

SJAA EPHemeris

Volume 3 Number 10 Official Publication of the San Jose Astronomical Association

October, 1992



THE EYEPIECE by Bob Madden

There was something I forgot to include in the September *Ephemeris*. We had a donation made by Herb Greenfield. Herb has given the Association a fine 8" f/9.0 reflecting telescope kit. Paul Barton reports it has been star tested and found to be excellent. We want to thank Herb for his generosity and thoughtfulness. Here is another opportunity for a member to "borrow" a fine instrument for some observing. Contact Paul Barton for further information.

As you will notice Paul Barton has been the largest contributor to this months issue. Many thanks Paul. With out your help, publishing this newsletter would be very difficult.

Paul Barton has also passed on some good information for those of you who have Cable TV and can receive Channel 60. Paul reports Saturday and Sunday at 5:00 PM there is a good Astro class session which is on going.

In this issue Don Machholtz has some interesting comments on comets. Also, The Scientist - Einstein continues from last month. I would take this time to mention that the article about Einstein is from the Wall Street Journal. I have requested permission to reproduce it with credits and had not had any responses from them. This is the credit and I take full responsibility.

For those who may be wonder-

- Oct 2: Star Party at Hoge Park. Sunset 6:49 pm, 46% moon sets 11:35 pm.
- Oct 3: No Activity.
- Oct 10: General Meeting, 8:00 p.m., Board of Directors meeting 6:30p.m. Speaker to be announced. Possibly Kevin Medlock will come and show us his latest endeavors.
- Oct 11: Full Moon.
- Oct 17: Last Beginning Astronomy Class.
- Oct 18: Third Qtr. moon
- Oct 24: Star Party at Fremont Peak or Grant Ranch. Your Choice.
- Oct 25: Darkness squandering time ends.
- Oct 31: Almost a First Qtr. moon. Lets have a star party at Hoge Park for Goblins. Contact Jim Van Nuland
- Nov 6: Star Party at Hoge Park. Sunset 5:04 pm, 90% moon sets 4:20 am.
- Nov 7: No Activity - fix equipment
- Nov 14: General Meeting, 8:00 p.m., Board of Directors meeting 6:30p.m. Speaker to be announced. We are working on getting Dr. Romani to come.
- Nov 21: Star Party at Henry Coe State Park. Sunset 4:52 pm, 6% moon rises 5:09 am.
- Nov 28: Star Party at Fremont Peak or Grant Ranch. Your Choice. Sunset 4:50 pm, 22% moon sets 9:04 pm.

ing how the Observatory is coming the word is the planning commission responded favorably to our description that it will blend into the park's motif and will be finished to look like a farm building. They did not seem concerned about the roof roll rails. An Environmental Impact Report is needed, a draft review, and the final plan approved. As you can see the final Plan is nearing an end. Del Johnson has done a fine job!

FREMONT PEAK 21 AUG '92

by Paul Barton

Only four telescopes and seven people were there this time. The fourth telescope and two people came after dark and parked a short ways away so I didn't catch their name. But we all shared our "findings".

The weather was not quite shirtsleeve, but still warm and dry and dark. But the seeing was not good. Only sharp eyes could see Sagittarius and Scorpius; weaker eyes couldn't see them at all. This was a night for setting circles — even at the peak. It was guessed the fires up north were sending clouds of smoke down here. It even seemed as though we could smell the smoke. [I think there was a temperature inversion that evening which also contributed to the difficulty — ed]

We observed the usual objects, compared images and the usual things. Terry and Dolores Stiner with their Meade SC-8 and Jim Bartolini with his Coulter 10" often "got there" before John Bettencourt and I could with the computerized JMI-18. Jim's Coulter had been skillfully modified (with only simple hand tools) and he used it as if he were a pro.

After lots of coffee and cookies we all bailed out at the approach of the moon a little after 1 AM. The moon was orange from smoke.

Those who signed in were:
Terry Stiner Meade MTS - SC 8
Dolores Stiner
Jim Bartolini 10" Coulter (rebuilt)
Paul Barton JMI 18
John Bettencourt - Associate JMI driver.

The Scientist -Einstein

By Jerry E. Bishop
Staff Reporter of

The Wall Street Journal
[CONTINUED FROM SEPTEMBER]

Gluing together the general theory of relativity took Einstein almost a decade. But it is an intellectual tour de force that still astonishes theoretical physicists.

Galileo's Role

First, Einstein discarded the notion that acceleration is absolute by pointing out a principle that scientists had used for two centuries without realizing it. He recalled that Galileo had disproved the ancient's assumption that a heavy object falls faster than a lighter one. Galileo showed that, if there isn't any atmosphere, two objects of different masses - say, a feather and a lead ball - dropped off the Tower of Pisa will accelerate at the same rate and hit the ground at the same time.

Newtonians had explained that although gravity may tug at the more massive object with greater force, that object's resistance to acceleration - its inertia - is also greater and offsets the stronger tug. So, all falling objects on Earth, regardless of their mass, accelerate at the same rate. Einstein found the equivalence of gravitational mass and inertia intriguing, and he said he "guessed that in it must lie the key to a deeper understanding of inertia and gravitation."

With this realization, Einstein reached his most momentous conclusion, his "principle of equivalence." This principle says, in essence, that if two phenomena produce equivalent effects, they must be manifestations of the same fundamental law.

Einstein then applied the principle of equivalence to acceleration. If people floating freely about inside a spaceship suddenly plunge to the floor, they can't tell whether their craft has been accelerated by its rockets or had been falling and stopped. For the travelers, the effects of acceleration and gravitation are the same. They can tell whether they have accelerated or stopped falling only in relation to something else, such as a planet. Acceleration is relative, not absolute.

Far-reaching Implications

The implications of acceleration and gravity being equivalent were far-reaching. If a spaceship is accelerating and a beam of light is coming through a window on one side, the beam, as it crosses the ship's interior, won't hit a spot on the wall precisely opposite the window. To its astronauts, the beam would be curved. And if acceleration makes light curve, the principle of equivalence indicates that gravity also makes light curve.

In 1911, to test the concept that gravity and acceleration are equivalent, Einstein stuck his neck out: He predicted that star light grazing the sun's surface would be curved by 0.83 seconds of arc by solar gravity. ("It should have been 0.87, but arithmetic was never one of Einstein's strong points," writes Banesh Hoffman, a scientific collaborator of Einstein's, in his 1972 biography of him.) Einstein, however, still thought in Newtonian terms of gravity being a force, and his calculations, if astronomers had been able to check them by observation, would have been found wrong, even aside from his arithmetical mistake. It would be four years before he developed his general theory of relativity and discovered why his 1911 calculations were wrong.

But Einstein first had to grapple with a far different problem. Newtonians said the influence of gravity was instantaneous every where; if a star suddenly disappeared, the disappearance of its gravity would be felt instantly throughout the universe.

However, Einstein's special theory said nothing, even gravity, could travel faster than light. At first, the inconsistency frustrated him. In 1922, however, a mathematical friend, Marcel Grossman, introduced him to tensor calculus. After the two men sweated through this complex mathematics, Einstein found the right equations in 1915, and the general theory of relativity fell into place. Gravity, he concluded, wasn't a force of nature but a geometrical distortion in the fabric of space-time.

Although most people perceive the universe in three dimensions - height, width and depth - the mathematics that Einstein used described a four dimen-

sion universe, with time the fourth dimension. In a four-dimension universe, any mass caused the fabric of the universe, of space-time, to curve. The curves bent into space-time affected the trajectories of moving matter.

A Dimple in Space-Time

Matter moving through the universe always follows the shortest distance between two points. In a flat universe, this is a straight line, but in a universe of curves, the shortest distance between two points is a curved line. Hence, the Earth and other planets circle the sun, not because the sun holds them on strings of gravity but because the sun's mass pulls a dimple into space-time and the planets follow the curved walls of the dimple.

Right off the bat, Einstein noted a phenomenon where the physics of general relativity worked better than Newton's did. Ever since the mid-19th century, physicists and astronomers had been puzzled by Mercury's movement around the sun. Newtonian physics predicted that a point of Mercury's closest approach to the sun, its perihelion, would change every Mercurial year. Observation found that the gravitational pull from other planets was moving Mercury' perihelion - but a little bit more than Newtonian physics predicted.

On that momentous day in Berlin in 1915, Einstein used his new general theory to calculate how much Mercury's perihelion would change if space-time were curved. The answer exactly matched the observations.

However, the real test of the general theory, as it emerged in 1915, came four years later. Einstein's theory predicted that star light grazing the sun would be bent by the sun's gravity more than Newtonian physics forecast. During a 1919 eclipse, British astronomers found that the degree of bending was exactly what Einstein predicted, a discovery that made headlines world-wide.

Since 1960, a dozen experiments have tested relativity. Radio transmissions from spacecraft sent to Mars, Venus and Mercury have refined measurements of the bending of light to within 0.1% from a possible 20% error in 1919.

Continued on page 3

Einstein - continued from pg 2

Pulsars Discovered

Relativity got major support in 1974, Dr. Will says in his book. Astronomers discovered what appears to be two extremely dense stars rotating rapidly about each other and pulsing out a radio signal every 59 thousandths of a second. This rapidly rotating "pulsar" has the equivalent of a rapidly changing perihelion. In less than three months, the pulsar gave far more accurate measure than Mercury does of how much this closest approach differed from that foreseen in Newton's "flat" Universe. And the difference was what Einstein's theory predicted.

Moreover, using the pulsar as a celestial clock, scientists confirmed the warping of time, predicted by the special theory of relativity, and the stretching of light waves towards the color red, predicted by the general theory.

Now, the pulsars are suggesting one more confirmation of general relativity. In 1916, Einstein described gravitational waves and predicted that an object that emits gravitational waves would loose energy. In 1979, a century after Einstein's birth, Joseph Taylor, the University of Massachusetts astronomer who, with student, Russell Hulse, discovered the pulsar, announced that the pulsar was indeed slowing down at exactly the rate predicted by Einstein.

This report's hint that the pulsar was emitting gravity waves set off a continuing search to detect such waves rippling past the Earth from vibrations in distant space. Other experiments, Dr. Will says, also are in the wings. One is Standford University's plan to put four super-precise gyroscopes into polar orbit in 1996. If general relativity is correct, the gyroscopes should change their angle relative to distant stars by a tiny fraction every year.

And more work remains to be done, of course. The general theory of relativity describes one force of nature - gravity - but doesn't incorporate the other natural forces such as electromagnetism and the forces that hold atoms together. From the 1920s until his death in Princeton, N.J., in 1955, Einstein worked on theories that would incorporate the

other forces into his concept of gravity as a geometrical warping of space-time. He never succeeded - and no one else has, so far.

But that hardly detracts from Einstein's enormous achievements. "What I find to be truly amazing," Dr. Will writes, "is that this theory of general relativity, invented almost out of pure thought, guided only by the principle of equivalence and by Einstein's imagination ..., turned out in the end to be so right." [This article printed in *The Wall Street Journal* in December 1991. It is reprinted here without permission.- ed]

Astronomy Magazine Renewals

Yearly subscription to Astronomy magazine for 1993 will cost \$16 (\$32/two years). But things have been complicated by the death of Telescope Making magazine — some subscriptions to the former have been extended to make up for the issues of TM that never came. Soooo, Jim Van Nuland will be calling each subscriber in early October, to tell you how many dollars to send, so that all "club" subscriptions will again be in step with the calendar year.

If you wish to convert an existing subscription, keep the mailing label from a recent issue, and call Jim in early October.

Houge Park Star Party Or a Wet Evening by Paul Barton

The weather was good, almost completely clear, warm, dry — some dew near midnight — about half a moon, a lot of people, lots of telescopes which totaled about 15. Perhaps 50 guests, many of them very small and very interested. Generally we all had a good time.

No one had a key to turn out the parking lot lights, which hurt the viewing. Something will be done about this for next time.

At 10:30 the sprinklers came on, [surprise] causing a panic retreat from the lawn to the sidewalk. Ed Erbeck stood on one sprinkler head for a while, getting soaked in the process. This will also be looked into (the sprinklers, not Crazy Ed's wet feet).

Several of the Association's loaners were there doing their thing. There are more loaners available. Call Paul Barton (408) 377-0148 for more information. Telescope loaners are available to Association members for a two month period.

Those in attendance:

Frank Vlanslager	Questar 3.5
Gabe Camarilo	Celestron C8
Doug Snyder	Celestron C8
Bob Keller	w/camera
Ed Erbeck	10" Coulter
Rich Newschafer	6" Starfire
Dave Enos	6" Maksutov
the Wagners	8" Dobson
Mark	
Pat	
Daniel	
Mimi	
David Smith	SP-C8
Paul Graves	C-90
Gary Mitchell	C-6
Leon Jones	10" Coulter
Terry Kahl	20x80 Binocs
Charles Chew	Quantum 4
and family	
Richard Paw	6" Dobson
Paul Barton	JMI 18
Lady (and others)	

Membership

Here are several guide lines discussed at the September Board of Directors meeting. If there are any questions or discussion, please come to a Director's meeting and place your request on the agenda.

1) A membership year runs from July to the end of June. The Treasurer will pro-rate a membership when started in the middle of a membership year.

2) There will be a two month grace period, for you to update your membership, where you will continue to receive the *Ephemeris*.

3) There will be no official notification of membership termination. The expiration date is clearly printed on your mailing label.

4) At the Newsletter Editor's discretion, complementary copies and reciprocal letters will be exchanged.

We will continue to publish extra copies of the Newsletter for Star Parties, special requests and interests.

This will be the only notification.

YOSEMITE AUG 29-30

by Paul Barton

I was there 50 years ago (Bridal Veil camp ground) with a war time bride of a little over a year, but there seems to be several areas now called Bridal Veil camp ground. We were the only two there, that fall (1942), but this year there were hundreds (at least). The camp grounds were surprisingly tidy despite an absence of garbage cans. There were B-B-Q type fireplaces and adequate restroom facilities, reasonably tidy, water, no electricity (for shavers), but all quite adequate for our purposes.

At Glacier Point, the star party site, there were over 15 telescopes for public viewing. There were 4" reflectors to 18" reflectors and up to 9" refractors, home made Dobsonians to high tech professional type. Knowledgeable visitors had access to a very wide variety of telescopes. (Also there was a party of about four people with fancy video cameras)

Friday night there were only a few visitors, but perhaps as many as 100 Saturday night, despite bad weather. It was largely overcast, both nights with lighting flashing in the distance, mostly too far away to hear.

Friday night the skies cleared up enough for some good observing after 10 PM, but most visitors and telescopes had left by then. Saturday night was worse because we could not see much due to an overcast, tho there were lots of visitors. There were a few drops of rain each night and the temperature was warm for that altitude - perhaps in the 50s and 60s.

Those from SJAA were:

Allan Nelems	Paul Mancuso
Tom Pressberger	Dick Williams
Dan Rappaport	Fred Rappaport
Bob Garfinkle	Kathy Garfinkle
Roger Smith	John Mc Collum
Steve Deiwart	Yoshiko Deiwart
Michie Kondo	Ken Miura
Charlie Chew	Jim Van Nuland
Bob Ashford	Dave Enos
Joe Muratore	Rich Arp
Ed Schilling	Eclair Acl
Paul Barton	John Bettencourt
Rangers were:	
Dick Ewart	Dave Balogh

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COMET COMMENTS

by Don Machholtz

One new comet has been discovered and a faint returning comet has been recovered recently. Meanwhile, new information about an old comet has given us another example of a transitional object.

The "old comet" I am referring to is Comet Wilson-Harrington. It was discovered in November 1949 at a magnitude 16, and recorded only on photographic plates taken between November 19 and 25 of that year. The orbit was not well-determined, and it's been thought that the comet had not been seen since.

Examination of the plates now have determined that this comet was also observed in the years 1979-80, 1988-89, and 1992. However, in these later observations the comet appears star like, and it even was, in 1979, labeled as an asteroid. Apparently, this object is a "largely inactive comet that undergoes occasional outburst". We now know that Periodic Comet Wilson-Harrington has an orbital period of 4.3 years, second only to Comet Encke's 3.3-year period.

This is not the first time that an asteroid-looking object has shown itself to be a comet. But improved observing and hunt-

ing technology have uncovered an increasing number of such "transitional" objects. This causes some concern for those who classify newly-found solar system objects, because the old method of calling an object either an asteroid or a comet doesn't always work. One suggestion is to add a third category (active asteroid?) for those objects which appear to linger between the two. Another suggestion is to classify and label all new objects the same, whether they show cometary activity or not.

Periodic Comet Daniel (1992o): T. Seki of Japan recovered this comet at magnitude 18 on July 29. It may brighten to magnitude 15 over the next few months. The orbital period is 7.1 years.

Comet Brewington (1992p): Howard Brewington of Cloudcroft, New Mexico visually discovered this comet on August 28. He was using his 16-inch reflector at 55x. This find came 99 search hours since his previous find in December 1991.

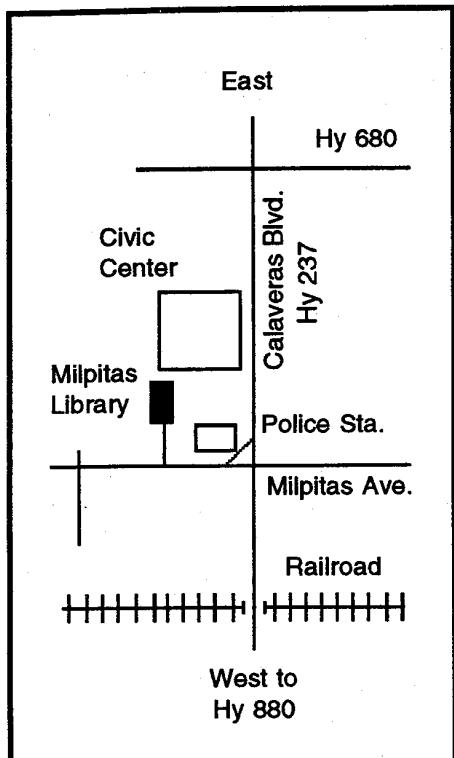
At discovery the comet was in the northern morning sky, shining at magnitude 11. An early orbit indicates that it was closest to the sun at a distant 1.70 AU on June 20. It is now slowly pulling away from the sun as the distance to the earth remains nearly constant.

EPHEMERIS

COMET BREWINGTON (1992p)

DATE (UT)	RA (2000)	DEC	ELONG	SKY	MAG
09-25	08h21.3m	+35°21'	64°	M	11.1
09-30	08h31.5m	+35°00'	67°	M	11.2
10-05	08h41.0m	+34°40'	69°	M	11.2
10-10	08h49.8m	+34°20'	72°	M	11.3
10-15	08h57.9m	+34°00'	75°	M	11.3
10-20	09h05.4m	+33°43'	79°	M	11.4
10-25	09h12.1m	+33°27'	82°	M	11.5
10-30	09h18.1m	+33°14'	86°	M	11.5
11-04	09h23.4m	+33°02'	89°	M	11.6
11-09	09h27.9m	+32°54'	93°	M	11.7

Don Machholz (916) 346-8963



REMEMBER THAT ENTERING GRANT RANCH AFTER 10:00 PM CAN BE DANGEROUS TO YOUR AUTOMOBILE TIRES. DO NOT GO THROUGH THE EXIT GATE WHEN THE ENTRANCE IS LOCKED!

Directions to our Favorite Places by your Editor

To the left is a map showing directions to the Milpitas Library location for our Board of Directors, General Meeting and Beginning Astronomy Classes. This is the old Milpitas Police Station location. The public and members are welcome to these meetings. There are interesting talks given by professional and amateur astronomers along with lively discussions. Here is a chance to ask someone about your equipment or theory to work out a solution.

The map below shows directions to our public star party site at Hough Park. Star Parties begin at sundown and continue until around 11:00 P.M. As you know the public is invited and so is the membership. Come display your favorite telescope, help another who is less proficient, and get some one else interested in astronomy and the night sky.

Henry Coe State Park is located east of Morgan Hill in the Hamilton mountain range. To get there go down Hy. 101, past San Jose toward Morgan Hill. Take East Dunne Ave. Follow it east, past Anderson Reservoir, up the mountain for 12 miles. At the overflow parking lot you'll see the sign identifying

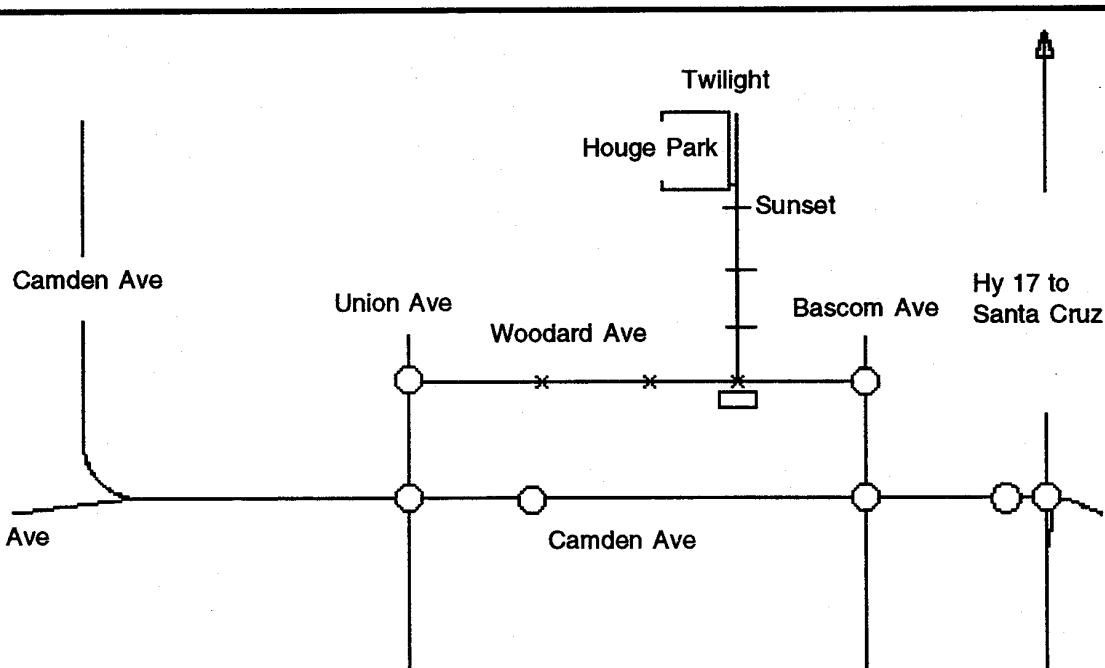
the Park. Then in a half a mile, you'll see the buildings of the old Coe ranch, now the park headquarters. On the left is a horse trough and a locked gate.

When star parties are scheduled you will pass through the gate and drive up the hill, about 100 yards and set up on the right. Be extremely carefull in the summer as the grass is dry and flammable. Smoking is allowed only inside your vehicle.

You should not let anyone else in to the park who is not attending the star party. If you don't need your car at the site and are not hauling heavy astronomical equipment, consider parking near the camp grounds.

There are restrooms in the Museum building, down the stairs and to the rear.

To get to Grant Ranch take Alum Rock Ave. east to Hamilton Road. Turn right here and continue on until you arrive at the Grant Ranch gate. Enter, Pay your fees, and continue to the first or second left where you will see Telescope row. There is no power here at the observing site, however there are restrooms. Please read the notification to the left of this page.



DOUBLE, TRIPLE, AND MULTIPLE STARS

by Patrick M. Donnelly

On August 26 this year I was using the 30-inch Challenger telescope at Fremont Peak observing as many globular clusters as I could. About midnight I grew tired of the same old view of globulars and went back to observing double stars. I wanted to observe in a constellation, where I had not observed before. As luck would have it Formalhaut was near the meridian. Therefore, I decided to look around Pisces Austrinus (PsA) for a while. It was a most interesting view of the southern skies. October should be an excellent time to view these stars, and don't worry about these stars being too far south. Pisces Austrinus is not any farther south than the teapot.

If you have a large telescope, begin at Formalhaut. There is a 14th magnitude optical companion about 30° from Formalhaut. I observed it with the 30-inch telescope, but it should be visible in a smaller scope. If you have a 12-inch or larger telescope, you should try to observe this star. Interestingly, according to Burnham's, Formalhaut has a companion at the same distance (23 light years) and the same proper motion about 2 degrees south of Formalhaut. It is the more northerly of a pair of sixth magnitude stars south of Formalhaut about 2/3 of the way to Delta PsA from Formalhaut. Try looking for it.

The next star to observe is Beta PsA. As I indicated last month Beta is one of the best doubles in the fall skies. Beta is a 4.5 and 7.5 pair separated by a very comfortable 30.5°. Beta is a true double system with a period of several thousand years. Both stars seem to be white in color. After observing Beta, move on to Gamma and Delta PsA. Gamma and Delta are about 1 degree apart, and they are south of Formalhaut. Gamma is a true double system, consisting of a magnitude 4.5 primary and 8.0 secondary. They are separated by 4.2°. Delta is also a true double system. It consists of a 4.2 magnitude primary and a 9.2 magnitude secondary, separated by 5.0°. Delta was more difficult to resolve than Gamma.

Finally, turn your telescope to the Eta PsA region. There are three doubles arranged along the right ascension line of 22 hours. Eta is the brightest, but start north about 1 degree at 11 PsA. This star is a dim double with a magnitude 7.5 primary and an 11.0 secondary, separated by 11.3°. Use high power for this star. Then move down to Eta. Eta is a close pair of stars, consisting of a 5.8 magnitude primary and a 6.8 magnitude secondary, separated by only 1.7°. It was resolved in the 5" refractor on the 30-inch Challenger. The final star to observe is the only triple of the group. It is h5311. The system consists of a magnitude 7.0 primary and a magnitude 10.6 and 10.9 secondaries. Both secondary stars are about 40" from the primary, making it easy to resolve the system. As a final note, h5356 is identified as a true triple system, that is resolvable in most telescopes. I did not observe this star, but you might try. [if you do, please let Pat know of your results . . . ed]

Asteroid Named after Andrew Fraknoi released by ASP

As many of you may know the International Astronomical Union announced that an asteroid has been named after Andrew Fraknoi, the executive director of the Astronomical Society of the Pacific (ASP). Fraknoi is being recognized for his contributions to astronomy education and the public understanding of science — as a teacher, author, lecturer, and frequent guest on radio and television.

Andrew Fraknoi was born in Budapest, Hungary and left with his family after the aborted 1956 revolution in that country. He came to the United States in 1959 and settled in New York City, where he attended Bronx High School of Science. He received his undergraduate degree in astronomy from Harvard in 1970 and did his graduate work at the University of California, Berkeley.

After several years of college teaching, he became executive director of the ASP and editor of its nontechnical magazine Mercury in 1978. He has also been teaching the evening "Astronomy

for Poets" class at San Francisco State University and will begin teaching introductory astronomy at Foothill College in Los Altos Hills this fall.

Fraknoi is the author or editor of eight books on astronomy and astronomy education, and was co-author of a nationally syndicated astronomy newspaper column for five years. For two years he was host of a weekly talk show on science on radio station KGO-FM in San Francisco and has been a regular guest on the Jim Eason Show on KGO-AM for 16 years. He has also appeared on the Today, Larry King Live, The Michael Jackson Show (from Los Angeles) and a number of other national and California television and radio programs.

As part of his work popularizing astronomy, Fraknoi has given almost 300 public lectures and weekend programs on such topics as: "A Tourist Guide to the Solar System", "Black Holes: Warped Space, Time Machines, and the Excruciating Death of Stars" and "What I Would Have Said to Nancy Regan about Astrology." His two day seminar on "Einstein: The Man and His Science" (which he gives with physicist Alan Friedman) has been offered over a dozen times in California, New York, and Michigan, always drawing large audiences.

Fraknoi serves on the Board of Directors of the Search for Extra-Terrestrial Intelligence (SETI) Institute, which sponsors research and education programs in connection with NASA's search for radio signals from civilizations elsewhere in our Galaxy. He is a Fellow of the Committee for the Scientific Investigation of Claims of the Paranormal, a group of scientists and educators who work to present a skeptical perspective on such pseudo-scientific topics as astrology and UFO's.

Astronomy Association Equipment
by Paul Barton

There are eight telescopes available for loan to members, from 50 mm refractors to a 12-1/2 inch Dobson. The C-11 is not available for loan. At this time we do not have photographs that are printable [half tones are needed], but Bob Keller is being pressed into service to take the necessary photographs. Your editor will then publish them with a more detailed write-up.

- 1) 4 1/2 inch f8 Reflector on a polar mount (white).
- 2) 6 inch f8 Reflector (red tube) Dobson.
- 3) Quantum 4 Maksutov.
- 4) 60 mm Refractor Cometron 60 Alt Az mount.
- 5) 60 mm Refractor Cometron 60 with a n equatorial mount [which can not be found].
- 6) 8 inch Reflector C-8 with an equatorial mount [being fixed and not available at this writing].
- 7) 12-1/2 inch Reflector f6 Dobson.
- 8) 60 mm Tasco 44T with an Alt Az mount.
- 9) 6 inch Reflector f7 (black tube) with an equatorial mount.
- 10) 8 inch Dobson

All loanees are responsible for the safe return of the item. Only members in good standing are permitted to borrow equipment and they are not permitted to sub-loan the equipment to others. The loans may be renewable if the equipment is seen at public star parties and no one has requested it. The normal loan period will be for 2 months. Extra eye pieces are available and may be issued separately with appropriate telescopes. Please read these simple rules, understand, and abide by them so other members may use the telescopes.

Celestial Calendar
October 1992

Lunar Phases	Date	Rise	Tran	Set
FQ	07-12hr	05-10	1408	1903 2351
FM	011:03hr	14-10	1814	0053 0732
LQ	021:12hr	21-10	2336	0640 1343
NM	12:34hr	27-10	1830	0151 0912

Nearer Planets

Mercury	07-10	0833	1353	1909
1.25 A.U.	17-10	0915	1410	1900
Mag -0.2	27-10	0859	1323	1752

Venus	07-10	0945	1453	1956
1.32 A.U.	17-10	1009	1502	1951
Mag -4.0	27-10	0930	1411	1848

Mars	07-10	2318	0639	1857
1.03 A.U.	17-10	2257	0617	1335
Mag +0.0	27-10	2135	0453	1209

Jupiter	07-10	0542	1150	1754
6.34 A.U.	17-10	0513	1119	1721
Mag -1.7	27-10	0345	0947	1547

Saturn	07-10	1537	2041	0139
9.55 A.U.	17-10	1458	2002	0059
Mag +0.6	27-10	1319	1823	2320

SOL Star Type G2V Mag - 26.72				
1258-0536 ...	07-10	0706	1251	1832
1340-0928 ...	17-10	0718	1251	1820
1415-1300 ...	27-10	0630	1251	1709

Astronomical Twilight

JD 2,448,903.5	07-10	0534	-	2003
913.5	17-10	0546	-	1951
923.5	27-10	0457	-	1841

Sidereal Time

Transit Right	07-10	0000	PDT =2357	
Ascention at	17-10	0000	PDT =0037	
Local Midnight	27-10	0000	PST =0216	

Darkest Saturday Night Oct 29

Sunset	1812
Twilight End	1944
Moon Rise	0641

**TIMES & DATES ARE
PACIFIC DAYLIGHT**

(Standard Time begins SU 25-10 02:00)
by Richard Stanton

ASTRO ADS

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ESTATE SALE - Owner will accept bid. DS - 10 f/4.5 Newtonian - minor damage to optical flat, telrad, Tasco finder scope, Custom made German EQ mnt, Spotting scope - minus 0.965 ocular, 2 axis drive corrector - disassembled (Meade), 2X Barlow, 2X Telenegative, 9mm guide Reticle, 1.25 extension tubes, Camera Extension Adapter, Eyepieces 5mm, 7mm, 9mm, 12.5mm, 18mm, 25mm, 30mm Ultrascopic (all Orion oculars), Metal Case. FILTERS - Polarizer, 2 ea. Skyglow, Color set, 2 ea. 52mm Skyglow (all 1.25 except as noted). PUBLICATION - Tirion Sky Atlas 2000.0 - delux color edition. Camera body - X7A, winder, Lenses 500mm - f/8, 80-200mm f/3.5, 50mm f/1.7, 2X Teleconverter. Total Approximate Value \$3,575. Call Ms. Judie Hobgood (408) 244-8851 8/92

Celestron 40mm, 2" eyepiece, very good cond \$75. Meade 12mm (1.25) Illuminated Reticle eyepiece w/C cell battery box and connecting wire. Never used, mint. \$50. C-8 Piggyback bracket for camera. \$20. Binocular clamp (screw-in type to mount binocs on a tripod) \$5. NIKON T-ring \$5. Porro Prism (1.25), never used \$25. 1/4 - 20 Adapter block for Orion small equatorial mount (for supporting camera or small scope). \$10. Celestron Full Aperture glass Solar filter fo C-5, \$50. Call Bill Dellinges (510) 792-9206 8/92

Bushnell 454 power, 60mm/f=910mm refractor, Equatorial Mount. K21mm, H12, and SR4mm eyepieces. Assorted filters and prisms. \$150. Call Leigh Trowbridge (415) 967-6396 8/92

Meade DS16 Telescope w/9X60 Finder - \$1,000. Other Accessories available also. Contact Mike Schartman. Days at (510) 455-6012 X-353 or (209) 544-8828 (Modesto) 8/92

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