# SJAA EPHEMERIS

VOLUME 6 NUMBER 7 OFFICIAL PUBLICATION OF THE SAN JOSE ASTRONOMICAL ASSOCIATION July 1995

**The Eyepiece**
by Bob Madden

Ed Erbeck has contacted Don Machholz to come and talk to us. Don will be our featured speaker at the July General Meeting and he will be bringing his latest book on Messier Marathoning. If you haven't purchased your copy come and get one. I am sure Don will autograph yours.

To those who are interested, the Board of Directors is voting to purchase General Liability to protect members who participate in our events such as public star parties. As a result of this action, it is my understanding that every member will become members of the Astronomic League (AL). What this means is that you will receive a quarterly publication from the AL.

I have noticed lately that there is a resurgence of amateur telescope making. Several of our members have taken to making telescopes including making their own mirrors. Paul Barton and I have completed a grinding machine - automatic, including its own shutdown timer. It will probably grind up to a 16-inch mirror, but we have only proofed it on my 5.5-inch f/10 and Paul's 10-inch f/4.3. It seems to do a very nice job. In addition to that we have (I should say Paul has) also constructed a Ronchi and Foucault test bench. Our plans are to demonstrate the optical test bench either at the June meeting and/or the September Show and Tell. If you have any mirrors that you want to have tested bring them to the September meeting or call Paul and arrange a test at his house. I have the 'confuser', as Paul calls it, program to draw the reference Ronchi pattern.

**July 1:** Star party, Fremont Peak. Sset 8:29 pm, 16% moon sets 10:41 pm.
**July 7:** Star Party, Houge Park, Sset 8:31 pm, 75% moon down 2:21 am.
**July 8:** General Meeting at Houge Park 8:00 pm preceeded by the Board meeting at 6:15. Speaker Speaker Don Machholz - Comet Hunting.
**July 15:** Observational Astronomy Class, Houge Park 8:00 pm, Jack Petersen instructing.
**July 22:** Star party, Coe Park. Sset 8:22 pm, 17% moon up 2:54 am. ALSO: Public star party at Grant Ranch County Park.
**July 27:** Star party, Fremont Peak. Sset 8:15 pm, 6% moon sets 9:17 pm.
**Yosemite Star Party:** July 28 - 29
**Aug 4:** Star Party, Houge Park, Sset 8:23 pm, 20% moon down 11:32 pm.
**Aug 5:** No activity. Too much moon, sets at midnight.
**Aug 12:** General Meeting 8:00 pm, preceeded by Board Mtg. Speaker TBA
**Aug 19:** Observational Astronomy Class, Houge, Jack Petersen, also - AANC Star-B-Q at Fremont Peak. Sset 7:50 pm, 31% moon up 1:40 am.
**Aug 26:** 2 star parties: Coe, Peak. Sset 7:44 pm, 1% moon down 7:52 pm., also, Public star party at Grant Ranch County Park.
**Lassen Star Party:** Aug. 23 - 27 Space filled.

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**Forty Years Ago this month**
by Jim Van Nuland

The July 18 meeting was called to order by President Walt Krumm, elected at the preceding Board/planning meeting.

The meeting commenced with Bob Cunningham's discussion of Sagittarius, the Constellation of the Month. He explained how to locate the constellation, after which he acquainted us with some of the many nebulae that are to be found in this area of the sky.

Steve read a letter presenting a telescope to our first secretary, Dean Pritchett, who missed his very first meeting of the club due to illness.

Mr. Krumm continued his discussion from last month by giving us a very excellent discourse on telescope mountings. Using some clever diagrams, he talked about six distinct types: alt-azimuth; German mount; fork type; double yoke type; split ring, or equatorial mount; and the Springfield mount. He also discussed observatories and turret-type mountings, after which he gave us many good pointers on the construction of a mount for amateur telescopes.

The meeting adjourned at 10 pm. Most of the members retired to the quad for an hour to look through Mr. Krumm's scope and the refractor presented to Mr. Pritchett.

**Riverside Telescope Maker's Conference**
by Olivier Thizy

Well, it was my first RTMC, and it was surely a surprise for me; and I don't know where to start...

First of all, the most surprising was the number of people, close to 2000 from what I heard, I saw certainly a lot. Next, the quality of instrument presented: from small binoculars to 30", from low cost CCD to big buck one. But I was disappointed: a lot of Dobson and standard newtonian; no real strange or new ideas (no off-axis telescope for example). And the 40" dobson was not here... Last, but not least, very interesting presentation: a fully remote controlled solar telescope, schmidt camera, and CCD evolution for amateur by Dennis Di Cicco. But overall, I would mainly remember the friendly welcome from all those people; I was impressed!

RTMC was CCD oriented this year; several CCDs held a shoot-out of the sky, from the $325 Pixel 211 to the $4500 (approximatly!) high end CCD camera, with of course ST7 and Cookbook cameras.

I was very impressed by the high end CCD camera, but actualy more by the $325 CCD from Pixel. It is cheap, and the results are very nice. And it is great to start with, and it is much more portable than the Cookbook camera. So, I bought one! I already spent several hours to test it; and it works perfect. And I did it from my balcony, with so many parking lights that I can't see Hercules stars with naked eyes! Now, I have to improve my guiding and my computing; but it is where the fun is.

To come back to the RTMC95, I came on Friday moring, early. Bob MADDEN gave me a ride, a lot of thanks to him! It was a very friendly and enjoyable ride for me... And it was great to have someone that could give you some advice (like wake up early on Saturday morning!).

Friday morning then, a lot of cars front of the gate; people were waiting to find a good spot (camping or dorms). Actualy, our dorm was not full, but almost. I don't know about camping spots.

Then, at 1pm, the vendors opened. Meade had a great sale, certainly the best one of RTMC95. Several eyepieces for a cheap price.

Friday evening, the night was clear, and more telescope came in. One could see through huge dobsonians (even a 20" 'binocular' telescope). Computerized dobsonians/telescope too were here. Some clouds at 1am.

Saturday morning, swap sale. Great, I got a lot of stuff. Well, you know it was my first swap sale!

During the day, several of us (from Robert FIELDS mail list: astromart, LX200, Celestron, ATM...) met. It was interesting to put a face on an e-mail address!

The evening: door prizes. first prize: a Meade 12"!!! Arghhhhh, I didn't get it :-( Well, anyway it would not fit my car...). Very nice second prizes too (huge Celestron binoculars...).

Then, a great show on Astrophotography and CCD by Dennis DI Cicco. And just in time for the second night: crystal clear. We took several shots with the Pixel 211 CCD, great experience.

Sunday morning, time to come back. I am sure a lot was still going on, but it was a long ride from home.

Well, I hope this gives you an idea of what happened at RTMC95. It certainly worth the trip; and I am anxious to come back if I can. Olivier

[Olivier is from Grenoble, France Working for HP at Roseville, Ca on a two year work visa. He is an avid amateur and interested in having "his station" have the best equipment they can afford. We met through the internet. The article is as he wrote the story.]

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**New PXL-211 US $325**
by Olivier Thizy

I was at RTMC95 and spent several hours with this camera to try it. The company that makes it is a very small company, and this has its advantage (personal services) and its disadvantage (the company can run out and go to other business and let you with your camera as it is). But the guy that makes this camera is very friendly, and the product looks good.

With a good tracked telescope, we took pictures of several objects with usualy 3 minutes exposures (and one of 6 minutes). It worked great, and I can post some on the net (if anybody has a ftp site where I can put them, it would be easier).

Especially, we took a picture of NGC4565, and I found it great for a TC211 camera. Then, we processed it with the Hidden Image software (that the advantage of the RTMC: you can go from a vendor to another to try their Hardware/Software). Arghhhh: it came really round, and several new details appeared in the arms of the galaxy. Of course, a better guiding would have been better, but it was really great for just 3 minutes of exposure and 10' of processing.

After buying one camera, I used a couple of hours last night. Very easy to setup. I got very quickly very nice results (after just two hours of learning). And I am waiting very anxiously this week-end to spend more time (and in a darker sky) with it.

Now, what are the drawback of this camera. After all, it costs only $325 (usualy, it is a kit; but they assembled some and I got a fully assembled one).

* Software very poor. No processing software come with. Picutres saved are in PIX format. ===>Does anybody know a good freeware software to process PIX images (or other format)?

* Acquisition program not very friendly. You can't for example take several shots automaticaly (like 10 pictures of 10" each) But the camera is Cookbook 211 compatible! ===>Does anybody know a freeware program to control a Cookbook211?

* Only 12bits; and in fact 10bits real. This is good enough to play with, and results are much better than MY photographs. But I am sure it will limit my field of play... in a couple of years!

* Way too small chip. Very hard to center an object, and forget M31! But it opens the door for very small objects: Hershell list is my start, but I am sure that one can take pictures of very faint and small objects with this

Continued on page 5 See Camera

**Space Telescope Science Institute Newsletter**
by Douglas Snyder
(snyder@ix.netcom.com)

Hi Bob: Hope you had a grand time at RTMC! Waiting to hear about all the going's on there with the SJAA crowd - God, I wish I could have gone, but I did have one great night up at the Peak (on Monday).

Well, here are some excerpts from the Space Telescope Science Institute Newsletter that I receive occasionally - it's rather lengthy (the newsletter), so I'll try to snip alot.

Excerpts from the May 1995 Space Telescope Science Institute Newsletter

For those with access to the World Wide Web, here is the main homepage for STScI: http://www.stsci.edu Their services and HST images available are incredible!

The Cycle 6 Call For Proposals will be issued in early June. The proposal deadline for full electronic submission will be 9/15/95 and Cycle 6 observing will commence nominally on 7/1/96. Proposals may request use of WFPC2, FOC, GHRS and FGS (instruments on board HST). [Note: no mention is made of the Director's Discretionary Time allowed for amateur proposals, but as in previous cycles, there have been orbits granted for serious proposals submitted by amateurs- it is an extremely educational experience to just develop the proposal and go through the preliminary justification process].

WHAT CAUSES A QUASAR? [Highlight article] [Images and a two page presentation in the newsletter] The WFC2 (Wide Field Camera 2) was used to image a sample of 20 of the most luminous nearby quasars. The results have been astonishing in some cases. Instead of the very bright host galaxies that we expected to see in all cases, we have found a number of quasars for which we do not detect convincing evidence of the galactic hosts. We have also found two bizarre cases in which the quasars appear to have been caught in the act of gobbling up the gas and stars that exist in their immediate vicinity. Finally, we have found many cases of distinct galaxies that are projected very close to the quasars, so close that theory indicates that they should fall into the quasar nucleus in the blink of a cosmic eye. Our results may be summarized as follows: Quasars exist in an extraordinary variety of diffuse environments that range from apparently normal host galaxies, to complex systems of interacting components, to surrounding material that is undetectably faint (so far). [Images of quasars PG 0953+414, PG 0052+251 and PKS 2349-014 are included in the article]

NETWORK ACCESS TO THE DIGITIZED SKY SURVEY [From STScI Newsletter] Beginning late May, the STScI Digitized Sky Survey (DSS) will be accessible from both StarView and Mosaic. The DSS consists of the 1950-55 epoch Palomar Observatory Sky Survey red plates for the northern sky and the SERC Southern Sky Survey and the SERC J Equatorial extension (plus 94 short V-band plates at low galactic latitude). These original Schmidt 1540 plates have been compressed by a factor of 10. To access the DSS via Mosaic, switch to the URL: http://www.stsci.edu/archive.html To access the DSS via StarView, select the DSS screen from the selection menu. The user will be required to enter the central equatorial coordinates and an angular size (in arcminutes) of each field.

THE DIGITIZED SKY SURVEY [From STScI Newsletter] The 102 volume CD-ROM set of pixel data for the ST ScI Digitized Sky Survey (DSS) has now been completed, printed, and distributed to all subscribers. A number of sets are still available and may be obtained from The Astronomical Society of the Pacific, Department 10X (EMail asp@bkyast.berkely.edu ). This project covers the entire sky. With regard to the more highly compressed (100X) version of the DSS, which is primarily intended for school and amateur use, all data preparation has been completed; and this version of the survey has been premastered as a 16 volume CD-ROM set. The selection of a distribution contractor is now in progress, and publication plans will be announced as soon as these arrangements are completed. In addition to the usual platforms, these disks will have support for PC's and Mac's.

For further information on the STScI Newsletter or its contents, contact Doug Snyder (snyder@ix.netcom.com or 408/266-0590). There is much more to it than what I have excerpted here - its 24 pages of good astronomy stuff!

Doug

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**Humility and Illumination... the Virgo Cluster**
By Mark Wagner

Sunday May 28, Dean Linebarger, Alan Nelms and I took advantage of a clear and warm night at Fremont Peak to work the Virgo portion of the Herschel 400 list on the 30" Challenger telescope.

As the Earth's shadow rose in the east, and the breeze began to subside, the sky revealed very steady and transparent conditions. Having been at Grant Ranch the night before, we could tell that the fog settling in over the city lights would provide a significantly darker sky.

Alan brought a 75MHz laptop loaded with The Sky. With a fast processor, the program was an invaluable observing aid. We decided on the 35mm Panoptic for wide-field, and a 20mm Nagler for detail.

Our first objects were easy targets. NGC4030, an elongated dusty galaxy some 4.5" x 3.3" shown clearly at mag 12.00, with marvelous detail. We all felt this would be an exciting and productive evening. Next on to NGC4179, a mag 10.90 dusty edge-on 4.0" x 1.1". Other IC and NGC's were found close to these two bright Herschels. Both galaxies were mostly alone, and in easily identifiable fields near bright guide stars.

Things changed. We entered a dense portion of the Virgo Cluster. I found that the 30" is great for sucking up faint-photons, but also complicates the field of view! Arguments ensued over whether we were in the correct field. We all used different methods of naked-eye star-hopping, finding hard won success. Many targets were packed

Continued on Page 5 (see Humility)

## Springtime Fishing

by David Johnson

*[This is an updated version of a feature on the Vernal Equinox I wrote two years ago for the newsletter of the Mount Laguna Observatory Associates, the San Diego State University Observatory's volunteer support group. Many people have found this an interesting explanation of what can be a slightly mystifying date on the calendar, and I trust it will be of benefit to anyone just getting started in astronomy.]*

Welcome to Spring, fellow honorary Piscesians! At 18:16 PST on March 20, the geometry of our alignment in space places us 'straight up' with respect to the Sun and we then find out what our days would be like if our planet's axis were not tilted. Those of you who try to help the Sun rise from its mid-Atlantic slumber face due east on the Equinox, and those of you who bid it farewell when it is broiling the Admiralty Islanders are oriented precisely west. When you trace that path [the 'ecliptic'] across the sky you are projecting the Equator on one of those two times a year when it is crossed by our star, heading north now and south in September.

For astronomers this is another 'New Year,' because a line drawn north and south from the Sun at the moment of the Equinox provides the reference for right ascension [RA], the astronomers' equivalent to longitude. This coordinate starts at 00.00 with the Sun and proceeds east; to provide an easily-used reference the sky is divided into 24 hours, with each hour consuming 15 of the 360 degrees we traverse each day. Knowing that Mars, for example, has a RA of just over 9h tells us it will be exactly half way between east and west three hours before Midnight, when the RA will be the 12h since Noon. Go outside at 2100 and take a look! The difference between our latitude of 32.5 and Mars' declination of 20.3 is the number of degrees the planet is south of being at the Zenith, directly overhead.

If the Earth were totally stable in its orbit the Sun would always be in the same position against the stars during the Equinox, but because we are wobbling like a top in a 25,800 year cycle [a phenomenon caused by gravity* and referred to as 'precession'] the celestial background changes. When the ancient Greeks chose the Vernal Equinox as the zero point for RA it occurred in Aries but now it's in the otherwise totally-obscure constellation of Pisces. If anyone is waiting for the "dawn of the Age of Aquarius," you will need exceptionally strong genes because it isn't arriving for close to another millennium.

This 'precession of the equinoxes' also results in turnover at the post of North Star. Polaris has been usefully north for more than far Northerners since well before modern navigation began, but if you find that too dim to be a proper guide today then stick around. In about 12,000 years brilliant Vega will have the [not quite as accurate] honor—and RA will begin in Virgo.

The Sun would be up precisely 12 hours on the Equinox [from the Latin meaning 'equal night'] if the Earth didn't have an atmosphere, but because of the effects of refraction as determined by the angle of the ecliptic to the horizon the closest evident equality occurs a few days on either side of the Equinox. In Spring our apparent even division takes place a few days in advance, and in September—when the ecliptic angles are reversed—it occurs several days post-Equinox.

To understand why we have the seemingly quick increase in daylight, all you need is a globe. With the U.S. facing you, hold the globe itself stationary; if you assume the Sun is in back of you, then when the support is over the Bay of Bengal we are at the Winter Solstice. Move the support slowly toward you, noting the rate of change in declination for each two hours you cover. Our revolution around the Sun in the course of a year traces the same sine wave you can find in magazine charts showing the Moon and planets against the stars, and you can think of us as now rapidly lengthening our stride up the incline that will pull the Sun north for the Summer Solstice. Obversely, in the Fall the days can be depicted as accelerating down the decline that will bottom in the south with the Winter Solstice.

If your interest has been piqued in Pisces, you will have a chance to try to find its occupants at 00.00 right ascension when our orbit brings us to the other side of the Sun in autumn. Something is definitely fishy if you think you can construct any fish with the material available in our light-polluted skies, but large telescopes reveal in M74 one of the most beautiful of face-on galaxies.

* Precession can be most succinctly described as the result of large-scale tidal forces, with the Moon and Sun acting on the Earth's equatorial bulge. The Moon contributes about 2/3 of the action.

## Ronchi Screens

by Bob Madden

Ronchi screens were originally described by Vasco Ronchi in 1925. Their use in telescope mirror testing has increased due to their ease of use when compared with the Foucault test. The Foucault test requires some experience and skill in its use while the Ronchi Test over comes the skill required to read the elusive Foucault shadows. Ronchi screens are made with equally spaced opaque lines alternating with transparent lines for a given measurement. This is usually stated in lines per inch, are available in 50 to 175, and are available on transparency or glass. Either medium works well and are available from optical supply houses, Edmund Scientific, and Willimann-Bell.

The Ronchi screen replaces the knife edge of a Foucault tester, covering the light source and placed with the lines vertical in such a manner that the light will pass through the screen to the mirror and return through the screen to your eye.

Slide the Ronchi screen/light source into the cone of light returning from the mirror, starting about 1/2-inch inside the radius of curvature. Looking at the mirror you will see a series of vertical lines. Move the screen closer to the radius of curvature until the dark lines fatten - about 0.1-inch inside the radius of curvature.

For interpretation of the Ronchi patterns refer to Amateur Telescope Making I and II, or Standard Handbook for Telescope Making, by Howard.

**The Light Hearted**
by Daniel Taylor

I read it in Fulton's book, *The Light Hearted Astronomer*, and after viewing the skies thru my 8" SCT, my host of Coulter Dobsonians, CCD cameras, self-designed computer control of the above, buying every Nagler, most every focuser ... guess what ?

I discarded it all and now view with my eyes. My fondest memories of amateur astronomy was the summer evenings, of walking outside, setting up the tent and sleeping bag, keeping the dew off the telescopes waiting for the dark skies to arrive, talking to Arcturus, as it made its way higher and higher, saying good night to all these special friends I came to know. Each night, slewing to M13 and feeling tingles ... low on the horizon comes the Double Cluster and I felt a friend had come to visit.

I never did convince John Dobson, but as I read the debates of refractors vs reflectors, Celestron vs Meade, ad nauseum, I just hope that everyone has the chance to take a step back from their hardware and software, and realize what a beautiful universe it is that we share, and the mysteries it holds for us.

I still look thru telescopes, but it is my mind that captures the light, and it is these special memories that make me want to throw the sleeping bag out on the lawn and say hello to my old friend Arcturus once again.

dark skies

dan
Daniel Taylor
email: dan@sd.com

**40 th Celebration**
by Bob Madden

We are planning something for the month of October. I'm the Chair Person and Committee. I'm interested in contacting some of the very early members or organizers of the SJAA. I know of John Delany, Richard Barrett, and Gene Cisneros. If there are any others who remain in the area and can be contacted, please call me at 408-264-4488.

**Humility** (continued from page 3)
closely with other galaxies, distant sardines with no close-by guide stars. *The Sky* began paying dividends now, zooming in and out, check relative sizes and position angles. When unsure of our eyepiece view, we'd move to nearby clusters to verify on computer. One field held nine galaxies without trying. Dense clusters were unavoidable. Messier Marathoners know Virgo is time consuming and difficult. Hershel's list multiplies the challenge. Too many galaxies... I began longing for sparser fields of my 10" scope! Virgo teaches humility.

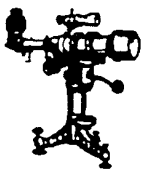
The Hershel highlight was NGC4216, a 10th mag edge-on with bright core at 7.3" x 1.7". The same 35mm field held NGC4206 and NGC4222, edge-ons at mag 12.09 10" x 5.3" and mag 14 3.2" x 0.6". All lay in nearly the same position angle.

Crowded fields, calculations, star-hopping and verification became wearing. We'd barely dented the list as Virgo began to set. The wet and cloudy spring succeeded in moving most of Virgo to my 1996 calendar.

To relax, we looked at highlights. M51, M13, M22, M17, Veil, Dumbell, Lagoon, Barnard 86. The Eagle's with dark areas shown very clearly, and the Triffid's three very clearly defined dark lanes were outstanding.

Just past 2 a.m., facing north raling with Dean at the eyepiece, the entire observatory was illuminated with halogen-like bright white light. Startled, we immediately looked to locate the source when I saw the bright blue-green trail of a meteor fading, extending from north of Deneb into Cepheus. Never have I seen a meteor cast shadows or have a such brilliance. It was an unforgettable sight.

By 3:20 fatigue set in. We had a very good observing evening. After a fast pack up we headed home. I closed my eyes to sleep as the dawn was breaking.



**Camera** (continued from page 2)
camera. The problem is to find them!

* Cooling by fan. I have not detected any problem with the fan yet, but it doesn't cool the camera too much. So, you may be limited with the objects you can take. Once again, I'll see in a couple of years!

* No shutter. The minimal exposure is 0.05s, and Jupiter comes as a big white ball on the screen (plus a large line below). That the main problem for me. But an upgrade for a TC255 is coming out, and I have heard that the TC211 can allow much shorter exposure time. ===> Can anybody post the characteristics of the TC255?

To summarize, as you can see from the above content, I am very happy with this camera. It fits exactly my budget, and I may upgrade it to the TC255 (~$150 more?). I know, it is not a 512x512 on 16bits cooled at -40C. But it costs only $325 (well, you have to have the computer too; this camera doesn't need a powerful one - it run on DOS!). I really think that if your budget is limited, this camera is excellent as an entry level to the CCD technology; it allows you to practice you technic (polar aligment, positioning, guiding, image processing...). And I spent certainly more than $325 in films before!

I hope this will help you in the CCD jungle.

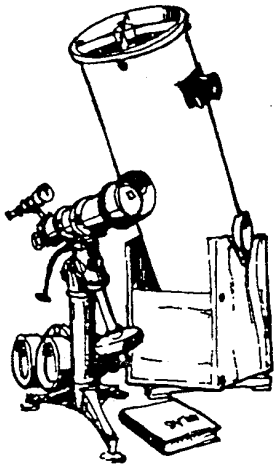
Olivier

**YOSEMITE STAR PARTY**
Our Yosemite date is July 28 - 29, with a 1 to 2 day moon. Rules will be as in previous years: no vehicles left in the observing area; camping at the group site in Bridalveil Campground. It is not yet known if we will actually use the site above the Ranger's residence at Glacier Point. Jim Van Nuland is taking reservations: 371-1307 afternoons or evenings,or catch him at a meeting. The guideline is to have at least one scope for each two people. The limit is 25 people (not cars).

**1995 SJAA Calendar**

| | General Meeting | Houge Park Star Party | Observational Astronomy Class |
|---|---|---|---|
| July | 8 | 7 | 17 |
| August | 12 | 4 | 19 |
| Sept | 9 | 1 and 29 | 16 |
| Oct | - | - | - Last one |
| Nov | - | - | - |
| Dec | - | - | - |

**Please read your *Ephemeris* each month for changes**



**Telescope Loaner Status**
by Paul Barton

| NO. | Name | User | Due Date |
|---|---|---|---|
| 1 | 4-1/2" Newt/P Mount | ----------> | available |
| 2 | 6" Dobson | John Paul Dasilvia | 6/3/95 |
| 3 | 4" Quantum | Bob Elsberry | 7/18/95 |
| 6 | C-8 Celestron | Bob Maillot | 6/16/95 |
| 7 | 12-1/2" Dobson | Tom Rice | indefinite |
| 8 | 14" Dobson | Lee Courtney | 7/8/95 |
| 15 | 8" Dobson | ----------> | available |
| 18 | 8" Newt/P Mount | Jerry Lovelace | 6/10/95 |
| 19 | 6" Newt/P Mount | ----------> | Avaliable |
| 21 | 10" Dobson | Steve Wincor | 6/11/95 |
| 23 | 6" Newt/P mount | Jim Marquis | 7/8/95 |
| 24 | 60 mm refractor | ----------> | Avaliable |

Solar telescope. Available only to experienced members for special occasions such as day time public star parties, etc. Call.

If you want to borrow a telescope call Paul Barton (number is on the credit Marque) and get your name on a general list (any telescope) or on a specific telescope list.

## ASTRO ADS

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**Televue Plossl Eyepieces**, 32 mm, 26 mm, 21 mm, 17 mm, 13 mm, 10.5 mm, 2.5x Barlow, 1.8x Barlow, all in a case. Also, Meade 8.8 mm UWA (84 deg field. Every thing in perfect condition. Sacrifice all for $500 (1/2 retail). Call Edward at (209) 892-8926 Evening. 3/95

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**8-inch Newtonian**, f/8, Equ. Mount, Clock Drive, portable. $400 obo call (408) 629-7741 5/95

## Celestial Calendar - July 1995

by Richard Stanton

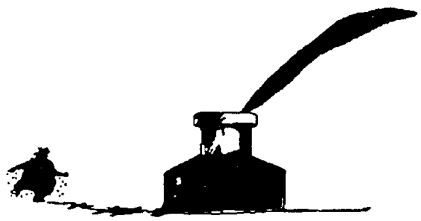
| Lunar Phase | | Date | Rise | Trans | Set |
|---|---|---|---|---|---|
| FQ | 13:03 | 05 | 13:23 | 19:13 | 00:22 |
| FM | 03:39 | 12 | 20:39 | 01:04 | 06:22 |
| LQ | 04:10 | 19 | 00:18 | 07:03 | 13:54 |
| NM | 08:13 | 27 | 06:18 | 13:19 | 20:14 |
| Nearer Planets | | | | | |
| Mercury | | 07 | 04:30 | 11:47 | 19:05 |
| 0.31 A.U. | | 17 | 05:00 | 12:24 | 19:48 |
| Mag. -2.2 | | 27 | 05:59 | 13:15 | 20:29 |
| Venus | | 07 | 04:56 | 12:20 | 19:44 |
| 0.71 A.U. | | 17 | 05:12 | 12:34 | 19:56 |
| Mag. -3.9 | | 27 | 05:31 | 12:47 | 20:03 |
| Mars | | 07 | 11:23 | 17:38 | 23:53 |
| 1.59 A.U. | | 17 | 11:12 | 17:20 | 23:27 |
| Mag. +0.9 | | 27 | 11:02 | 17:02 | 23:01 |
| Jupiter | | 07 | 17:29 | 22:24 | 03:23 |
| 5.32 A.U. | | 17 | 16:47 | 21:42 | 02:41 |
| Mag. -2.4 | | 27 | 16:06 | 21:01 | 02:01 |
| Saturn | | 07 | 23:57 | 05:52 | 11:42 |
| 9.62 A.U. | | 17 | 23:18 | 05:12 | 11:02 |
| Mag. +0.8 | | 27 | 22:38 | 04:32 | 10:22 |
| SOL Star Type G2V | | | | | |
| RA | Dec | | | | |
| 07:04 | +22:37 | 07 | 05:51 | 13:13 | 20:34 |
| 07:44 | +21:15 | 17 | 05:57 | 13:14 | 20:30 |
| 08:24 | +19:17 | 27 | 08:24 | 13:14 | 20:23 |

| Astronomical Twilight | | Begin | End |
|---|---|---|---|
| JD 2,449,905 | 07 | 03:58 | 22:26 |
| 915 | 17 | 04:08 | 22:19 |
| 925 | 27 | 04:20 | 22:07 |

| Sidreal Time | | | | |
|---|---|---|---|---|
| Transit Right | 07 | 00:00 | = | 17:51 |
| Ascention at | 17 | 00:00 | = | 18:30 |
| Local Midnight | 27 | 00:00 | = | 19:10 |

Darkest Saturday Night 22-JUL-1995

| | |
|---|---|
| Sunset | 20:27 |
| Twilight End | 22:13 |
| MoonRise | 02:09 |
| Dawn Begin | 04:12 |

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## COMET COMMENTS

by Don Machholz

Periodic Comet d'Arrest continues to brighten as it heads south in our morning sky. It reaches perihelion on July 27, while it is closest to the earth at 0.41 AU in early August.

Only one comet has been discovered so far this year, and that was a faint photographic find from Kitt Peak in January. Since 1975, there have been only three other years with so few finds for the first five months of the year. In both 1979 and 1982, a photographic discovery occurred early in the year, followed by a second comet discovery in June. In each case this second comet was a visual find by a Southern Hemisphere observer: William Bradfield of Australia in 1979 and Rodney Austin of New Zealand in 1982. Then in 1985 the first comet discovery didn't take place until May, and that was a visual find by myself. The next find was a photographic discovery in June.

There are several reasons for this slow activity. First, there simply may not be any easily discoverable comets coming in right now. This happens from time to time. Although amateurs average 3.3 visual finds per year, some years yield no visual finds, while others show as many as seven discoveries. Secondly, poor weather has prevented thorough searches of the sky from some locations. For example, I've been able to accumulate 90 hours of comet hunting this year. Although this is at the same pace as in previous years, excessive cloudiness has not allowed me to always search the areas I've wanted to cover. Finally, professional observatories do not consistently carry out the same programs month after month. The Shoemakers, along with other teams surveying the sky, may go several months before getting back to the telescope.

### EPHEMERIDES

6P/d'ARREST

| Date (00UT) | R.A (2000) | Dec | EL | Sky Mag |
|---|---|---|---|---|
| 06-22 | 21h388m | +09d31m | 117d | M 10.4 |
| 06-27 | 21h527m | +09d0lm | 119d | M 10.2 |
| 07-02 | 22h068m | +08d12m | 121d | M 9.9 |
| 07-07 | 22h213m | +07d0lm | 123d | M 9.7 |
| 07-12 | 22h35.9m | +05d26m | 126d | M 9.5 |
| 07-17 | 22h50.6m | +03d27m | 128d | M 9.4 |
| 07-22 | 23h05.3m | +0ld02m | 131d | M 9.3 |
| 07-27 | 23h19.7m | -0ld47m | 134d | M 9.2 |
| 08-01 | 23h33.5m | -04d57m | 136d | M 9.1 |
| 08-06 | 23h46.6m | -08d23m | 139d | M 9.1 |
| 08-11 | 23h58.8m | -11d58m | 142d | M 9.1 |

### ORBITAL ELEMENTS

Object 6P/d'ARREST

| | |
|---|---|
| Perhelion Date | 1995 July 27.3619 |
| Perhelion Dist.(AU) | 1.34587 AU |
| Arg of peri. (2000) | 178.0504 deg. |
| Ascending Node(2000) | 138,9874 deg. |
| IInclination (2000) | 019.5232 deg. |
| Eccentricity | 0.6140404 |
| Orbital Period | 6.51 yrs. |
| Source | MPC 20122 |

Don Machholz (916) 346-8963

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