SJAA EPHEMERIS

VOLUME 5 NUMBER 8 OFFICIAL PUBLICATION OF THE SAN JOSE ASTRONOMICAL ASSOCIATION November 1994

The Eyepiece
by Bob Madden

Well, we start the fourth year together. I have received a single article to publish this month. I must say it is discourging when we have so many members. Either you folks are arm chair astronomers or aren't getting much done. You don't get much feedback in this business, but I'll mention a couple of items that hopefully will cause some comment. One is I'm thinking of reducing the size of this publication to four pages with only news about our public star parties, Loan Program and the calendar of events. All of this and the Board of Directors is considering the increase in membership dues. Yes, for several months this subject has been under discussion and it will become firm in another month or two. An increase to $15 or $20 is being considered. We haven't been placing any monies in our Observatory Fund for several years and we want to be able to do that.

So this month I surfed the Usenet sci.astro and sci.astro.amateur forums. I caught a couple articles by Jack Zeiders, Tim DeBenedictus, Jay Freeman and Jim Van Nuland. I also have some stuff from the net on the size and age of the universe (Hubble constant). I would rather publish member material than from the internet.

Nov 5: Star party, Fremont Peak. Sset 5:05 pm, 10% mset 7:18 pm. Also Public star party at Grant Ranch County Park.
Nov 11: Star party, Houge Park. Sset 5:01 pm, 69%, mset 1:35 am.
Nov 12: No Activity. Catch up on Sky & Telescope magazine!
Nov 19: Board and General Meeting at Milpitas Library. Board of Directors meeting at 6:15 pm followed with the General Meeting at 8:00pm. Speaker will be Dr Dale Crickshan talking about Pluto.
Nov 26: Star party, Coe Park. Sset 4:50 pm, 41% mrise 0:51 am.
Dec 3: Star party, Fremont Peak. Sset 4:50 pm, 2% moon, Mset 5:59 pm.
Dec 9: Star party, Houge Park. Sset 4:50 pm, 55% moon, Mset 0:25 am.
Dec 10: No activity
Dec 17: Board and General Meeting at Milpitas Library. Board of Directors meeting at 6:15 pm followed with the General Meeting at 8:00pm. Speaker will be Bob Kesserling, Grace Autio and Jim Albers of LMSC reporting on the Jupiter/SL9 collisions.
Dec 24: Watch for the gift bearer (for those that do) Happy holiday Season.
Dec 31: Star party at Fremont Peak. Sset 5:00 pm, no moon.

If you are interested, we have 204 paid members and about 40 complimentary members (no dues). The complimentary distribution goes to other exchange clubs, buisnesses (Orion, Sky and Telescope), and regular contributors (Don Machholz).

"Redscope" Review
by Charlie Chew
September 6, 1994

I recently purchased a copy of the astronomical software "Redscope". The software was developed by Steve Waldee, a long time Bay Area Amateur astronomer and his collaborator and friend, another amateur, Ron Wood. As they say, "necessity is the mother of invention" and Mr. Waldee and Mr. Wood apparently got tired of trying to figure out all those astronomical parameters like magnification, field of view and limiting visual magnitude, in their heads, so they decided, why not let a computer do it, and "low and behold"....."Redscope"!

The program is named for its questionable ability to create a display with red characters on a black background, mimicking one of those annoying, and now fortunately obsolete, plasma jet computer displays. The red characters are intended to interfere as little as possible with your dark adapted eyes. However, for this function to have any value in the field, you need to own one of those expensive portable color computers, unless of course you have a computer with a plasma jet display and then the whole matter is moot. Although this software bears the name of this one feature, I tend to believe that the feature is irrelevant for most amateurs. Fortunately, the program also produces a "normal" color or black and white display, and contains many other unquestionably useful features. To name a few: the program will compute your telescope's magnification and real field of view based on the focal length of your telescope and eyepiece, it will also compute your visual limiting magnitude based on you telescope's aperture, eyepiece

Continued on page 2

RedShift (continued from page 1)
magnification, filter selection and "seeing". The program will also let you know how your observation might be improved with one of several Lumicon filters. It is interesting that Lumicon products are the only ones actually mentioned by brand name. This is possibly because of Lumicon's unique line of filters which are so specific in their application.

In my personal opinion, one of the best aspects of the software is its ability to enable the amateur astronomer to conduct endless "thought experiments" about telescopes one may or may not actually own. Plus this can all be accomplished in the comfort and warmth of one's home without having to actually leave your ergonomically designed computer chair (yes, spoken like a true arm chair astronomer). For example I can sit down at my computer with my copy of "Redscope" and inquire as to what I might expect in terms of performance on something like the Veil nebula, from a 25-inch, f5.5, Obsession, coupled with a 27mm Panoptic eyepiece and a Lumicon Oxygen-III filter. Or I can determine my chances of splitting a certain very close double with a 7-inch Starfire and a 2.5mm Vixen Lanthanum eyepiece. And what's especially good, is that once you have your copy of "Redscope", besides not having to leave your computer chair, you don't have to spend one extra dime (unless of course you want to) to engage in this kind of fantasizing and wishful thinking. Of course on a more practical note, you could use these same capabilities of "Redscope" to serve as a guide for future equipment purchases or to determine what specific items from your own vast arsenal of astronomical equipment you will need to pack on your next outing to Fremont Peak.

Unfortunately the program is currently only available for PC's and clones. Alas, all Apple polishers will have to trot on down to your local produce mart and make that long delayed upgrade to Power PC with Soft PC installed, to take full advantage of that remarkably user friendly and intuitive DOS command structure. One final feature of "Redscope" that I really appreciate, is the price. The share-ware version, which contains many of the most important features, is available for only $15.00! The full featured version which has data on nearly 100 commercially available eyepieces and an extensive and detailed glossary of astronomical terms, can be obtained from Orion or Lumicon or by direct mail form Alegro Music (see San Jose Phone Book) for about $35, and that's still a bargain.

S-80 test report from Yosemite
by timmyd@netcom.com
(Tim DeBenedictis)
Date: Tue, 4 Oct 1994 06:05:48 GMT

Well, my quest for a backpacking scope has come to an end. A week ago I purchased an S-80 spotting scope from Pocono Mountain Optics in PA. It arrived 2 days later in fine condition. Additionally, the Pocono people swapped the 45-degree diagonal prism for a 90-degree prism at no extra charge (something no other dealer, even Orion, would do.) I paid $285 for the telescope, which is on par with the prices offered by the big NYC discount houses like Adorama. I would really recommend Pocono - good service, friendly, knowledgeable support, and very good pricing.

I should also mention the tripod: It's a Velbon DH-10ML purchased for $29.95 from Ewert's photo supply in Santa Clara, CA. For $29.95, it's surprisingly sturdy; the construction is all anodized black aluminum. Its maximum height is 62 cm; it collapses to about 18 cm, and weighs nothing. It is ideal for backpacking.

I was able to replace the pan-head with an Orion slow-motion control, which is much better for astronomical viewing. Unlike the pan head, the slow-motion control allows you to point for a full range of motion all the way to the zenith, and is -much, much- nicer to use at high magnification. The design is both elegant and simple, although the implementation was a bit weak. When I bought it (from Orion, $36) it had something like 1/2-degree of wobble, although I was able to tighten some screws and tweak some clips, which vastly improved its sturdiness. In any event, it is much better than the pan-head which came with the tripod.

This weekend I finally put the thing to use. Some friends and I hiked out to Clouds' Rest at Yosemite, and I brought the S-80 along. Clouds' Rest is a peak which overlooks the main valley; at 9926 ft altitude, it is 1000 feet higher than the famous "half-dome". Getting up there is a bit harrowing; once you are past the pines, you have to walk up a fairly steep scarp, only a yard or two wide in places, with nothing between you and the valley floor 6,000 feet below but a long, steep, rocky, unforgiving 60- or 70-degree slope.

At the top the rock flattens out, and there's a spot about 100 feet long by 50 or so wide which is adequate for camping. The view, needless to say, was spectacular. You can see Half-dome and glacier point to the west, north dome, and the top of El Capitan to the northwest. However, it got hazier all day, and as the afternoon went on, the sky became more and more overcast.

We had reached the top of clouds' rest at about 2PM. I set up the S-80 and pointed it at Half-dome. At 16x (using my 25-mm Kellner binocular eyepiece) you could easily see the cable running up the side of the rock, and 100s of people going up and down it. At 67x (with a Coulter 6mm Orthoscopic eyepiece) you could see facial expressions... that was neat! Half-dome is one heck of an impressive rock... climbing that cable up the side, which must go at more than a 60-degree slope in places, must be an awesome experience.

By nightfall the sky had begun to clear out. I and the four other people camped on top of clouds' rest were able to see a fairly unspectacular sunset (too much low-altitude cloud and haze), but eventually the summer triangle became visible. Hopefully, I pointed my scope at the Andromeda galaxy, and saw a rather unimpressive smudge of light. Disappointed, I decided to get some rest.

Around 3:15 I woke up, and poked my head out of my sleeping bag. It had warmed up a little (or the breeze had died down, or both) but more importantly the sky had cleared out. With my 20/800 vision, and no eyeglasses, I could see stars down to mag 4.5. When I put my glasses back on, the view was
Continued on page 3

Yosemite (continued from page 2
-astounding! I could see fainter than the limit of my Tirion Bright Star Atlas (mag 6.5), no question. The Milky Way, running high through Cassiopeia, Perseus, and Auriga, was so bright that I had trouble picking out some of the constellations, and I could clearly see at least a dozen Pleiads.

The Andromeda galaxy, now on the other side of the sky, was plainly naked-eye visible, and in the S-80 I could see dust lanes, and a halo at least 3 degrees wide. I was able to split a number of double stars, including Eta Cassiopeiae, and Sigma Orionis, although the magnification afforded by even the highest-power eyepiece I had (67x) was not quite enough for me to convincingly split Rigel. I observed a number of open clusters; M-35 in Gemini and M-41 in Canis Major were particularly impressive at 32x (12.5-mm Coulter orthoscopic eyepiece.)

Just for kicks, I tried observing the Crab Nebula. I'd never seen it in anything less than a 4.5" reflector, so I doubted my 80-mm spotting scope would be able to pick it out... it took a while to find, because it was so much smaller than I had expected... but there it was! A distinct, compact, oval patch of gray light, right where my Tirion charts said it would be. It was again most impressive at 32x; at 16x it was too small, and and 67x it was too dim. But the fact that I could see it it all really impressed me.

The 3-days-before-new moon rose at about 5 AM, and provided some interesting views, especially at 67x. It did tend to wash away the fainter stars, so I dozed off until sunrise. That was quite an experience, watching the shadow of our mountain crawl across the valley floor 6,000 feet below.

All in all, I was very pleased. The S-80 performed well. I wish, though, that I had had my binoculars with me; I would have loved to have just lain on my back in my sleeping bag and scanned through the sky; that's one position from which it's very difficult to view through a 90-degree diagonal refractor. I spent most of my time looking through it while sitting up or lying on my side, which wasn't incredibly comfortable... but well worth the effort!

The sky on a crystal-clear moonless night from 10,000 feet in the middle of Yosemite is an awesome thing to behold, no less impressive than the mountains all around, or the dizzying drop offs and sheer cliffs and magnificent conifers. I hope everyone with any interest in astronomy or nature or the outdoors will get to have an experience as unique and powerful as the one I had from the top of Clouds' rest last weekend.

DISCOVERY GAUGES SIZE AND AGE OF THE UNIVERSE

Date: 29 Sep 1994 10:55:22 -0500
Sender: astres@pecos.msfc.nasa.gov

With the discovery of Cepheid variable stars in the distant Virgo Cluster of galaxies, astronomers using the Canada-France-Hawaii Telescope have settled a long-standing debate as to the distance scale of the universe, a debate which has been raging for decades. The results establish that the Virgo Cluster is at a distance of 50 million Light Years from Earth and that remote objects in the universe are at as little as half the distance previously believed. Virtually all astronomers agree that the Cepheids represent the key to ending the controversy over the distance of remote objects. A variety of other methods have yielded estimated distances to individual galaxies which vary by as much as a factor of two. The Cepheid results strongly favor the closer distances and appear to have settled the controversy. The work is described in the September 29 issue of Nature and is the result of an international effort by Dr. Michael J. Pierce of Indiana University (Bloomington, IN; and formerly of Kitt Peak National Observatory, Tucson, AZ); Dr. Douglas L. Welch of McMaster University (Hamilton, Ontario); Dr. Robert D. McClure, Dr. Sidney van den Bergh, and Dr. Peter B. Stetson of the National Research Council, Herzberg Institute of Astrophysics, Dominion Astrophysical Observatory (Victoria, British Columbia); and Dr. Rene Racine of the Universite de Montreal (Montreal, Quebec). This is the first time that these stars have been found at a sufficiently large distance to establish directly the size of the universe.

The discovery is important because the Virgo Cluster is the nearest large concentration of the many different types of galaxies we see throughout the rest of the universe. "For some time astronomers have compared the properties of galaxies in the Virgo Cluster with those found in even more distant clusters of galaxies in order to determine how much further away these clusters are than Virgo", explained Dr. Pierce. "Since we all agree on whether a particular cluster may be, say, three or five times the distance of Virgo the debate has been focused upon the distance to the Virgo Cluster itself. We find the distance of the Virgo cluster to be 50 million Light Years with an uncertainty of only about 8%. Now that we have established the distance to Virgo accurately, the distance to any other cluster and size of the universe follows. We can now establish other properties of the universe, such as its rate of expansion, and place limits on its age."

The newly revised distance to the Virgo Cluster implies that the universe is currently expanding at a rate of 27 kilometers per second for each million Light Years in distance. The current rate of expansion, also called the Hubble Constant, is a key parameter in defining the evolution of the universe over time. One of the more curious results of these measurements is an apparent paradox in the age of the universe. "The age of the universe ends up being between 7 and 11 billion years, depending on the details of the model for its expansion. The best age estimate for the oldest stars is thought to be about 16 billion years, so we have a problem", explains Dr. Pierce. "Either we are missing something in our understanding of the evolution and age of the oldest stars, or we are missing something in our understanding of how the universe has been evolving since the Big Bang. It's going to be very interesting in the next few years while we struggle to unravel this mystery."

"One of the possible interpretations is that the equations developed by Einstein which describe the 'Big Bang' may require modification", explained
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AGE (continued from page 3)

Dr. van den Bergh. "The modification would be to insert a 'Cosmological Constant' which Einstein had originally considered and then left out of the final form of General Relativity. It is, perhaps, slightly ironic that Einstein once said that introducing the 'Cosmological Constant' had been the greatest blunder of his scientific career since we may have to include it after all."

Cepheids are stars which pulsate in a regular fashion and whose true brightnesses can be accurately determined once their pulsation characteristics are established. Cepheids can be found relatively nearby in our own galaxy, the Milky Way. They have a long history of use in estimating distances and are generally accepted as the most reliable tool used by astronomers for this purpose. "The true brightness of a Cepheid variable star is directly related to the length of time it takes to go through its pulsation, or brightness cycle", explained Dr. Welch. "If we find a Cepheid in a distant galaxy we can measure its brightness over time. Once we determine its true brightness, from its cyclical variations, we can estimate its distance."

The detection of the Cepheid variables in the Virgo Cluster was made possible due to the excellent images produced by a special instrument called the High Resolution Camera (HRCam) on the Canada-France-Hawaii Telescope on Mauna Kea, Hawaii. The camera was designed and constructed by a team lead by Dr. McClure and Dr. Racine. "This camera produces images which are about three times sharper than most other ground-based telescopes," Dr. McClure explains. "It accomplishes this by correcting for some of the image distortion due to turbulence in the atmosphere above the telescope. By monitoring the position of the image of a nearby star which has been focused onto a light-sensitive detector, a computer can direct a fast-moving mirror inside HRCam to compensate for the 'shimmering' of the atmosphere. Pictures of galaxies in the Virgo Cluster obtained with conventional cameras just aren't sharp enough to show the Cepheids."

For their work in developing HRCam, Drs. McClure and Racine, along with the Dominion Astrophysical Observatory Instrumentation Group, received the Muhlmann Prize of the Astronomical Society of the Pacific in 1992.

In part for developing the software packages that were used to analyze the digital images from HRCam, Dr. Stetson received the 1992 Petrie Prize granted by the Canadian Astronomical Society.

For More Information:
Dr. Michael J. Pierce, Indiana University, (812) 855-0274
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Dr. Sidney van den Bergh, Dominion Astrophysical Observatory, (604) 363-0006
Dr. Peter B. Stetson, Dominion Astrophysical Observatory, (604) 363-0029
Dr. Rene Racine, Universite de Montreal, (514) 343-6718

From: boroson@spot.Colorado.EDU (BOROSON BRAM S)
Newsgroups: sci.astro.research
Subject: Re: PRESS RELEASE: "Discovery Gauges Size and Age of the Universe"
Date: 3 Oct 1994 10:09:40 -0500
Organization: University of Colorado at Boulder

I've seen this in several newspaper articles from around the country. Do these results really convince everyone? Have Sandage et al. given up on their H_0 = 50 km/s /Mpc claim? The press release gave H_0 as 27 km/s /Mly, which is 88 km/s /Mpc—certainly nothing surprising in that value; most recent determinations have given H_0 ~ 100. The newspapers made it seem as if this value of the Hubble constant was unexpected and that the problem with globular cluster ages was something new. Help out this galactic astronomer & tell me if the controversey has finally been settled or if the press is hyping this result.

Thanks,

Bram Boroson

From:
ethanb@ptolemy.astro.washington.edu (Ethan Bradford)
Newsgroups: sci.astro.research
Subject: Re: PRESS RELEASE: "Discovery Gauges Size and Age of the Universe"
Date: 3 Oct 1994 16:32:37 -0500
Organization: University of Washington

In article
<36p6rk$7ij@pecos.msfc.nasa.gov>
boroson@spot.Colorado.EDU (BOROSON BRAM S) writes:

> Do these results really convince everyone? Have Sandage et al. given up on their H_0 = 50 km/s /Mpc claim?

I doubt it.

> The press release gave H_0 as 27 km/s /Mly, which is 88 km/s /Mpc—certainly nothing surprising in that value; most recent determinations have given H_0 ~ 100. The unexpected and that the problem with globular cluster ages was something new.

I am unaware of any recent H_0 measurements near 100; this result is large compared to most that I have seen lately. It certainly makes the age problems worse, cutting off various squirming options.

> Help out this galactic astronomer & tell me if the controversey has finally been settled or if the press is hyping this result.

The fact that they were able to observe Cepheids at all indicates that their galaxy was closer than the low H_0 people say, but the controversy is certainly not settled. The main problem is that they don't properly include their systematic errors, so H_0 as low as ~70 is not excluded. For instance, they don't even include the uncertainty in distance to their galaxy w.r.t. Virgo's center. However, it seems like the issue will be finally settled in the next couple of years after seventy years of trying.

What Have You Seen Lately
From: strong@uofport.edu
(Caroline Strong)
Newsgroups: sci.astro.amateur
Juniper Sky Horsehead
Date: 3 Oct 1994

Juniper Sky Ranch
Sept 30-Oct 1:

Chuck arrived with his 24" around 10 pm. The evening began with Gary and I getting incredible views of Saturn with the LX200 and the stereo-viewer and my sharp 8" SC. The narrow, razor sharpness of the ring was truly amazing! Poked around in Scluptor galaxies for awhile down in the scuz.

After the 24" was set up and some socializing, took a tour of all the showboat objects: :-) (<-- smile)

The Veil with filter was like an 8-bit graphic on a computer screen...total depth of shading in the silky flowing layers of the smoke of a candle flame. Beautiful.

NGC 6888, Crescent Nebula ...my first look at this. Described by someone as a miniature Veil Nebula.

NGC 281...another bright nebula.

NGC 7331...component galaxies very visible! With 7331 at 9 o'clock, then a nudge out of field of view, Stephan's Quintet popped in at 3 o'clock NGC 253...back to Scluptor...huge, incredible structure visible, foreground stars.

Orion rising...we try the Horsehead with the H-beta. Yes, it really does exist!! I have tried many times, through a variety of scopes and never *really* seen it...but there it was, no averted vision or averted imagination for that matter!!! I SAW IT!!!!!!!!

Thank you, Chuck for the tour.

Next morning it was our turn to give the tour....

We headed down Millican Valley Road towards Pine Mountain to check out a potential site for the 1995 Oregon Star Party. Once at Pine Mountain Observatory, we ran into Kelly Grant, also a committee member for OSP and a member of the PMO group. Kelly gave us a tour of the new warming room for the 32"...total class and quality, what luxury!

Off over the mountain to check out more sites, then part ways...Those headed for the Sunriver starparty for Sat. night and Gary and I back to Juniper Sky.

A great weekend. I'm so happy I saw the Horsehead.

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Whatcha been looking at lately?
From: jackz@scd.hp.com (Jack Zeiders)
Newsgroups: sci.astro.amateur
Date: 20 Sep 1994 19:37:06 GMT

Caroline Strong (strong@uofport.edu) wrote:
: Okay, this group has been alive for nearly 24 hours and I've yet to see a posting about observing anything... I like to hear some of the things people have observed lately. With the nights getting longer, there's some great viewing coming up. Here's a few of my last objects:

:NGC 7662 - 9th magnitude planetary in Andromeda refer to as the "Blue Snowball" because of its blue-green color.

You will probably also like 6210 in Herculese.

: NGC 7538 - found this trying to find the Bubble Nebula (NGC 7635), in Cassiopeia. A couple of stars with some nebulosity around them.

: NGC 891 - 10.5 mag spiral galaxy in Andromeda. Extremely elongated with dust lane. wow.

Absolutely lovely at 100-150X in a dark sky, also dear to Dark Star fans.

Well I have not been out as much as I would have liked, but here are a few things I enjoyed, The Cuccoon in Cygnus, it is at the bottom of a dark channel in the Milkey Way near M39 It is low surface brightness and a UHC filter does help, it is difficult for some in a 17".

NGC 6888 is easy with a Oxygen III filter from Lumicon. It is South of Gamma Cygnie. While you are in the area the nebulosity around Gamma itself can be nice in a very dark sky. While up in Cygnus the Veil is a must see. A O3 filter helps immensely. In my 17" from a dark sky one can easily trace Pickerings Triangular wisp much of the way across the loop. Higher power will pull out more filimentary structure. It will reveal a different aspect with different filters, If you have a sky glow, UHC or other LPR filter give them all a try. I like about 40X and 100X.

At Mt. Lassen this summer the Pelican and North American were fun to cruise, although you need a wide field and a O3 filter to view them well. I found 40X with a UHC the Pelican just stared back at me, it looked just like one of a friends Schmidt Camera photos, one could even pick out the dark lanes.

I found a (new to me) galaxy cluster in Peagsus, the Pegasus I cluster. A couple of moderately bright members and lots of fainter ones.

Ngc 7331 and Stephans Quintet are often very nice. I really like the 7331 field with its faint companion galaxies. Arp 229 and 331 are near Beta Andromeda, just a Couple of degrees East if I remember correctly. One of these groups has a chain of 7 galaxies in one field (221?). While you are at Beta Andromeda, look for NGC 404.

There is much more, but that is some of the stuff I've observed recently.

Jack Zeiders
zeiders@netcom.com

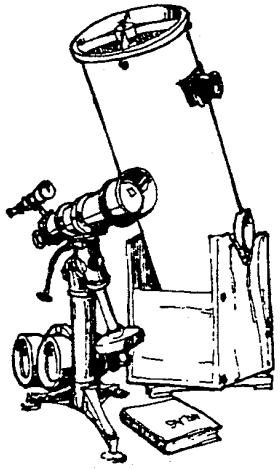
Mounting Rings Made Easy
by Paul Barton

Have you ever needed mounting rings to hold that Optical Tube Assembly (OTA) to your Equatorial mount? Here is a thought to try. I've used this method in completing Paul Krukar's installation. Take a thick walled PVC pipe of appropriate diameter (many times these are scrap pieces) and cut it to width with a saber saw. Now slit the width and then place in a preheated oven at 275 to 300 degrees F until it is as soft as leather. Remove and shape on a form or the OTA and hold until cool. This ring can now have felt placed inside and attached to the mount in an appropriate manner. I've even made finder scope mounts this way.

1994 SJAA Calendar

General Meeting	Houge Park Star Party	Observational Astronomy Class
Nov 19	11	no meeting
Dec 17	9	no meeting
1994 SJAA Calendar		
Jan 14	6	25
Feb 11	3	18
Mar 11	3	18
Apr 8	7	15

Please read your *Ephemeris* each month for changes



Telescope Loaner Status

by Paul Barton

SJAA no.		Name	User	Due
1	4-1/2"	Newt/P mount	---------->	available
2	6"	Dobson	John Paul Dasilva	10/3/94
3	4"	Quantum	---------->	available
5	60 mm	Refractor	---------->	available
6	C-8	Celestron	Bob Brauer	11/3/94
7	12-1/2"	Dobson	Tom Rice	Indefinite
8	14"	Dobson	Ken St George	12/1/94
14	6"	Newt/P mount	Steve Wincor	10/28/94
15	8"	Dobson	John Schoenenberger	10/13/94
18	8"	Newt/P Mount	Bob Maillot	10/11/94
19(B)	6"	Newt/P mount	Jerry Lovelace	10/6/94
20	4-1/4"	Dobson	---------->	available
21	10"	Dobson	Chung-Lin Lee	11/18/94
23	6"	Newt/P mount	---------->	available

Solar telescope (#16). Available only to experienced members for special occasions such as day time public star parties, etc. Call.

(on waiting list)

C8 Lee Courtney

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

ASTRO ADS

ASTRO ADS are free to all noncommercial advertisers wishing to sell astronomically related products or services. Please send your ad directly to the Editor: Bob Madden
1616 Inglis Lane
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NO LATER THAN THE 12th OF EACH MONTH! Your Astro Ad will run approximately 3-months.

Takahashi FC 100H, 100mm, f-8 Apo refractor, multicoated, 2.7" Focuser, 7X50 Illuminated finder. Em-10 mount - all electric, built-in drive corrector. $3800 OBO. Still in Warranty. Call Edward (209) (31-0486 8/94

Wanted: Drive Mechanism for 1-1/2 inch shaft - GEM mount. Will pay a modest amount. please call Paul Krukar at: (408) 286-5728 9/94

Aluminized Flat, 8-inch, low expansion glass - $325. **Aluminized Flat,** 4-inch Fused quartz - $250. **4-1/4 inch Refractor OTA,** Coated lenses, adjustable cell, 3.4-inch draw tube, 1.25-inch rack and pinon, Jaegers f15 objective - $350. **12-inch pyrex mirror blank,** tool, abrasives, pitch, etc. - $135. Call John Brookman, (408)-374-0594 Before 7:30PM Please. 11/94

CELESTIAL CALENDAR

November 1994

LunarPhases	Date	Rise	Tran	Set
NM 05:36hr	04-11	0643	1206	1725
FQ 22:15hr	11-11	1258	1844	-NS-
FM 22:58hr	19-11	1726	-NT-	0710
LQ 23:04hr	27-11	-NR-	0617	1239

Nearer Planets

Mercury	07-11	0503	1042	1621
1.262 AU	17-11	0533	1056	1618
Mag -1.8	27-11	0613	1118	1622
Venus	07-11	0610	1115	1620
0.299 AU	17-11	0505	1023	1541
Mag -4.9	27-11	0419	0945	1511
Mars	07-11	2323	0623	1322
1.201 AU	17-11	2305	0601	1256
Mag 0.0	27-11	2244	0537	1228
Jupiter	07-11	0717	1224	1731
6.379 AU	17-11	0649	1153	1658
Mag -1.70	27-11	0620	1123	1626
Saturn	07-11	1404	1932	0104
9.469 AU	17-11	1325	1853	0025
Mag 0.9	27-11	1246	1814	2343

SOL Star Type G2 V Mag - 26.72

RA	DEC				
14:53	-16:32	07-11	0638	1151	1705
15:34	-19:12	17-11	0648	1153	1657
16:16	-21:17	27-11	0658	1155	1652

Astronomical Twilight		Dawn	Dusk
JD 2,449,664.5	07-11	0509	- 1833
,674.5	17-11	0519	- 1826
,684.5	27-11	0527	- 1823

Sidereal Time

Transit Right	07-11	0000	PDT=0300
Ascention at	17-11	0000	PDT=0340
Local Midnight	27-11	0000	PDT=0417

Darkest	Saturday Night Nov 5
Sunset	1707
Twilight End	1834
Moon Set	1919
Dawn next morning	0509

TIMES AND DATES ARE PACIFIC STANDARD

Times are Local Civil

Planet distance and Magnitude for 17th of month

Derivation of these values are from

Astronomy with Your Personal Computer

by Peter Duffet-Smith

MacEphem

by Elwood Charles Downey

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Comet Comments

by Don Machholz

One returning comet has been recovered recently. Meanwhile, periodic Comet Machholz 2 (1994o) is dimming in our morning sky. During the past month one of its companions brightened briefly, it even exceeded the primary coma for a few days. The orbital period is now computed to be 5.23 years. When it comes back next time it will be in the evening sky, and, as it did this time, will approach to within 35 million miles of the earth. At no time will it ever get closer to the earth than 10 million miles, this applies to the companions too since they seem to be staying on the same orbit as the main comet.

Two small pieces have broken off Periodic Comet Harrington (1994g) recently. This was discovered last week by Jim Scotti. The fragments are magnitudes 20 and 21 while the main nucleus shines at magnitude 12.

Periodic Comet Reinmuth 1 (1994p): A. Nakamura of Japan and Jim Scotti of Kitt Peak recovered this comet in early September at magnitude 20. It orbits the

EPHEMERIDES

PERIODIC COMET BORRELLY (19941)

DATE(00UT)	R.A.(2000)	DEC	EL	SKY MAG
10-20	07h08.7m	+08d22'	99d	M 8.1
10-25	07h21.7m	+10d50'	101d	M 8.0
10-30	07h34.8m	+13d33'	103d	M 7.9
11-04	07h47.9m	+16d32'	106d	M 7.8
11-09	08h00.9m	+19d47'	108d	M 7.7
11-14	08h13.9m	+23d17'	111d	M 7.7
11-19	08h26.7m	+27d01'	114d	M 7.6
11-24	08h39.2m	+30d57'	117d	M 7.6
11-29	08h51.5m	+34d59'	120d	M 7.7
12-04	09h03.2m	+39d05'	122d	M 7.7
12-09	09h14.3m	+43d09'	125d	M 7.8

PERIODIC COMET MACHHOLZ 2 (1994o)

DATE(00UT)	R.A.(2000)	DEC	EL	SKY MAG
10-20	10h07.4m	+06d28'	55d	M 9.3
10-25	10h17.5m	+04d11'	57d	M 9.6
10-30	10h26.9m	+02d03'	59d	M 9.9
11-04	10h35.5m	+00d03'	61d	M 10.2
11-09	10h43.3m	-01d49'	64d	M 10.4
11-14	10h50.4m	-03d34'	67d	M 10.7
11-19	10h56.6m	-05d12'	70d	M 10.9
11-24	11h02.1m	-06d43'	73d	M 11.2
11-29	11h06.7m	-08d09'	76d	M 11.4
12-04	11h10.5m	-09d28'	80d	M 11.6
12-09	11h13.4m	-10d42'	83d	M 11.7

19941	ORBITAL ELEMENTS	1994o
1.3651 AU on Nov. 01.5, 1994	Perihelion	0.7526 AU on Sept. 18.8, 1994
353.359 degrees	Argument of perihelion	149.257 degrees
075.424 degrees	Ascending Node	246.181 degrees
030.271 degrees	Inclination	012.788 degrees
0.6228036 = e, 6.88 years.	Eccentricity/ Per.	0.750261, 5.23 years.
MPC 18259	Source of 2000 Elements	MPC 23956

CC195.TXT Don Machholz (916) 346-8963

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