DELPHINUS, SAGITTA AND VULPECULA

- by Steve Gottlieb and Dr. Jack Marling

(Continued from the August issue, which lists coordinates, sizes and brightness for these objects.)

Abell 63: The photographic magnitude of this 1955 discovery suggests that this faint planetary should be visible in large amateur scopes with a visual magnitude of about 15 and a surface brightness of 14. Nevertheless, Jack reports 3 negative attempts with his 17.5" and I have had 2 negative results with my 13". If you want to have a try at it, look 25 arc minutes south a 1 minute following the bright star Beta Sagittae. Is this planetary visible in any amateur scope?

Minkowski 2-48: Discovered in 1948, M2-48 is not well studied and only a photographic surface brightness of 13.8 is known. Because of its small size, M2-48 is likely to be very dim. As far as we know, it has not been observed visually.

NGC 6842: Discovered to be a planetary by Heber Curtis of Lick Observatory in 1919 using the Crossley reflector, NGC 6842 is large but a pretty dim object. Using a 17.5" at 220x, Jack viewed a faint disc with no interior star. On the other hand, a 24" telescope on Mauna Kea at 550x revealed a 16th magnitude central star to Jack. I estimate the integrated visual magnitude at 13.0 which indicates it should be visible in a 6" scope in dark skies.

NGC 6853: The famous "Dumbbell Nebula" or M27 was discovered to be a planetary by Higgins in 1864, even though Messier first viewed it on July 12, 1764, a century earlier. It is a fascinating object in any telescope, and is easily seen as a disc even in small finders. The familiar dumbbell shape is radically altered in dark skies as the side lobes cavities fill in giving a rounder appearance. The 13th magnitude central star is just barely visible in an 8" scope but is easily seen in my 13" at high powers. Jack once counted 18 interior stars in a 17.5" at 420X without a filter.

Abell 68: This 1955 photographic discovery is a challenge to large scopes. Using my 13" at 166x, my notes read "even using an OIII filter this is a threshold object visible perhaps 20%-30% of the time with averted vision as a fairly small disc located 1' north of a brighter star. A second star is close SE by 2'. The estimated magnitude is 15.0-15.4." Even with his 17.5", Jack states "very faint, averted vision only, a 40" disc is visible with averted vision. Invisible without the use of a filter."

Weinberger-Sabbadin 5: This planetary was discovered recently in 1981 by carefully re-examining the 25 year old Palomar Sky Survey plates. With a 17.5 magnitude surface brightness, we assumed WeSb 5 would be too faint to be seen visually. Surprisingly, on September 6, 1986 Jack achieved the first visual sighting using a 17.5" telescope and noted "at 150x and an OIII filter, it is extremely faint, at the limit of averted vision, sighting 75% certain, surrounded by several stars."

Weinberger 1-9: This planetary was discovered in 1977 by Weinberger while searching for galaxies on the Palomar Sky Survey red sensitive plates. We 1-9 has a 15th magnitude blue photographic surface brightness so it may be visible using a UHC or OIII filter in a very large scope in dark skies. It has not yet been seen visually and Jack reports a negative sighting. If you want to give this one a try, look 3 minutes of right ascension west of the open cluster NGC 6885.

NGC 6879: Discovered by Pickering in 1883, this compact planetary has a pretty bright stellar image. Using my 13" scope, I recorded a "mag 12.5 stellar object at all powers. A similar magnitude star is close SW, and the planetary is easily distinguished by blinking with an OIII filter." At 280x, Jack found a very small disc was visible.

Henize 1-5: This 1961 discovery consists of a faint 16th magnitude shell surrounding the bright variable star FG Sagittae. This curious central star has brightened from mag 13.5 in 1890 to 8.9 in 1978. You will definitely need a UHC or OIII filter to suppress the central star to have a chance to see the faint nebula in amateur scopes. In 1960, professional David Allen saw He 1-5 as a ring surrounding FG Sagittae using a 60" Cassegrain telescope.

NGC 6886: Discovered by Copeland in 1884, NGC 6886 is bright at 11.4 magnitude and has a 7.2 surface brightness due to its small size. He 1-5 discussed above is located just 20' NW of NGC 6886. Using my 13" on Chew's Ridge at an elevation of 5000', I found a "fairly bright out of focus star at 166x without a filter. At 415x, easily seen to be elongated in an east-west direction. Two stars of similar brightness to the east form an equilateral triangle with NGC 6886." Jack found with his 17.5" a "bright 12th magnitude compact planetary. A tiny blue-green disc about 5" diameter is visible."

NGC 6891: Also discovered by Copeland in 1884, NGC 6891 is a bright planetary in Delphinus with an easily discernable disc. It has a bright but obscured central star. Using my 17.5" scope I found it "very bright at 140x with an OIII filter. Takes high power well. Excellent view at 410x as a bright center or star is visible in a bright oval nebulosity. A fainter outer halo is also visible."

Henize 1-6: This planetary is number 6 in the list of planetaries discovered by Karl Henize in 1961. Accurate magnitude data for He 1-6 is not known although the photographic surface brightness is 14.0. Jack and I were able to add to this data with visual observations in August of 1986. With his 17.5", Jack logged an "attractive 20" diameter disc, magnitude 14.5-15.0, best seen with an OIII filter at 220x or a UHC filter at 280x. I was also successful in my 13" and found a "very faint small disc approximately 15" at 214x using a UHC filter. I could almost hold the planetary continuously with averted vision. The estimated visual

magnitude was 14.5-14.9. A triangle of stars is located to the west and 2 brighter stars are to the southeast."

IC 4997: Discovered by Fleming in 1896, IC 4997 is stellar and has the highest surface brightness of any planetary. With my 13", I found a "bright mag 10.5-11.0 stellar object at all powers. Confirmed by OIII blinking where it becomes much brighter than a comparable star 1 arc minute southwest." You may find a blue-green tint to this planetary.

NGC 6905: Discovered by John Herschel in 1831, NGC 6905 is located in Delphinus and is a real showpiece. It is in a lovely, rich starfield and is framed by 3 fairly bright field stars. In my 17.5", I logged "very bright planetary at 280x. Appears slightly elongated and the faint central star is definite. Takes 440x easily due to its high surface brightness." Using the 24" at the very dark skies of Mauna Kea, Jack found the central star to be an easy target.

Abell 72: Another Abell discovery from 1955, this planetary has an integrated magnitude of 13.8 but its large size gives it a low surface brightness of 15.6. At 80x using an OIII filter, Jack reports "moderately easy to see, elongated east-west, quite bright star on the west edge, 3 other interior stars visible." Using the same magnification with my 13", I found A72 "very diffuse, large, roundish glow just east of a mag 8 star. Several faint stars are involved and 2 or 3 additional stars are close off the east edge. The estimated visual magnitude is 13.5-14.0."

Abell 74: This final Abell planetary is a real giant, measuring a full 870" by 790". Little is known about this object although its surface brightness is quite low. For comparison, it is similar in size to the famous Helix planetary in Aquarius, NGC 7293, but perhaps 20 times dimmer!! Remarkably, though, experienced planetary nebulae observer Dana Patchick of Los Angeles was successful on August 3, 1986 with his 17.5" at 70x using an OIII filter. He logged Abell 74 as "very faint, very large, magnitude of 15.5-16.0, homogeneously bright, not circular, elongated in a north/south direction. Approximately 14'x10' in diameter. Repeatedly visible more than 50% of the time."

BULLETIN CONTRIBUTIONS

As always, the Bulletin welcomes your announcements, letters to the editor and articles on astronomy. Send them to: SFAA Bulletin, C/O Jim Shields, 190 Chilton Avenue, San Francisco 94131. The deadline is the 18th of the month.

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 several astronomy publications at greatly reduced rates. Contact Chelle Beard at 32 Penhurst Avenue, Daly City 94015. Telephone 878-4965 evenings.

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 SEPTEMBER 1989

An aid to enjoying the changing sky

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>Evening planets: Venus is brilliant mag -4, very low in W to SW at dusk. Increasing from 38° to 44° E of Sun in Sept. Venus begins to set in dark sky, over 1½ hours after sunset late in month. Watch Venus overtake Spica Sept 6 and Alpha Librae Sept 24-25. Saturn, mag 0.3 to 0.5, is in S at dusk, above Teapot as shown Sept 8-10. Two faint planets and an asteroid, also in Sagittarius, are all visible in binoculars not far from Saturn; see left margin. Brilliant morning planet: Jupiter, mag -2.1 to -2.3, is high in E at dawn in early Sept, and even higher in SE at month's end. Telescopic views: Venus shows tiny gibbous disk, ¾ to ½ full, best seen in bright sky, in daylight or at sunset. Saturn shows splendid rings inclined 26°, greatest tilt until early next century. Jupiter shows four moons. Comet Brorsen-Metcalf may attain 5th mag in late Sept morn sky; see Aug & Sept Sky & Telescope.</p> <p>Evening: 3 Spica • Venus Moon in WSW</p>	<p>Spica • Venus Moon in WSW</p>	<p>3 This month, Pluto passes perihelion, coming closest to Sun in the planet's 248-year orbit. Pluto's closest approach to Uranus & Vesta tonight: See left margin.</p> <p>4 At this time of year, Moon's path connecting its daily positions at dusk makes very shallow angle with horizon, as shown on diagrams Sept 2-16. But Moon's path at dawn is very steeply inclined to horizon, as shown Sept 22-28.</p> <p>5 Evening: Venus passes 1.7° N of Spica.</p> <p>6 Antares Thurs Sept 7: Beautiful occultation of 3rd-mag γ Sco; see note above.</p>	<p>Diagrams on Sky Calendar usually show sky in mid-twilight from latitude 40° N, about ¾ hour after sunset or ¾ hour before sunrise. Exceptions: Sept 1, 19, and 21, where another time or location is stated.</p> <p>7 On Thurs Sept 7: Occ'n of Tau Scorpii visible in binocs from parts of Midwest & central U.S. Graze from N Texas to western NY state; see map Jan '89 Sky & Telescope, p. 69. From S of graze path, Moon narrowly misses star.</p> <p>8 Spica • Venus Young Moon WSW</p>	<p>1/2 hour after sunset on Fri Sept 1, from southern U.S.: Can you see Moon? Its age is 42.45 hours.</p> <p>9 Saturn A-Saturday Sept 9</p> <p>10 TEAPOT • Antares γ Sco occulted by Moon from some locations</p>	<p>15 By one convention, the Harvest Moon is the Full Moon closest to the start of autumn. That would make it tonight! Watch the Moon rise at nearly the same time as Sun sets.</p> <p>16 The Moon after Full rises later each night, but not much later for a few days after the Full Moon at this time of year. Watch Moon come up in evening twilight tonight and Sunday.</p> <p>17 Watch Moon rise farther north each evening until Sept 21. Tonight, Moon rises in ENE about 1 hr after sunset (depending on your latitude).</p> <p>18 Tonight, Moon rises about as evening twilight ends. Beginning tomorrow, evening sky 1½ hours after sunset is dark and moonless, excellent for viewing Uranus, Neptune, and Milky Way.</p> <p>19 Moon, Tuesday 19 Pleiades</p> <p>20 Wednesday morning: Moon, Sat 18 Harvest Full Moon</p> <p>21 Thursday Sept 21, 4½ hours after sunset: Pleiades Hyades Aldebaran • Northernmost Moon, at Last</p> <p>22 Morning: Moon Jupiter • Castor • Pollux</p> <p>23 Morning: Jupiter • Castor • Pollux</p>	<p>Evening midtwilight from northern U.S. (nearly ¾ hour after sunset): Moon setting; look earlier to be sure to see it!</p> <p>Spica • Venus WSW Moon</p> <p>Just-past-First Quarter southernmost Moon, Friday Sept 8</p> <p>Saturn A-Saturday Sept 9</p> <p>TEAPOT • Antares γ Sco occulted by Moon from some locations</p> <p>15 The Moon after Full rises later each night, but not much later for a few days after the Full Moon at this time of year. Watch Moon come up in evening twilight tonight and Sunday.</p> <p>16 The Moon after Full rises later each night, but not much later for a few days after the Full Moon at this time of year. Watch Moon come up in evening twilight tonight and Sunday.</p> <p>17 Watch Moon rise farther north each evening until Sept 21. Tonight, Moon rises in ENE about 1 hr after sunset (depending on your latitude).</p> <p>18 Tonight, Moon rises about as evening twilight ends. Beginning tomorrow, evening sky 1½ hours after sunset is dark and moonless, excellent for viewing Uranus, Neptune, and Milky Way.</p> <p>19 Moon, Tuesday 19 Pleiades</p> <p>20 Wednesday morning: Moon, Sat 18 Harvest Full Moon</p> <p>21 Thursday Sept 21, 4½ hours after sunset: Pleiades Hyades Aldebaran • Northernmost Moon, at Last</p> <p>22 Morning: Moon Jupiter • Castor • Pollux</p> <p>23 Morning: Jupiter • Castor • Pollux</p>
<p>24 Monday evening, Sept 25: Jupiter • Antares</p> <p>25 Tuesday Sept 26, morning: Regulus • β Lib Venus • α Lib</p> <p>26 Wednesday 20 ENE Moon</p> <p>27 Thursday Sept 27, morning: Regulus Moon</p> <p>28 Friday Sept 28, morning: Regulus Old Moon</p> <p>29 Saturday evening, Sept 30: Antares</p>	<p>24 Monday evening, Sept 25: Jupiter • Antares</p> <p>25 Tuesday Sept 26, morning: Regulus • β Lib Venus • α Lib</p> <p>26 Wednesday 20 ENE Moon</p> <p>27 Thursday Sept 27, morning: Regulus Moon</p> <p>28 Friday Sept 28, morning: Regulus Old Moon</p> <p>29 Saturday evening, Sept 30: Antares</p>	<p>24 Monday evening, Sept 25: Jupiter • Antares</p> <p>25 Tuesday Sept 26, morning: Regulus • β Lib Venus • α Lib</p> <p>26 Wednesday 20 ENE Moon</p> <p>27 Thursday Sept 27, morning: Regulus Moon</p> <p>28 Friday Sept 28, morning: Regulus Old Moon</p> <p>29 Saturday evening, Sept 30: Antares</p>	<p>24 Monday evening, Sept 25: Jupiter • Antares</p> <p>25 Tuesday Sept 26, morning: Regulus • β Lib Venus • α Lib</p> <p>26 Wednesday 20 ENE Moon</p> <p>27 Thursday Sept 27, morning: Regulus Moon</p> <p>28 Friday Sept 28, morning: Regulus Old Moon</p> <p>29 Saturday evening, Sept 30: Antares</p>	<p>24 Monday evening, Sept 25: Jupiter • Antares</p> <p>25 Tuesday Sept 26, morning: Regulus • β Lib Venus • α Lib</p> <p>26 Wednesday 20 ENE Moon</p> <p>27 Thursday Sept 27, morning: Regulus Moon</p> <p>28 Friday Sept 28, morning: Regulus Old Moon</p> <p>29 Saturday evening, Sept 30: Antares</p>	<p>24 Monday evening, Sept 25: Jupiter • Antares</p> <p>25 Tuesday Sept 26, morning: Regulus • β Lib Venus • α Lib</p> <p>26 Wednesday 20 ENE Moon</p> <p>27 Thursday Sept 27, morning: Regulus Moon</p> <p>28 Friday Sept 28, morning: Regulus Old Moon</p> <p>29 Saturday evening, Sept 30: Antares</p>	<p>24 Monday evening, Sept 25: Jupiter • Antares</p> <p>25 Tuesday Sept 26, morning: Regulus • β Lib Venus • α Lib</p> <p>26 Wednesday 20 ENE Moon</p> <p>27 Thursday Sept 27, morning: Regulus Moon</p> <p>28 Friday Sept 28, morning: Regulus Old Moon</p> <p>29 Saturday evening, Sept 30: Antares</p>

Locate three planets and an asteroid in Sagittarius: Saturn, Uranus, and Neptune all reach turning points this month, and so linger near the west (right) ends of their tracks as shown on finder chart on last month's Sky Calendar. First, refer to angular distances between stars stated on that chart to determine diameter of your binoculars' field of view. Then use that chart and information here to "star hop" to each faint planet. Begin with bright Saturn, 3° NNE (upper left) of λ (Lambda) Sgr, the 3rd-mag star marking top of the Teapot. Uranus (mag. 5.7) lies 6° W of Saturn all month. Look about 1° NE of Lagoon Nebula, and nearly halfway from 11 Sgr to 4 Sgr, two 5th-mag stars 2.7° apart. Note 11 Sgr can be found by extend-

ing line from ϕ to λ Sgr (back of Teapot's lid) 4° past λ . Neptune (mag 7.9) lies east and slightly north of Saturn. In early Sept, Saturn-Neptune a 2.4° apart; at month's end, 2.1°. Neptune also lies within 1° WNW of the 5½-mag star 28 Sgr. Don't confuse Neptune with two 8th-mag stars 16' apart and 0.7° W of 28 Sgr; Neptune lies within 18' to 21' NW of the more northerly of those two stars. Vesta, fading from mag 6.8 to 7.2, goes 7½° E September 1-30. It passes about 1° S of the Lagoon Nebula Sept 1, 1.9° S of Uranus Sept 5, and 0.6° S of λ Sgr on Sept 24. That same evening, 7.2-mag Vesta is midway between λ and a compact triangle of stars of mag 6.3 to 6.9; the triangle lies just over 1° to λ 's south.

BOARD MEETING

The next meeting of the SFAA Board of Directors is on Wednesday, September 13, at 8 p.m. in the library of the J.D. Randall Museum. All SFAA members are encouraged to attend Board meetings to contribute their ideas and suggestions.

AANC CONFERENCE IN BERKELEY

The Astronomical Association of Northern California will be holding its annual conference this year on November 18 & 19 at Lawrence Hall of Science in Berkeley. The conference will feature talks and presentations by amateurs and professionals, commercial displays, an astrophotography contest, and a swap meet. Hopefully, there'll be some significant results to report from the Voyager - Neptune encounter.

The AANC is also holding a pre-conference picnic, star party and telescope contest at Fremont Peak State Park on Saturday, September 30. The picnic starts at 4 p.m. and hamburgers will be provided by the association. For more information contact: AANC Conference Committee, 4917 Mountain Blvd., Oakland 94619.

AT THE PLANETARIUM

Feature shows are presented at Morrison Planetarium in Golden Gate Park Monday through Friday at 2 p.m. and Saturday and Sunday at 1, 2, 3 & 4 p.m. Tickets are \$2.50 for adults and \$1.25 for children and senior citizens. Upcoming features are:

A COSMIC VIEW (Sept 15-Nov 26): Explore our place in space and time. Just how big (and old) is the universe, anyway?

THE CHRISTMAS STAR (Dec 1-Jan 1): View the skies of the holiday season and unravel the mystery of the Star of Bethlehem.

1990: THE YEAR AHEAD (Jan 6-Feb 25): Preview the big astronomical events of the coming year: eclipses, comets, meteor showers and more!

SAGUARO ASTRONOMY CLUB DATABASE VERSION 5.0

The Saguaro Astronomy Club of Phoenix, Ar. has made available to amateur astronomers a public domain 10,300 object deep sky computer database. There are two MSDOS 5 1/4" floppy disks with the archived databases files in text format, a program to decompress the archived files, a program to produce printed reports, and a few odds and ends. The database can be used by dBase III and similar programs, a hard disk is strongly recommended. There are 16 fields per record, a shortened sample is shown below.

OBJECT NAME	RIGHT ASC	DEC	SKY ATLAS 2000.0 #		TYPE	MAG	SIZE	CON
NGC 6440	17 48.9	-20 22	22		GLOCL	9.7	5.4'	SGR
NGC 6469	17 52.9	-22 21	22		OPNCL	8.2	12.0'	SGR

Further information can be had or these files can be copied to your 5 1/4" or 3 1/2" MSDOS floppy disk by calling Robert Michaud (W) 398-7667 or (H) 668-8262.

San Francisco Amateur Astronomers

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



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 - Small lightweight rich field refractor such as Televue Oracle or Brandon 80mm f/6.3 apochromat. Call Jim Shields at 565-4088 evenings or weekends. (3)

FOR SALE - SKY ATLAS 2000.0, new laminated Field Edition from AstroSystems, \$25. Call Steve Gottlieb at 525-7968. (2)

FOR SALE - Odyssey One, 13-inch telescope. Excellent primary mirror, Edmund RKE 28mm eyepiece, Barlow, Telrad, Sky Atlas 2000. star charts, Burnham's Celestial Handbook (3 volumes). \$475. Celestron 11X80 binoculars - \$175. Call Tim Robinson at 566-9624.