the san jose astronomical association

Bulletin

june 1982

Ephemeris

June 5 GENERAL MEETING: ANNUAL SJAA BOARD ELECTIONS; slides of the Riverside telescope-makers' conference. Nominations for board positions may be made at this meeting. Room S-34, De Anza College (off of McClellan Road in Cupertino). 8 pm. (See Observations for more on the elections.) (This time, there really is.)

June 11 Board Meeting in Outer Siberia, alias Denni Frerichs'. 15022 Broadway Terrace, Oakland. Topics will include the SJAA observatory building fund, tax-exempt/tax-deductible-status status report, and nominations for the A.B. Gregory award. Call (415) 654-6796 for directions. Very limited parking; please call Jim van Nuland at (408) 371-1307 for carpool coordination. 8 pm.

June 12 Indoor Star Party at the Los Gatos Red Cross. Mirror-making and Mystic Mint-munching. 7:30 pm.

June 19 Star Party at Henry Coe State Park. Directions: 101 south to the Gilroy area; East Dunne Avenue east past Anderson Reservoir; up the mountain for twelve miles; past the park entrance to the old ranch buildings. A horse trough stands near the locked gate on the left that leads to the SJAA site. Combination to the lock is 4565; RE-LOCK IT AFTER YOU ENTER. About 100 yards past the gate is a knoll where you can set up.

June 26 Indoor Star Party; Los Gatos Red Cross. Special telescope collimating class led by Frank Dibbell. Make your very own collimating device—please bring plastic 35mm film cans if you have any. (Frank will provide some, but BYO to be safe.) Also bring your 'scope to check it out with your new collimator! 7:30 pm.

July 3 No scheduled SJAA activities due to the holiday weekend, but several members are planning to attend the fourth landing of Columbia, scheduled for July 4th. See "Space Program Update" for further shuttle information; call Denni if you're interested in going to the landing.

July 9 Board Meeting. Election of 1982 SJAA officers from among the board members. Location to be announced.

July 10 SJAA Annual Picnic. Installation of new SJAA officers; presentation of the A.B. Gregory Award. Tentatively scheduled for Portal Park in Cupertino; watch this space for updates.

July 17 Star Party at Fremont Peak. The SJAA traditionally sets up at Coulter Group Camp for visual observations, and behind Ranger Kate's house for photography.

July 24 Star Party at Mt. Umunhum. Combination for the SJAA lock is 4565; please remember to RE-LOCK the gate after you enter. We set up 'scopes on the helipad.

July 31 Indoor Star Party; Los Gatos Red Cross. Find out who's polishing and who's still using #60 sandpaper. 7:30 pm.

The SJAA Bulletin is published monthly by the SAN JOSE ASTRONOMICAL ASSOCIATION, 3509 Calico Avenue, San Jose, CA 95124. The membership year runs from July to June; dues are pro-rated if you join after June. Membership rates: $18/year for adults, $12/year for children under 12. Subscriptions to the Bulletin are available to non-members for $7/year.

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BULLETIN DEADLINE IS THE 15TH DAY OF THE MONTH PRECEDING PUBLICATION.

Miss Peach *By Mell Lazarus*

Observations

by Steve Greenberg

May 7 Board Meeting Notes. Two related items of great potential interest to all club members were discussed by the SJAA Board.

SJAA Tax Exempt/Tax Deductible Status. We are presently awaiting details about John Schipper's meeting with the Internal Revenue Service. (John is a lawyer to whom we all owe thanks for his donation of much valuable time to the club.) By the June Board meeting, he should have given us the latest IRS requirements, and any legal revisions needed for our articles of incorporation. If no changes are needed from his submissions, our tax exempt/tax deductible status could be approved almost immediately, if it is handled by the San Francisco IRS. (However, it could take a further sixty to ninety days, if the request goes on to Washington, DC.)

Building Fund. In a closely related move, the Board is actively investigating creating a high-interest fund, whose purpose will be to acquire land for a permanent club observatory site, constructing permanent observing pads for telescopes at it, and (eventually) constructing a club observatory. When our tax status is clarified, all donations to the building fund should be deductible.

For further details about this building fund, how it will work, how donations can be made, etc., please call Frank Dibbell during the day at (408) 746-6493 (after he returns from vacation on June 14th).

SJAA Board Elections. Nominations are now being accepted for the new SJAA Board. This year, four Board positions are up for re-election. The present holders of these positions are: Frank Dibbell, Steve Greenberg, Shea Pratt, and Gerry Rattley. The first three have said that they want to run for re-election. (Gerry is moving to Arizona this summer, but hopes to remain an active long-distance member.) If you feel that you, or someone you know, should serve the club as a Board member, please tell one of the remaning Board members, or COME TO THE JUNE GENERAL MEETING, where nominations will be taken.

JUNE GENERAL MEETING. CLUB ELECTIONS. PLEASE COME AND PARTICIPATE IN ELECTING THE SJAA'S BOARD.

The Dr. A.B. Gregory Award. This award is given at the July General Meeting (Picnic) to the SJAA club member, whom it is decided has helped most to advance the astromomical knowledge of others. For more details, and to make nominations, please contact the nominating committee: Dave Ambrose, Bob Fingerhut, and Denni Frerichs. (Check the Roster for their phone numbers.)

SJAA Auction Solar Filter Warning! If you bought a solar filter at the SJAA auction, please take note! The filters were supposed to have a safe optical density. I tested mine, and it is not safe to use on the sun with my Meade 4". Another person bought a filter so dense that the sun could not be seen at all through it. I talked to Earle Watts about this lack of quality control, and he has agreed to replace unsafe or unusable filters with ones having the proper coating density.

Here is a simple three-step method for checking your filter's safety: (1) Look at a 100-watt light bulb from 12 to 18 inches away. If you see a glowing ball of light, stop right here! Don't use the filter on the sun. If you see a bright filament, the filter is marginal. If the filament is dimly visible and comfortable to look at, go to step two. (2) Take the filter outside and, holding it at arm's length, look at the sun through it with your unaided eye. You should see a disc that is comfortable to look at and not very bright. If it is bright, the filter may be marginal for full aperture use, but okay for stopping a 12" or 14" telescope down for solar use. (If there are pinholes visible, dots of black paint applied with a toothpick or pencil point will seal them.) (3) To be absolutely safe, put the filter on your scope with a lab-grade thermometer in the focus, before you stick your eyes there. Check for excessive heat. (Sky & Telescope had an excellent article a few months ago on the temperature rise your retina can take, and for how long.) My advice is: if the thermometer shows a noticeable rise in temperature, don't use the filter.

If you have any doubts about your filter after these tests, please take Earle up on his offer. (See the roster for his phone number.) Remember: your eyesight is precious, and an improperly made solar filter can permanently damage it in a few seconds.

Club Telescopes. Since May 3rd, Penny Pinshmidt has had the 12-1/2 inch. Her time with it will be up on July 3rd. (Those members who expressed interest in using the telescope this summer will be able to try for it again at that time.)

SJAA Dues Due by June 30th. A little while ago, Patti Winter and Shea Pratt decided to investigate the inner mysteries of the term "pro-rated" with regard to our club dues. (See the bottom of the first page.) As a result, they developed the following table of payments to guide members who join the club at various times of the year.

Before	June 30th	- $18.00 for	1 year
"	July 31st	- $16.50 for	11 months
"	Aug. 31st	- $15.00 "	10 "
"	Sept. 31st	- $13.50 "	9 "
"	Oct. 31st	- $12.00 "	8 "
"	Nov. 30th	- $10.50 "	7 "
"	Dec. 31st	- $ 9.00 "	6 "
"	Jan. 31st	- $ 7.50 "	5 "
"	Feb. 29th	- $ 6.00 "	4 "
"	Mar. 31st	- $22.50 "	15 "
"	Apr. 30th	- $21.00 "	14 "
"	May. 31st	- $19.50 "	13 "

After reading this table, it struck me that it is certainly much simpler (for everyone concerned) if our memberships are renewed on time, during June.

As a matter of fact, it wasn't until I wrote this that I realized I hadn't paid my dues yet, even though I'd been meaning to get a check to Shea for the past month!

One major advantage of all club members renewing at the same time (in June) is that it allows the board to plan the club's finances for the next year with some degree of certainty.

Another advantage is a new one this year. Our membership roster is now kept on an Apple II diskette, and it is being updated monthly. (We now have the ability to print out a club roster at any time, and have done so this month.)

Since we also use the diskette to print out the Bulletin's mailing labels, if you are dropped from the membership list, your Bulletin subscription will also stop. This can now happen in much less time than the six or eight months that it has sometimes previously taken.

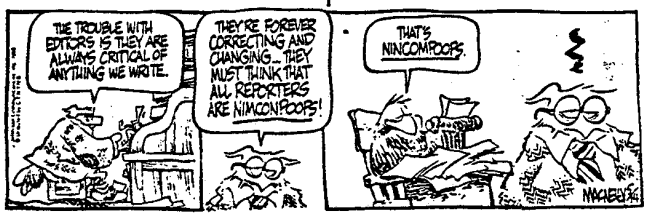
Thus, if you pay your dues before June 30th, your Bulletin, and your timely knowledge of the club functions announced in it, will continue to arrive as rapidly as the Post Office allows. As noted in the Ephemeris and in other Observations, lots of club activities are developing, besides our usual general meeting lectures and star parties. Don't take the chance of missing them because your dues were sent too late. Please make out your checks to the SJAA, before the end of June, and send them to our treasurer:

Shea Pratt
474 Safari Drive
San Jose, CA 95123.

Sky & Telescope Subscriptions. I have a message for those pillars of the community who, unlike myself, have already renewed their club memberships. If you have gotten a second notice from Sky & Telescope to renew your subscription, the chances are that there is nothing to worry about. S&T's paperwork tends to be slow. However, if you want to be on the safe side, you can check with Shea Pratt as to the status of your subscription.

Uncle Editor Needs You (Pt. II). Due to the almost unanimous non-response to last months' desperate plea for new blood (er, authors) I've decided to go to the heart (ah, root) of the problem. Classically, Non-Author Discomfort (known in the trade as non-writer's block) can usually be abolished by memorizing the following set of Rules for Modern American Authors. (This list also goes a long way towards assuring a certain basic level of (um) competence among future authors.)

1. Don't use no double negatives.
2. Its important to use apostrophe's right.
3. Watch out for irregular verbs which has cropped into our language.
4. About sentence fragments.
5. Be sure that each pronoun agrees with their antecedent.
6. When dangling don't use participles.
7. Verbs has to agree with their subjects.
8. Don't abbrev.
9. And, of course, there's that old saw: never use a preposition to end a sentence with. (As Winston Churchill said, "This is something up with which I shall not put".)
10. Check to see if you any words out.
11. Check to see if words any are upmixed.
12. Assure yourself that no words are misspilled.
13. In notes letters themes reports articles books and stuff like that you use commas to separate a string of objects.
14. Join clauses good, like a conjunction should.
15. Don't use run on sentences you've got to punctuate
16. Make sure that sentences end with the proper punctuation?
17. In my opinion, I think that when an author is writing, he or she (as the case may be) should not get into the habit of making use of too many unnecessary words that he or she does not need.
18. And, last but not least, avoid cliches like the plague.



Crater Timings for Lunar Eclipse. Bob Shelton of the Peninsula Astronomical Society would like to see people do crater timings during the July 5-6 total lunar eclipse. It is not necessary for everyone to be in the same location—wherever you'd like to observe from is fine. He'll create the recording forms and reduce the resultant data. Call him at (415) 257-8525 if you're interested. (Anyone want to stay near Edwards AFB an extra day after the shuttle landing and do it from the desert?)

New (very new) SJAA Member. Congratulations to Mary and Dave Ambrose on the May 19th arrival of Elizabeth Denise Ambrose. She weighed barely more than a C-90 system at the time (7 lbs., 7 oz.), but is undoubtedly more difficult to keep in alignment. The fact that she arrived at 1:04 in the afternoon may indicate a preference for solar astronomy, anyway.

Land for Sale (Cheap!) in the Sunbelt. Looking for lots of land on which to build your dream house? How about 14,000 acres on the planet Mercury? For a $25 donation, The Astronomical Society of the Pacific will send you a deed entitling you to a "nice recreational site in a pollution-free environment". You'll even get an aerial photo of your plot. Needless to say, the ASP's land claims on Mercury are ephemeral at best, but whose aren't? And, by the way, when you visit your new "property", bring summer-weight asbestos clothes. The temperature is a toasty 700°F.

Galaxy

—the Bulletin's miscellany department.

by Jim van Nuland

The following table gives the times at which the Great Red Spot is in transit across the face of Jupiter, and is therefore facing directly toward the Earth. You should be able to detect the Spot, east of the cen tral meridian, about half an hour before these times, and follow it to the west for a little longer afterward.

da	mo	d	h	m		da	mo	d	h	m	
W	6	2	11	2	pm	Th	6	17	0	30	am
Sa	6	5	0	43	am	Sa	6	19	10	5	pm
M	6	7	10	14	pm	M	6	21	11	46	pm
W	6	9	11	44	pm	Sa	6	26	10	47	pm
Sa	6	12	9	18	pm	Th	7	1	10	3	pm
M	6	14	10	60	pm	Th	7	8	10	49	pm

This month's table is shorter than last month's, mainly because Jupiter sets about two hours earlier each month. The times are selected to have Jupiter at least two hours before setting. So by mid-August, Spot-watching time will be over. Get out soon and spot the Spot!

Recent observations show the Spot as a bright yellow during moments of good seeing. At the Fremont Peak star party, I was able to glimpse it a full hour before the central time...things are improving!

The Celestial Tourist Speaks

by Jay Reynolds Freeman

Though Mars is by now well past opposition and rapidly diminishing in angular size, Jupiter and Saturn will be well placed for evening observations during the next month or so. Persons with larger telescopes might wish to take advantage of some of the excellent seeing that we will probably have this summer, to look for some of the finer detail in these two gas giants and their attendant satellite systems.

I will not presume to discuss the intricacies of the belts and clouds of Jupiter; I have never even memorized the nomenclature for telling which belt is which (though I have seen the Great Red Spot recently). However, I call your attention to the fact that twelve inches or so of aperture will suffice to show the Galilean satellites as discs. The view isn't up to the standard set by Pioneer and Voyager, but it does underscore the fact that these are entire worlds, not merely points of light.

(A friend of mine, a graduate student in astronomy at U.C. Berkeley, occasionally had time on the three-meter Shane telescope at Mount Hamilton, in pursuit of his thesis. Once, he took a moment to point the giant telescope at Jupiter for a casual visual observation. The narrow-angle view from the Coude spectrograph room did not impress him. There was only a tiny disc, with a hint of lighter areas at the poles and a dark band across the middle. Then he realized that he had mis-set the telescope a little bit. It wasn't Jupiter he was looking at; it was Ganymede!)

Saturn's largest moon, Titan, also shows a disc in moderate-sized amateur telescopes. On the night of March 23rd - 24th, 1979, I was playing with the aperture stops of the twenty-inch Brashear refractor at Chabot Observatory, while observing Titan at about 900x, in pretty good seeing. The Brashear has a disc at its objective end, with stops for eight and thirteen inches (as well as for the full twenty inches) on it. The aperture stops can be rotated by a wheel at the eyepiece end, without having to move the telescope...and even without jiggling it too much. Titan showed an obvious disc at twenty inches. As I reduced the aperture, the disk got blurrier, but was still definitely non-stellar in appearance even with the eight inch aperture. Will a six-inch telescope show the disc?

I also made an interesting observation of Saturn's rings on the same occasion. The seeing was good enough so that, with 900x and full aperture on the Brashear, I was able to see three divisions in the rings. Besides the Cassini division (which is easy with my eight-inch Dobson), I could see a division about three-quarters of the way from the Cassini division to the outer edge of the rings; and another about half-way between the Cassini division and the inner edge of the "B" ring. I believe that the outer division was the Encke division. The inner one was apparently one of several dark bands (not really divisions) in that area, which are visible on the Voyager photos.

Saturn also shows interesting detail with smaller apertures. I occasionally see the crepe ring with my eight-inch Dobson, as well as a dark band in the north temperate latitudes of the planet's disc. I am sure that an observer with more experience with the planets than I have, would see more detail.

An interesting project for some amateurs might be trying to identify the various moons of Jupiter and Saturn. Sky & Telescope's "Sun, Moon and Planets This Month" routinely features a chart that should make it easy to unravel the Galilean satellites, but identifying Saturn's family members will probably require an ephemeris and some calculation.

(If enough readers are interested, maybe some letters to Sky & Telescope and Astronomy magazines would convince them to regularly run a chart of positions for Saturn's larger moons, as was done during the most recent ring plane crossings. I, for one, would be interested in knowing whether I am seeing a background star or Titan with my four inch, without having to do any calculations. Ed.)

Incidentally, in order outward from Jupiter, the Galilean satellites are: Io, Europa, Ganymede, and Callisto, which you can remember via "I Eat Green Cabbage" (provided you like cabbage).

I have some more to say about eyepieces and magnification. There are six eyepieces that I routinely use with my Celestron 14: 4- and 7-mm Orthoscopics, 12.4-, 20-, and 32-mm Erfles, and a 55-mm Plossl. They provide magnifications of 978x, 559x, 315x, 196x, 122x, and 71x, respectively. The latter two eyepieces are in two-inch barrels; the others are inch and a quarter. All are multi-coated.

As those who read my column last month may surmise, the 55-mm Plossl is by far my most frequently-used eyepiece. It and the 32-mm Erfle are tied for maximum field of view, at about 39 arc-minutes. (That's actual field of view, not apparent. All I'm saying is that the two eyepieces have almost exactly the same front lens diameter.) Therefore, both are equally useful for finding things; but, the long eye relief of the Plossl makes it very easy to use. Furthermore, its loiwer power results in brighter images of very faint diffuse objects. It's great for looking at nebulae, galaxies, and coarse star clusters.

My second most commonly-used eyepiece is the 12.4-mm Erfle. At 315x, I can begin to see the Airy disc and diffraction rings in a stellar image. This eyepiece is beginning to make use of the C-14's inherent resolving power; yet the wide apparent field of view will encompass most globular clusters and most remote, compact, open clusters. I routinely use the 12.4-mm for resolving clusters and double stars, and for looking for details in planets and planetary nebulae.

I find myself wanting more power than 315x about as often as I want something between 71x and 315x. The 7-mm Orthoscopic seems to show me all the detail that the C-14 is capable of resolving. Although I have used the 4-mm occasionally, I have never been able to see anything with it that I had not already noticed with the 7 mm. (If my eyes were worse, perhaps this would not be so; or if they were better, perhaps I wouldn't need the 7 mm.) Yet the 7-mm eyepiece is definitely better than the 12.4 for resolving double stars, and for looking at detail on planets and in planetary nebulae.

I use the 32-mm and 20-mm Erfles for occasional study of detail in galaxies or diffuse nebulae, or for basic observation of these objects when the sky

See pg. 7

Comet Comments

by Don Machholz

Two comets are visible at this time; no new ones have been discovered nor any old ones recovered. This has been a slow year for comets thus far, and none have been discovered by amateurs since Christmas, 1980.

Great Comets. Comet Seki-Lines (1962 III): Discovered as a ninth-magnitude object on February 4th, 1962, by Seki and Lines of Japan, this comet whirled to within three million miles of the sun on April 2nd of that year. The comet moved rapidly across the sky and became lost in the glare of the sun in late March. It later reappeared, with a coma of at least first magnitude, and a tail that was some 15° long.

Comet Seki-Lines picked up some additional energy on this trip through the inner solar system, and it is not expected to return.

Comet Bowell (1980b)

DATE (UT)	R. A.	DEC.	MAG.
05-31	18h 17.8m	-22°20'	10.9
06-10	18h 14.7m	-22°25'	
06-20	18h 10.9m	-22°31'	10.9
06-30	18h 06.9m	-22°36'	
07-10	18h 03.4m	-22°42'	11.1

Not far from M28, M8, and M20, the motion of this comet is now retrograde. It is small (about 0.5' to 1.0'), moving away from the sun, and nearly holding steady with respect to the earth.

Periodic Comet Grigg-Skjellerup (1982a)

DATE (UT)	R. A.	DEC.	MAGNITUDE (ESTIMATES)	
05-31	10h 38.0m	+31°59'	10.2	9.8
06-05	11h 21.7m	+35°28'		
06-10	12h 07.1m	+37°47'	10.4	9.9
06-15	12h 51.8m	+38°51'		
06-20	13h 33.2m	+38°47'	10.9	10.7
06-25	14h 10.2m	+37°49'		
06-30	14h 42.0m	+36°14'	11.4	11.6
07-05	15h 09.4m	+34°17'		
07-10	15h 33.0m	+32°06'	12.0	12.6

Slowly moving away from the sun and earth (but close to the earth), this comet is moving rapidly across the sky. The magnitude estimates are from John Bortle, and (as mentioned last month) comet 1982a will follow either one or the other. Get out and see this comet in the evening sky; it will soon be gone. It's rather large, about 10' to 12' in diameter.

General Meeting

by Patty Winter

Early Bird, Westar, GOES, Syncom. . .these are just a few of the communications satellites of past and present discussed by Mark Gingerich at the May SJAA General Meeting. Mark, a lecturer at Lawrence Hall of Science, summarized the history of these "birds" that bring us telephone calls and television and radio programs, and explained how geosynchronous orbits are used to keep a satellite's "footprint" over a specific part of the earth.

The legal considerations of satellite receivers are of interest to many people now, and Mark noted that direct reception of satellites is still perfectly legal. Using small dishes to pick up local retransmissions of Home Box Office and other services is not allowed, however.

Mark also discussed the possible application of satellite receiver technology to amateur radio astronomy, since there is an overlap in the frequencies used by both. He predicts an increased interest among amateurs in radio astronomy as dishes and their associated electronics become more widely available. And for those who "don't get excited by hearing static...", Mark suggested trying to visually observe communications satellites, a task which will become increasingly easier as communications stations become larger and larger.

For further details, look for a soon-to-be-published article by Mark in Sky & Telescope on "Stalking a Communications Satellite".

Astronomy Day

Jack Zeiders

I arrived at about 3:00 PM; it was a nice warm day with a few high thin clouds. Stan Koslowski was already there with his 6". Soon afterwards Stosh Groner, and Mike Ryan and friend came up from San Mateo. Later Bill Ramsted and his brother set up a C-8. Tom Ahl set up a 13" Odyssey, and then had to tear it apart to recollimate it.

Towards evening Chris and Shea Pratt arrived with their 12" and 6" telescopes. Bill Gimpel made his first trip to Fremont Peak, after being a member of the SJAA for twelve years, and found out that it's a neat place. He brought his 3" refractor, and claimed that he would return. Gary Rice and Joe Sunseri came with an Odyssey 17" on a Dobson mount. We all watched the sun set into a bank of clouds.

Clear spaces soon materialized, and 15 to 20 campers and others came to the area to use the telescopes. Since the moon was up, I used extreme power (a 4-mm eyepiece on a 2x Barlow) for views of the planets, double stars, globular clusters, and galaxies. (However, using my 10", I couldn't detect M97 when it was in the center of the field! The moonlight was very bright!)

There was a good turnout for a first Astronomy Day up on the Peak. Some people even came up from Salinas. They had heard an announcement on KGO (courtesy of the ASP?) that the SJAA was going to set up a public viewing site. I turned in at about 1:00 AM, but others stayed up till 3:00 AM and saw the Red Spot!

I want to thank everybody who took the trouble to come down and set up at the Peak. Basically, it was a nice evening; it was a whole lot better viewing situation than the star party the week before!

(Reports from the other SJAA Astronomy Day sites should be forthcoming for next month's Bulletin. Ed.)

Space Program Update

by Bob Fingerhut

New Asteroid Discovered. A new asteroid, called 1982 DB, was discovered by a JPL planetary scientist. It made its closest approach to earth (2.9 million miles) in January. Since it periodically crosses the earth's orbit, it is thus one of 34 known Apollo asteroids. Size estimates range from less than a mile to several miles in diameter.

It Glows in the Dark! Photographs from STS-3 show that the Columbia glows in the dark, an unexpected orbital phenomenon that could have adverse effects on optical payloads that will be operated on the nightside of each orbit.

The glow is believed to be a chemoluminescent effect resulting from atomic oxygen impacting on the spacecraft. It is thought that these atoms then combine to form oxygen molecules. As these molecules are shed, they give off light. It is believed that all the tile-covered parts of the spacecraft facing into the orbital velocity vector are affected.

STS-4 Launch Preparations. Columbia was towed to the Vehicle Assembly Building on May 16th, and should have been transferred to Launch Pad 39A by May 25th. The launch is scheduled for 11:00 AM EST on June 27th. The planned mission duration is 168 hours (7 days).

Among the scheduled activities are additional tests of the remote manipulator system, monitoring of the Air Force Cryogenic Infrared Radiance Instrumentation, the processing of further electrophoresis samples, and photography of lightning on earth. Astronaut Mattingly is also scheduled to do an airlock demonstration of the Extra-Vehicular Mobility Unit. STS-4 will also carry the first Getaway Special.

Shuttle Landing Sites. The primary landing site for the STS-4, -5, and -6 missions has been designated as Edwards AFB, California. The Kennedy Space Center, Florida, is now the primary backup site for STS-4, even though more data on the autoland system and crosswinds are needed before a Florida landing can be attempted. Northrup Strip, at the White Sands Missile Range, New Mexico, will be a contingency landing site for STS-4. As a safety precaution, the first missions flown by the orbiters Challenger, Discovery, and Atlantis will also land at Edwards. STS-4 is scheduled to land on Runway 17, with Runway 22 as the backup.

Space Policy Address? Following the STS-4 landing at Edwards AFB on July 4th, three shuttle orbiters, Columbia, the new Challenger, and the old Enterprise, will be within towing distance of one another. With this impressive scene as a possible backdrop, President Reagan is expected to present his long awaited Space Policy Address. In it, he will probably announce support for developing a complete shuttle-based operational space transportation system, which will include: (1) a high-energy upper stage for the shuttle, (2) exploiting the shuttle's science capability, and (3) doing basic research in technology and applications.

Isaac T. Gillam, senior policy analyst in the presidential Office of Science and Technology, said that the next major step in space will be a space station or platform, "but, we don't need to start it at this time." (See the Salyut 7 item for another opinion. Ed.)

Salyut 7 Launched. The new Russian space station, Salyut 7, was launched on April 19th. Its first tenants were a T-5 cosmonaut team, launched on May 13th. Another team, composed of a French "Spacenaut"* and two Soviet cosmonauts, is scheduled to be launched (about June 20th) on a Soyuz-T spacecraft for a seven-day visit.

*(Where's the French gov't committee to preserve linguistic purity, when it's really needed? Ed.)

STS-5 Space Walk. The first extravehicular activity is now planned for STS-5 in November. Astronauts Joseph P. Allen and William B. Lenoir will don NASA's new space suits and work up to seven hours in Columbia's payload bay. This is a practice run for the (soon to be cancelled?) orbital repair of the Solar Maximum satellite.

Crews for STS-7, -8, and -9 Missions Are Named.

STS-4: June 27, 1982. Thomas Mattingly , commander; Henry Hartsfield, pilot.

STS-5: November 1982. Vance Brand, commander; Robert Overmyer, pilot; and Dr. Joseph Allen and Dr. William Lenoir, mission specialists.

STS-6: January 1983. Paul Weitz, commander; Karol Bobko, pilot; and Donald Peterson and Dr. Story Musgrave, mission specialists.

STS-7: April 1983. Robert L. Crippen*, commander; Frederick H. Hauck, pilot; and John M. Fabian and Sally K. Ride+, mission specialists.

STS-8: July 1983. Richard H. Truly*, commander; Daniel C. Brandenstein, pilot; and Dale A. Gardner and Guion S. Bluford, Jr., mission specialists.

STS-9: Sept. 1983. John W. Young*, commander; Brewster H. Shaw, Jr., pilot; and Owen K. Garriott and Robert A. Parker, mission specialists. (Payload specialists from NASA and the European Space Agency will be named later.)

*Second flight. +Second woman in space.

STS-7 will be the first flight of the orbiter Challenger. Scheduled for a six-day mission, it will carry a German shuttle-pallet satellite, the second Office of Space and Terrestrial Applications instrument package, a Canadian communications satellite, Telesat-F, and an Indonesian communications satellite (Palapa-81).

STS-8. This three-day mission will carry an Indian communications satellite (Insat 1-B), and the first of NASA's three Tracking and Data Relay Satellites (TDRS-B).

STS-9, a seven day mission, will be the first flight of the European Spacelab.

(Yet More Space Program Upsets. I recently heard an interesting sidelight to the TRDS-system development saga. These three geosynchronous satellites were funded to give the shuttle orbiters a continuous real-time communications link to the ground. Since the shuttle's earth-resources' systems

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scan the earth from the cargo bay of the upside-down orbiter, an antenna on the bottom of the shuttle will transmit data (in real time) to a TRDS satellite above it. The present minimal ground station system (see Landsat-D Delay), which is now in direct communication with the shuttle for only about 30% of each orbit, will be closed down.

Sounds great? Sure it does, except for one minor point! Apparently, in order to save a few hundred thousand dollars on each orbiter, someone approved removing the only radio antenna on the underside, i.e. the side facing the satellites. This budgetary "efficiency" reduced the usefulness of the multimillion dollar TRDS system to about 30% of each orbit. Sound familiar? Anyway, I'm sure that a new ground system, rather than an expensive antenna retrofit, will solve the problem. Ed.)

Landsat-D Delay. Because of possible tracking facility conflicts with the STS-4 mission, the Landsat launch was delayed one week (until July 7th).

Launch Date Slips. The first operational launch of the Ariane rocket has been rescheduled for September, in order to allow onboard systems of the Marecs-B satellite to be repaired. The Sirio-2 satellite will also be carried, making this the first dual satellite launch with the Ariane system.

Insat-1A Satellite Tested. Initial orbital tests of Insat-1A have been completed, and its telephone, television, and meteorological subsystems are performing properly. A problem with the C-band antenna deployment was solved by firing a 5-lb. thruster for 60 milliseconds. However, the spacecraft's controllers have still not been able to deploy the satellite's solar sail.

New Delta Launch Vehicle. Canada's Telsat-F communication satellite will be launched in July on the latest version of the Delta launch vehicle, the Delta 3920/PAM. The new vehicle has a geosynchronous transfer weight capability of 2800 lbs.

Ads

FOR SALE: 12 1/2" f/6 Cave reflector, on a Star Liner Mount; rotating tube, rack and pinion/helical focusser rotates 360 degrees and has a 1 1/4" adaptor, motor drive, setting circles, 8 x 50 finder; $1300. Also, 6" f/4 RFT reflector on Edmund equatorial mount; electric drive, setting circles, 1 1/4" helical focusser; $250. Both 'scopes may be purchased for $1400 (negotiable). Contact Tony Bueno; work (408) 277-5357; home (408) 378-4716.

FOR SALE: 6" Newtonian reflector. f/7.6; 1/8-wave mirror. Excellent condition. Edmund equatorial mount on metal tripod; extruded aluminum tube; 26mm, 18mm, and 9mm Meade eyepieces. Constructed by Kevin Medlock. $400 or best offer. Aaron Haws, (408) 378-8222.

TIRION ATLASES: Field and desk editions available from the SJAA at a good discount. Contact Shea Pratt, (408) 629-2994.

FOR SALE: Celestron binoculars, 11x80; $125. Coulter 17-1/2" mirror and diagonal; in box--never used; will sell at cost. 10" f/5.6, 1/10-wave;tube assembly; 2" focuser; 30mm finder; 2.14 diagonal; professional components; $225 or best offer. 12-1/2" f/5, 1/20-wave Parks mirror and 3.10" diagonal; new in box; $25 below cost.

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is bright with moonlight or city lights. After the 4 mm, the 20 mm is my least used C-14 eyepiece. It's a magnificent eyepiece, but the magnification it provides is not that useful with a C-14; it's too high for low-power work, and too low for high-power work.

I should stress that comments about the utility of eyepiece focal lengths depend specifically on the f/number of the telescope. As I mentioned last month, "high" and "low" apply not to magnification itself, but to the ratio of magnification to aperture. With my Celestron's f/11 focal ratio, a 55-mm eyepiece gives five power per inch of aperture, and a 4 mm gives 70 power per inch. With a focal ratio of f/5, those numbers would be 2.3 and 32, respectively. The 55-mm eyepiece would then give so low a power that the dark-adapted pupil of my eye would not be wide enough to take in the entire beam of light coming out from it, and the 4 mm would give a useful, medium-high power. My forlorn 20-mm Erfle would give 6.4 power per inch, and would be very handy for low-power work. And that's exactly my experience with my 8-inch f/5 Dobson.

Ads

5-1/4" Jaegers refractor RFT; 2-1/2" focuser; polished aluminum tube; 6x30 finder; on Meade equatorial mount; slow motion; mint condition; $385 or best offer. 6" Coulter f/5 Newtonian; Novak mirror cell; Meade 1-1/4" focuser; $110. 4-1/4" f/15 Jaegers refractor; tube assembly; 2" guide scope; 6x24 finder; Pacifics mount with 1" shafts; .50 caliber WWII machine gun tripod; $375 or best offer. 3-1/4" f/15 refractor; Jaegers objective; 1-1/4" star diagonal; mint condition; $135 or best offer.

Prices on all of the above items negotiable. Contact Carlton Perry at (408) 395-1352 or (408) 293-6611.

FOR SALE: Celestron C-8, purchased in 1981. Virtually brand new and hardly used. Zoom ocular, Barlow, 9-mm Ortho, 25-mm and 40-mm Kellners, quick-knobs, wedge, tripod, coatings, etc. Best offer over $900. Call Nubar Deombeleg; (415) 538-1514.

NEW AD POLICY: If (when) your item sells please let me know. I usually run Bulletin ads for two months, without knowing whether the items have sold. If twice isn't enough tell me, and I'll run it a third time (maybe with a lower price?). You can reach me irregularly in the evenings by phone, at (415) 326-8614, or always by mail at: P.O. Box 262; Menlo Park, CA 94025. Thanks. Steve Greenberg.

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Rattley Rattles

by Gerry Rattley

"The Coma Cluster of Galaxies"

This famous group of galaxies is located near the northeast corner of the constellation Coma Berenices on an imaginary line drawn between Beta Comae Berenices and the Coma Berenices star cluster, Melotte 111; it is about a quarter of this distance from Beta Comae Berenices.

The principle member of this galaxy cluster has been assigned two numbers in the NGC Catalogue, NGC 4884 and NGC 4889. However, its real position is closer to that given for NGC 4889, so this has become its accepted NGC number. (It is now usually said that NGC 4884 is identical to NGC 4889.) NGC 4889 is a 12-1/2 magnitude giant elliptical galaxy at 12h 57.7m +28° 15'. (1950 coordinates; the coordinates for 2000 are 13h 00.1m +27° 59'.) This galaxy is a slightly elongated fuzzy ball about an arc second in diameter. The axis of the elongation is east-west. About half an arc minute to the west of NGC 4889 is the second brightest member of the Coma galaxy cluster, NGC 4874. It also is a giant elliptical galaxy, but it has a round shape, and is about half a magnitude fainter than NGC 4889.

Figure 1 shows these two galaxies (about a third of the way up from the bottom center) along with sixty-one other galaxies, in a three-quarter degree field. In this diagram, north is up and the coordinates are for 1950. The faintest galaxies shown are magnitude 15 1/2. NGC 4911 and NGC 4921 are magnitude 13-1/2 spirals. NGC 4848 is a 14th magnitude barred spiral. NGC 4860, 4865, 4881, 4895, and 4907 are all magnitude 14 1/2. All the rest are 15th magnitude or below.

A magnitude 15-1/2 star that got recorded as a galaxy is listed in the diagram as I 3964. NGC 4851 and I 839 may be the same object, or they may be a double galaxy. NGC 4898 is a double galaxy.

Using this diagram as a guide, how many of these faint galaxies can you see with your telescope? You can also use the diagram to check your scope's limiting magnitude and improve your observing skills! Some of the 14" (and larger) telescopes in the club should be capable of seeing most of these galaxies. Use a moderate power (100x to 150x), and pick a night with good seeing and dark skies. I have observed most of these galaxies (to magnitude 14 1/2), with my 10-inch f/5.7 at 115x, from Fremont Peak. (The seeing and transparency were good, and there was no wind or dewing.)

I started this project of identifying the galaxies in this cluster because I am currently building a card catalogue of deep-sky objects. While making out a card for NGC 4872, I discovered a discrepancy in its position (as listed in the NGC Catalogue and the Skalnate Pleso Atlas catalogue).

The Skalnate Pleso Atlas catalogue lists NGC 4872 and NGC 4889, but only plots NGC 4872. The AAVSO atlas also plots only NGC 4872 (in the same wrong position as the Skalnate Pleso). The Tirion atlas plots NGC 4872, NGC 4874, and NGC 4889. (It also gives the erroneous position for NGC 4872.) Burnham does not list NGC 4872.

The real NGC 4872 is a magnitude 15-1/2 object, just south-west of NGC 4874, while the fictitious object listed in the Skalnate Pleso is magnitude 12 1/2, and about half a degree too far north. The "X" in the diagram marks the erroneous position of NGC 4872.

At our last Fremont Peak star party, I had an opportunity to search for this misplotted galaxy with a 16-inch telescope and found that it wasn't there. Although I could not see the real magnitude 15 1/2 NGC 4872 either, I am sure that the magnitude 12 1/2 listing is incorrect!

The galaxies NGC 4874 and NGC 4889 are correctly plotted in the Tirion atlas. The two brighter stars in the diagram are correctly plotted on all three of the atlases mentioned.

You may wish to compare the diagram to a photograph of the Coma galaxy cluster. The best one that I have run across appeared in the March, 1973 issue of Sky & Telescope, on page 140; another good photo appeared on page 13 of the magazine's July, 1973 issue. The most recent photograph appeared on page 366 of the May, 1980 Sky & Telescope.

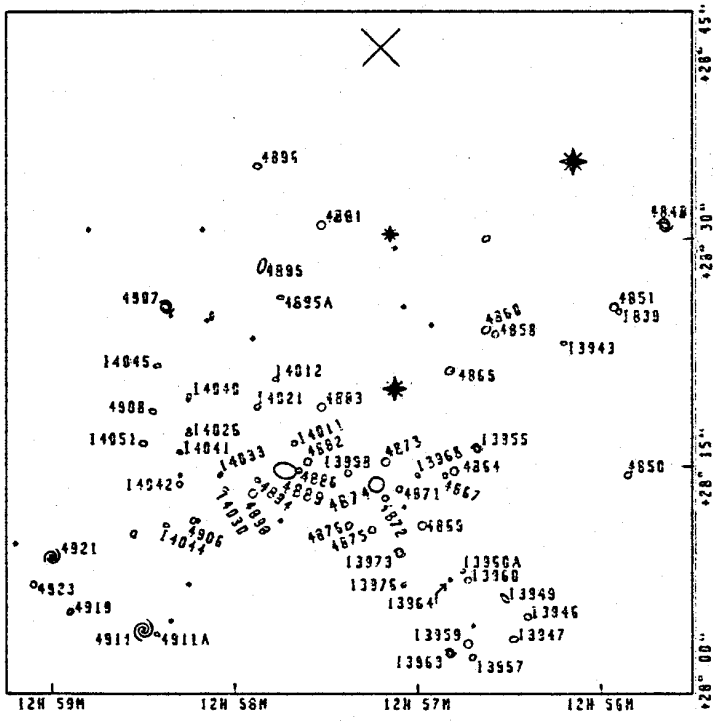

Figure 1. The Coma Cluster of Galaxies.

Letters to the Editor

To Whom It May Concern:

WOW!!!!! What a great Bulletin. I saw my first San Jose Bulletin today and I am very impressed. Congrats to you all. It is very good. Would you please arrange to send me/us one every month. Thanks a lot.

Michael D. Sugarman
President, Riverside Astronomical Society

Of course. For a fan letter like this I'll do anything! (Well, almost anything.)

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WEBSTER	LARRY	5291 ELROSE AVE.	SAN JOSE, CA	95124	408-267-4133
WEISS	IRA	6565 CATAMARAN ST.	SAN JOSE, CA	95119	
WILD	NORMAN	7557 ORANGE BLOSSOM DR.	CUPERTINO, CA	95014	408-252-8966
WINTER	PATTY	P.O. BOX 537	MENLO PARK, CA	94025	415-326-8614
ZEIDERS	JACK	2961 MAGLIOCCO DR. #3	SAN JOSE, CA	95128	408-246-6189

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BEAL	CYNTHIA ANNE	P.O. BOX 297	SILVERADO, CA	92676	
BLACK	ROBERT H.	585 DARTMOUTH AVE.	SAN CARLOS, CA	94070	
CHERRINGTON	WILLIAM	367-21ST AVE.	SAN FRANCISCO, CA	94121	415-752-9420
CORNETT	PAUL	38340 LOGAN DR.	FREMONT, CA	94536	
FREEMAN	JAY	P.O. BOX AJ	BELMONT, CA	94002	415-592-9776
JONES	DENNIS	13, GAINFORD GARDENS, MOSTEN	MANCHESTER, ENGLAND	M1096M	
KESTNER	ROBERT	1792 MONTROSE DR.	CONCORD, CA	94519	
LARSON	RICHARD	546 SHADOW GLEN	SAN JOSE, CA	95129	
LEITNER	HARRY O.	425 HAZELWOOD DR.	SOUTH SAN FRANCISCO, CA	94080	
MANLY	PETER L.	1533 W. 7TH ST.	TEMPE, AZ	85285	
MARLING	JACK	891 LAGUNA ST.	LIVERMORE, CA	94550	
PETERSON	JACK	1840 YOSEMITE DR.	MILPITAS, CA	95035	408-262-1457
SCOTTEN	GEORGE	16 RESERVOIR RD.	SPRINGFIELD, VT	05156	
STARK	VIRGINIA	541 S. 12TH STREET	SAN JOSE, CA	95112	
STEYDING	WILLIAM	24405 LOMA PRIETA AVE.	LOS GATOS, CA	95030	
TAKAHASHI	ALLEN	5916 ORCHARD AVE.	RICHMOND, CA	94804	
WELLS	J.D.	BOX 9651	SAN JOSE, CA	95157	408-253-5309
WILSON	KEN	336 GATEWAY, #204	PACIFICA, CA	94044	
WOLLAN	CRAIG	669 HAMAUN DRIVE	SAN JOSE, CA	95117	408-246-4851
ZHIVAGO	PHILIP & KRISTIN	417 TASSO ST.	PALO ALTO, CA	94301	