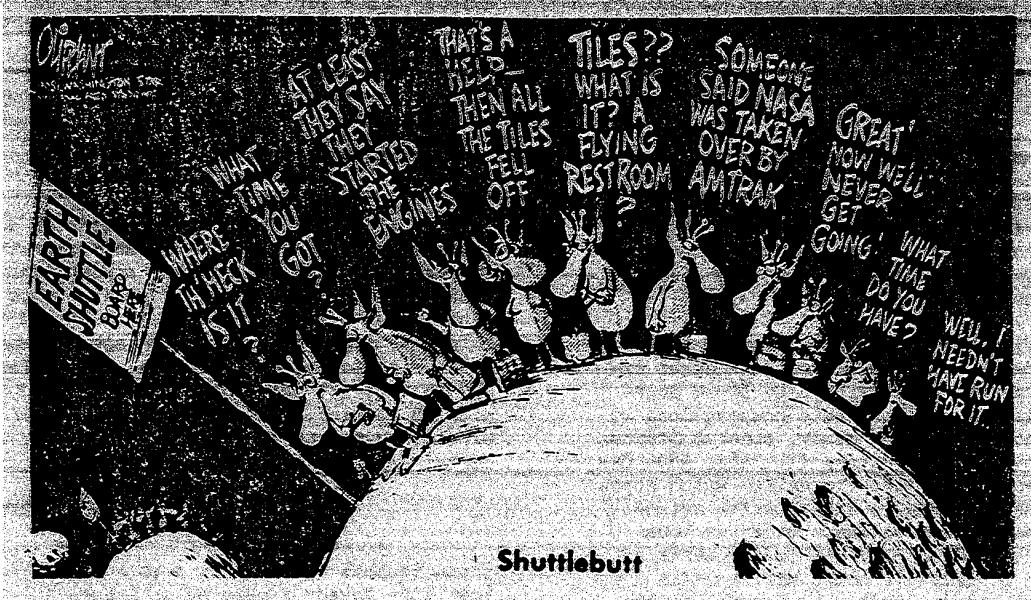


the san jose astronomical association

SJAA

january 1982

- Jan. 2 Indoor Star Party at the Los Gatos Red Cross; 7:30 pm on. Bring all your newly-received astro-goodies. There'll be a parking lot star party to try out your new (or old) telescopes on the Orion Nebula, Pleiades, etc. All ISP's feature a mirror-making class from 8-9 pm, and show and tell at 9.
- Jan. 9 General Meeting, Room S-34 at De Anza College (near the Planetarium). Ernie Piini will show slides of his tour of the USSR last summer, including the total solar eclipse. 8:00 pm.
- Jan. 15 Board meeting at Frank Dibbell's, 710 Georgia Ave., Sunnyvale; 733-7208. 7:30 pm.
- Jan. 16 Star Party at Sanborn Canyon County Park. If the weather is bad, we'll have an indoor Star Party at the Los Gatos Red Cross instead.
- Jan. 23 Star Party at Henry Coe State Park. The combination for the SJAA padlock is 4565.
- Jan. 30 Indoor Star Party. 7:30 pm on. Bring astro-slides to show off (and a projector!).
- Feb. 6 General Meeting, Room S-34 at De Anza College. SPACE SHUTTLE: Steve Greenberg was there for the first landing of Columbia, and the second launch and landing. Come see his slides. Also, MARS: Gerry Rattley and Jim van Nuland tell how to make the most of the upcoming opposition of the red planet. 8 pm.
- Feb. 13 Indoor Star Party, Los Gatos Red Cross. 7:30 pm on. As always: mirror-making class at 8; show and tell at 9; cookie-eating and other spontaneous activities, all evening.
- Feb. 19 Board Meeting. This month at Don van Zandt's, 168 Waverley (between Hawthorne and Ruthven), Palo Alto. 327-3158 for directions. 8 pm. All interested persons invited.
- Feb. 20 Star Party at Henry Coe State Park, with fallback to the Los Gatos Red Cross for an ISP if the weather is bad.
- Feb. 27 Star Party at Sanborn Canyon County Park, reverting to an ISP at the Red Cross if necessary.



SAN JOSE ASTRONOMICAL ASSOCIATION 3509 Calico Avenue, San Jose, CA 95124

President: Denni Frerichs, 15022 Broadway Terrace, Oakland, CA 94611. (415) 654-6796. Bulletin Editors: Patty Winter and Steve Greenberg, P.O. Box 262, Menlo Park, CA 94025. (415) 326-8614.

Membership rates: Adult \$18/yr; Junior (under 12) \$12/yr; pro-rated from June. Membership includes a subscription to Sky & Telescope. Subscriptions to the SJAA Bulletin are available to non-members for \$7/yr.

OBSERVATIONS

by
Steve Greenberg and Patti Winter

Hi. I'm Patti Winter, and he's not. Contrariwise, I'm Steve Greenberg, and she's not. Between us, we're the new Bulletin editors, and this is our second effort. At this point, we'd like to thank Denni Frerichs and all of our regular contributors for making this a surprisingly easy transition. Now that we're getting our sea legs, we want to ask all SJAA members (and Bulletin subscribers, Jay) to feel free to corral us (for short times, anyway) at club functions and let us know what you would like to see printed in your Bulletin. You can also write; send your comments to us at the following addresses:

Favorable comments: Patty Winter; P. O. Box 537; Menlo Park, CA 94025.

Unfavorable: Steve Greenberg; P. O. Box 262; Menlo Park, CA 94025.

Thanks Patty. However, I noticed that some typos crept into the text before the compositor got it. For our readers' benefit, here are the corrections:

Favorable comments: Steve Greenberg; P. O. Box 262; Menlo Park, CA 94025.

Unfavorable: Patty Winter; P. O. Box 537; Menlo Park, CA 94025.

As a matter of fact, if you feel strongly about it (or even if you don't), you can help out even more by writing or sending us some of what you'd like to see in print. Given our space limitations, we can't promise to use everything. But we'll use as much as we can. We feel that the easiest way to make this bulletin more interesting to more people is to encourage more people to contribute to it.

Just a few general rules: (1) We prefer legibly written, printed, or typed material. (We will attempt decipherments, but can guarantee nothing when such material is received.) (2) If there is a time value to your material, please get it to us by the 20th of the month before the issue in which you wish it to appear. (3) As a rough guide, assume that five eight by eleven pages, typed with double-spaced 47-character lines, equals one page in the Bulletin, and try to hold submissions to (or under) this length. (4) No anonymously written or submitted material or letters will be printed. However, all requests for the use of pseudonyms or no name at all will be honored, as long as the editors can contact the author before publication.

MAGAZINE PROBLEMS: SJAA treasurer Shea Pratt reports that some members have been having problems with their *Sky & Telescope* subscriptions (and/or with the Bulletin). If you're one of those people, please contact her by the end of the month. Drop a note to her at 474 Safari Drive, San Jose, CA 95123; include your phone number so she can call you.

THE INTERNATIONAL HALLEY WATCH has just asked experienced double star watchers (with 6 to 50-cm aperture telescopes) wishing to contribute observations to a short-term astronomical-seeing study, contact Stephen J. Edberg, Jet Propulsion Laboratory (T-1166), 4800 Oak Grove Drive, Pasadena, CA 91109. The Halley Watch hopes that, from these observations, a quantitative method for estimating atmospheric steadiness under various conditions can be derived. (In my opinion, studies of the next apparition of Halley's comet will benefit greatly if such a method is developed. Indeed, in the long run, an expanded ability for coordinating observations and data sharing among amateur and professional astronomers can also result. S. G.)

Gerry Rattley has a new observing site southeast of Hollister. He goes there on clear star party nights; call him if you'd like to go along some time. (408) 732-0202.

FREE NASA INDEX: The Astronomical Society of the Pacific has just published a subject index to NASA's astronomy books (many of which are non-technical). Ordering information for the books is also included. The index is available free by sending two first-class stamps to: NASA Index, A.S.P., 1290 24th Ave., San Francisco, CA 94122. (Since the A.S.P. is a non-profit group doing lots to publicize astronomy, think about sending more than stamps with your request.)

AUCTION: The Second Annual SJAA Astronomical Auction is still a few months away, but if you expect to be selling any large-ticket items, now is the time to let Denni or another board member know about it. We'll also be needing volunteers for various jobs—some before the auction, some that night. More information next month, but please be thinking about what you can do to help. The auction was a big fund-raiser for the club last year; it's an important event.

We want to have you listed correctly on our master list—not only correctly, but the way you prefer (nickname or given name, for instance). Please let us know of any changes you want after you check the new roster and your mailing label. (And thanks to Dave Ambrose for supplying us with a couple sets of labels until we could make our own.)

IN CURRENT MAGAZINES: SJAA members have a habit of getting their photos and writing published in major astronomy magazines, and January is no exception. This month's *Astronomy* features a beautiful globular cluster photo by John Gleason, and Bob Fingerhut's pre-eclipse wide-angle photo that was in the November *Astronomy* is now in *Odyssey*, Astromedia's children's magazine. Congratulations, guys!

NEW FUTURE ASTRONOMER: Luke Swayze, born to Bruce and Barbara Swayze on November 17, 1981. Time (UTC) 1700; Mass (measured in one earth gravity) 8 lbs., 14 oz. Congratulations, Barbara and Bruce!

FOR SALE: Celestron 2" diagonal for C5/C8/C11, with adaptor plate for 1-1/4" eyepieces, less visual back for 1-1/4" eyepieces, mint condition, \$125. Bill Dellings, (415) 792-9206.

FOR SALE: 4-1/4" reflector, f/11 quartz mirror made by professional optician; equatorial mount with clock drive (R.A. and Dec.); 2" eyepiece; \$300. Scott Hares, (408) 629-1600 or (408) 225-0330.

FOR SALE: Coulter 17.5" optics with two diagonals; \$700. Odyssey 13.1" reflector modified with 60mm finder and 2" focuser; superb mirror; \$600. 4-1/8" achromat Jaegers f/15 with 2" guide scope and 24mm finder on a Pacifics equatorial mount; \$550. 5" RFT refractor (Jaegers coated achromat) on Meade German equatorial mount; one eyepiece; \$475. Parks 12" f/5 optics with 3.1" diagonal; \$330. 10" tube assembly with 2" focuser, 50mm finder, and Coulter f/5.6 mirror; \$225. 6" f/5 RFT tube assembly; \$150. C.J. Perry, (408) 866-6128 or (408) 293-6611.

Frank Dibbell (looking at a VOIR button): "Voyeur? Is that like Voyeur 2 peeing at Saturn?"

Patty Winter: "If the county turns Mt. Umunhum into a jail, what are we going to do about our star parties up there?"

Jay Freeman: "Simple: SJAA members should all go out and commit misdemeanors the week before the star party."

SJAA

The SJAA is a member of the W.A.A., an association of amateur astronomy clubs in the western United States. The W.A.A. has two main functions: (1) to sponsor a yearly astronomy conference, usually held in July by some host society; and, (2) to present (at this conference) the G. Bruce Blair Gold Medal to an amateur or professional astronomer, in recognition of his or her efforts to promote amateur astronomy.

At the next board meeting, to be held in Fresno on January 30, nominations for the next recipient of this award will be taken from the delegates present. The award is international in scope: past winners have included Patrick Moore and David Dunham. Closer to home, John Dobson, Frank Miller, Kingsley Wightman, and Paul Zurakowski have been presented with the medal. Last year's winner was Ashley McDermott, from the College of the Desert, for his efforts in promoting the Riverside Telescope Makers' Conference. The SJAA will be sending a delegate to the board meeting (probably myself, Steve Greenberg, or Gerry Rattley) with a nomination (to be decided upon at the January 15th board meeting). We are now open to suggestions as to whom we should nominate. In the past, nominations from other local clubs have included Doug Berger and Ben Mayer. Last year, we nominated Don Machholz.

As president, I would like to see the recipients of this medal expanded beyond our backyard (with the problem that local clubs consistently can have - of patting each other on the back) into a fully national or international award. What would you think about our club nominating Richard Berry, Walter Scott Houston, or Hans Vehrenberg? Just think of how much each of these men has contributed to amateur astronomy! Personally, I am endorsing none in particular, and all in general. If you have any ideas about whom you would like to see awarded this year's G. Bruce Blair Gold Medal, please call me or one of the other board members; or, attend the January 15th board meeting at Frank Dibbell's home.

Another item on the agenda of the January 30th W.A.A. meeting concerns remedying the problem of low attendance at their summer conferences. The suggestion has been made that the W.A.A. split the host duties as follows: alternate years, meeting one year with the Riverside Telescope Makers' Conference at the end of May, and in the next year meet (in September) with the Astronomical Association of Northern California. It is my opinion that, while the AANC could do nothing but benefit from the joint effort, the RTMC will be thrown into confusion. Why? (1) The RTMC is jammed with activities, so much so that already one person can not attend them all; (2) the facilities are already crammed full; and, (3) whether we like to admit it or not, telescope making is a separate hobby from amateur astronomy -- closely related, but different. The RTMC is for a specific purpose -- telescope making.

It was suggested at the last W.A.A. winter board meeting that an Astronomical Association of Southern California (AASC) be formed to balance the voting power in the state. I think that this would be a good move for the W.A.A. to endorse. It could still alternate the locations of its annual conference, and leave the RTMC alone.

I realize that these items of business have little to do with the internal running of the SJAA, and that many of you could not care less if these events occur one way or the other. This is a valid opinion, of course. However, the SJAA is present at, and does give its opinions to, the yearly W.A.A. board meetings. Our delegate should have the backing of more than just a selected few persons' views. Please let the SJAA board know what yours are.

Clear skies,
Denni Frerichs
(415) 654 - 6796

SPACE TELESCOPE TOUR
by Bob Fingerhut

On Friday, December 4th, about ninety SJAA members and guests were treated to a tour of the Space Telescope mockup at Lockheed. Tom Styczynski of Lockheed gave us an informative presentation, and answered endless questions by two groups of SJAA people.

The full-sized mockup consists of three large modules which are too large to be assembled even in the Hi-bay building. The telescope contains an optical assembly, communications and control systems, solar panels, and instrumentation. There was also a small (approximately 6 foot) Space Shuttle mockup with a correspondingly-sized Space Telescope.

I would like to thank all of the people who came and made this tour successful, as well as the people who helped chaperone and register our group. I would like to give special thanks to Tom Styczynski and Lockheed on behalf of all of us who enjoyed this fabulous tour.

<And special thanks also to Bob and to Steve Greenberg for all the time they spent organizing the tour. It was a smash success! P.W.>

THE SJAA'S NOVEMBER STAR PARTIES
by
Jay Freeman

The November star parties were adversely affected by weather. The one on the twenty-first was simply rained out. That evening, many SJAA regulars came to the Los Gatos Red Cross building for an impromptu indoor session, so the weekend was not completely wasted for astronomical purposes.

The star party on the twenty-eighth had more subtle weather problems. There had been heavy rain for much of the previous week, and there was still cloud cover overhead when I arrived at Fremont Peak, but it blew away by seven o'clock. A trace of haze remained for a while, but by eight the sky was pretty dark. There was no fog below, so the lights of Salinas were a bother: but, there was no dew. Unhappily, it was very cold. The temperature was probably in the mid- to high-30's; and some ten knots of wind put the wind chill factor below freezing. I had my heavy wool jacket, but hadn't brought my heavy wool sweater to wear under it. Consequently, I was sufficiently chilly that I did not set up my C-14. I guess that a down parka should be my next telescope accessory. The cold also deterred Bill Ramstad from setting up any equipment, but Chuck Olson set up his new 13.1" Coulter Odyssey I. We alternated observing and warming up inside his heated RV.

The Odyssey was working well. At 58x, we had a lovely view of spiral structure and ionized hydrogen (H II) regions in M33, saw the Merope nebula in the Pleiades, detected traces of the filamentary structure in the Dumbbell Nebula, and found many colored stars in the Perseus Double Cluster. At 140x, M15 was resolved almost to the core.

The delivery time for Chuck's Odyssey I was almost exactly 16 weeks. It does not come with a finder, so he had installed one from an old 60-mm refractor. The finder optics were wretched: nevertheless, we could satisfactorily line up the telescope by using the patterns of bright stars visible in its field. The seeing was not good enough to permit field testing the Odyssey's optics.

A FUNNY THING HAPPENED ON
THE WAY TO THE SHUTTLE
by
Steve Greenberg

(Being the amusing sidelights left out of last month's Columbia report.)

At eleven-thirty on the morning of November 2nd, I flew into the West Palm Beach, Florida airport on my way to the STS-2 launch. Six hours later, courtesy of the same airline, my clothes arrived at the Orlando International Airport. However, did I go out into the Florida sun, sightsee, relax, then drive to the Kennedy Space Center in my waiting rental car, and settle in at a nearby motel? Nope, no mundane touristy stuff for this professional! I spent much of my newly acquired leisure time transacting business: trying to rent a car so I could drive to Orlando. Indeed, this challenging task was arranged (finally) by the agency next door to the one that the airline should have informed (in September!) of the change in my travel plans, after the first launch delay.

I woke up at five the next morning (after a solid five hours sleep) determined to start the new day off with my best foot forward. However, by six-thirty I had already accidentally driven far into the sprawling space center through the wrong entrance. If I had been stopped, and found to be in possession of a press badge, it could have been pulled on the spot. Since I didn't even have my badge yet, visions of a summary court martial and firing squad ran through my head. So, I made a fast U-turn and retreated at a high warp factor to the outlying badging area. When I got there, I found out what I had actually missed. My two immediate predecessors in line at the badging station had made a similar mistake, and they had gotten a really spiffy military escort off site. I couldn't help but wonder what their previous day had been like, but my sense of decency kept me from asking.

Before the morning press briefing started, I arranged for my first close look at the Columbia by signing up for the next tour of the space center and Patrick Air Force Base. My brother, who was with me as an official photographer, is a retired Major in the Air Force Reserve, so he asked some Air Force personnel about further opportunities for seeing more of the air base. He was told this was absolutely impossible. Their facilities were stretched to the limit because so many brass hats had descended on them from the Pentagon. They said the situation was so bad that at meetings, one-star generals were being sent out for the coffee.

After the press briefing, we went out to the parking lot where the buses for the tour participants were waiting. Walking across the lot, we were intercepted by a 10-passenger van. The driver called out to ask us whether we were going on the tour. We said yes, while I thought, "This is incredible - a personalized tour!" As we were getting inside, my brother asked if we were going straight to the Columbia.

The driver looked at us strangely, and asked, "Aren't you the people who wanted to cover the SWAT team demonstration?"

"No," we said, "Although it would be interesting to do it later, when we have some spare time." After giving my brother another strange look, he said, "That's funny; are you sure you didn't arrange to see them?"

At about this time another photographer started running toward us. He was heavier than my brother, but had the same color hair, was wearing the same color and style hat and shirt, and was carrying exactly the same camera bag. After explanations and apologies all around, we straightened everything out, got into the correct bus, and took a marvelous set of photos of Columbia during the next two hours.

When I originally registered for this trip, I also had an easy time setting up our next tour. As a matter of fact, so did everybody else -- I was the 250th

person to sign up. This little jaunt was officially billed as "a sunset photo opportunity". About half an hour before sunset, over 350 photographers condensed themselves and several tons of bulky equipment into six or seven school-type buses to take advantage of the unique photo locations that NASA had carefully chosen for us by the roadside.

Indeed, we all did photograph Columbia at sunset (as advertised), and from "different" locations (also as advertised). However, the photographers wound up being separated only by about two or three feet (not advertised), thereby causing a scramble for the "best" view (also not advertised). I can guarantee that 350 "unique" sets of photos definitely did not result from this "photo opportunity". I suspect the arrangement was convenient only for the platoon of NASA security guards, military police, and guard dogs, who kept us carefully penned in. ("Stay on THIS side of the road, please!")

In some respects, the week-long launch delay worked painfully to my disadvantage. Since it rained on and off the entire time, and there were few reporters and photographers available, a new and very hungry generation of mosquitoes and no-see-ums were waiting for the donations amply provided by those who returned. (See Tom Wolfe's "The Right Stuff" for an accurate description of the results.) It was a good thing that, with fewer press people there, we had more room for maneuvering (SLAP!). From a reliable source I found out that "so much insect repellent is used here, the bugs have evolved to the point where they actually need it in their diet".

Speaking of the natives, we were also encouraged not to walk in the tall grass: "I tell you someone saw a RATTLER HERE, just yesterday!" ... "Are you REALLY going to sleep near your equipment? There are SNAKES around!"

A large number of signs, many of them in the water, urged us not to be as foolish as the people who had put them there, and "Do Not Go Into The Water" - because of: water moccasons, cottonmouths, and/or alligators. Nothing was mentioned about the skunks, black widow spiders, and giant snapping turtles, so it couldn't have been all that bad.

The day before launch, a group of about 70 mosquito-bitten photographers (including myself) and an equal number of mosquitos, were driven out to a cold, windy, and wet (but otherwise invigorating) sunset "shoot" from the shoreline railroad, on the side of the road where we couldn't go the week before. (But, perhaps because it wasn't sunset yet, we weren't allowed to go either into the sand dunes, or onto the OTHER side of the road.) On the way, we drove slowly past a small group of photographers (in water up to the tops of their hip-wader boots) busily setting up remotely-triggered automatic cameras. In the tall grass near the water was a "Beware Of Snakes" sign. In the water near the grass was a "Do Not Enter The Water" sign. Further out was a "Stay Out Of The Water" sign. Some yards further on, a "Beware Of Alligators" sign had been posted. About twenty yards past this sign, one of the group had just beaten off a water moccasin with his tripod. Back on the road, far from the tall grass, and way out of earshot of the photographers, a NASA guard responded to our bus driver's amazed, "They're not SUPPOSED to be out THERE, are they?" with, "I'M not going out there to bring them back -- would YOU?"

Late in the afternoon on the day of the shuttle launch, I flew back from Orlando (via Atlanta) to San Francisco. When I arrived, at about nine PM, I found out that the airline (yep, I'm a glutton for punishment -- it was the same one) had lost my tripod case. (The tripod was included: there was no extra charge for the service.) Furthermore, in order to make amends, they were quite eager to deliver them to me as swiftly as possible. So when they arrived at my apartment, bright and early the next morning, I had only been asleep six hours! Such efficient service would have been commendable ... the night before!

ASTRONOMICAL OBSERVING AMONG THE "CRITTERS"
AND UNRELATED PHENOMENA
by
Don Machholz

-5-

~~SZQAT~~

(Last month, Don gave suggestions on how to deal with potential people problems while out in the wilds stargazing. This month, the subject is fauna.)

A few years ago, I spent some time at another comet hunter's home in Colorado. He lives out in the wilderness, on top of a mountain. One night, before I went out to observe, his wife told me, "We have a bear that comes around here at night. Just don't bother her cubs, and you'll be o.k." Well, I still went out observing, but the bear never showed up; so I was able to spend my time comet hunting and not bear hunting!

A while back, one of my friends bought a telescope and began observing with me up at Loma Prieta Mountain, forty minutes south of San Jose. One evening I was unable to go up there, and suggested he go by himself. "Oh, no," he said, "I can't do that. I'm afraid of the critters." We then discussed various ways of handling the problem, including feeding them lunch meat, "Which would work o.k.," my friend said, "until you run out of meat."

Generally speaking, animals are less complicated than people. They are usually more afraid of you than you are of them.

But, when you set up telescopes on their paths, or next to their feeding grounds (and do so at night), you can expect to run into some creatures, once in a while. Let's divide these animals into two groups: (1) those that could harm you (paragraph one), and (2) those that can't (but can scare the daylights out of you anyway: paragraph two).

In this area, you aren't very likely to run across many animals that can harm you, such as: bears, big cats (mountain lions); certain types of snakes, spiders, and scorpions; wild dog-packs; and, rabid mammals. Generally, if a person makes some noise, all the animals nearby will know where you are (if they haven't already smelled you), and will most probably try to avoid you. And, should they not do so, the wisest course of action is to get out of their way! You may feel cowardly hiding in a car while a bear "misuses" your telescope. But, just imagine what a great story you'll be able to sent to the Readers' Digest!

With regard to category (2): as FDR said, "The only thing to fear, is fear itself...". Almost every observing session I've been on has been momentarily disturbed by the realization that something is walking or crawling through the bushes surrounding me. On a still night, even the tiniest bird hopping from twig to twig, sounds loud. For that reason, I leave a radio on, which stops my hearing every little sound, and (I think) helps keep the animals away. These animals include: (1) domestic dogs (I've met quite a few, and they usually respond well to a friendly voice); (2) raccoons (I've seen very few, but they're numerous at some sites); (3) mice and rats (which I no longer try to chase away); (4) deer (they quietly tip-toe in close, before darting away); (4) cows (curious creatures); (5) bats (hard to detect, but often present); and, (6) birds (which I never considered much of a problem, until one landed on my wife's knee while we were lying on our backs, watching meteors). I don't want to give you the impression that every observing site is a cross section of a city zoo. The chances are that you'll hear these animals, rather than see them; and at least now you have some idea of what's really out there. As you can see, there is usually nothing to be afraid of.

I should also mention mosquitos. The slightest wind will send them away, but on still nights they can be a problem. I bundle up as much as I can stand, and use insect repellent (keeping it off the optics) to cover whatever isn't clothed.

There are two other, possibly scare-provoking phenomena, unrelated to the animals near you, that I should also mention. The first happens to me perhaps

two or three times a year. I'll be gazing into an eyepiece at a dark sky, and the whole field of view suddenly lights up. For an instant the sky is brighter than when the full moon is up, and then the field darkens again. This occurs in complete silence.

What is it? Assuming that nobody is shining a flashlight around, it is probably either: (1) a brilliant meteor lighting up the sky; or, more likely, (2) an high-voltage electrical transformer that has shorted out due to high humidity (dew formation), or to a bird tangling with the high-voltage wires (as the papers generally report). Even when this occurs twenty miles away, the night sky lights up briefly, and - well - it's breathtaking! Woe to astrophotographers who have their shutters open when this happens.

The second phenomenon concerns artificial satellites. Sometimes they can be seen as a bright light coming out of the southern sky, usually heading west, after being launched from Vandenberg Air Force Base (near San Luis Obispo). Conversely, sometimes satellites can be seen reentering the atmosphere, looking like a slow moving meteor. Fear not, we are not being invaded.

In summary: (1) Don't set up at dumps or at other animal feeding grounds; (2) wear (protective) clothing, as bare feet, legs and hands would make that rare bite much worse; (3) leave a radio on, or make other (low volume) noises to encourage animals to keep their distance; (4) keep your equipment off the ground, or out of the reach of rodents; and, (5) remember that these critters usually don't wish to harm you -- they have as much right to use the outdoors as you do -- (re-read that a few times) and are willing to avoid you.

COMET COMMENTS

by
Don Machholz

No new comets are within reach of amateur telescopes, as we draw near the end of 1981, but this year did not lack in bright comets! For parts of the early half of the year, we had at least four comets visible at once. Next month, I'll discuss in more detail the discoveries and recoveries of 1981. Since August 29th (Comet Howell, 1981k), there have been no new discoveries or recoveries. The "Sungrazing" comet that hit the sun in August, 1979 (see last month's column) now has been given a name: Comet Howard-Koomen-Michels (1979 XI).

For those of you who are interested in more information than this column can offer, a wonderful, informative newsletter devoted exclusively to comets is available. Called the Comet News Service, it is published four times a year by Editor Joseph Marcus. A subscription costs \$4 for one year, or \$8 for two. To subscribe, send a check (made out to the Comet News service) to: C N S; McDonnell Planetarium; 5100 Clayton Road; St. Louis, MO 63110.

Great Comets. The "Daylight Comet", or "Great January Comet", (1910 I). Discovered by South African diamond miners on January 12th, 1910, this comet was one of the brightest ever observed. Two weeks later, it was visible from most of the northern hemisphere in the daytime, only four degrees from the sun. Within a week, its tail had grown to forty degrees in length, and had taken on a yellowish appearance. It got close to the sun, about half as far from it as Mercury, and then sped away into outer space.

In May 1910, Comet Halley made its appearance. It was not as bright as 1910 I, and some people who say they remember seeing Halley's Comet actually observed the much brighter comet, now known simply as the "Daylight Comet."

THE CELESTIAL TOURIST SPEAKS

by

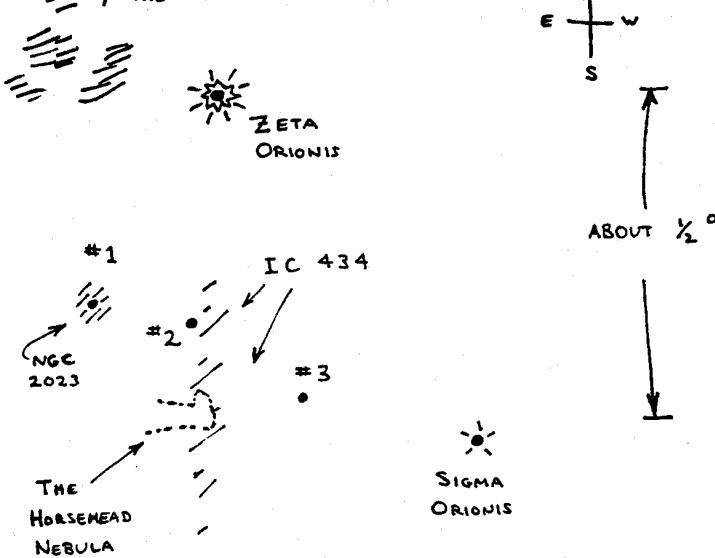
Jay Freeman

I regret that the Ancients had no telescopes. There are many deep-sky objects whose beauty and subtlety warrant mythic or poetic comment. Foremost among these, I think, is the Horsehead Nebula. Why was this great, softly luminous stallion placed under Orion's belt, its powerful neck frozen in graceful, magnificent glory?

The Horsehead Nebula, more prosaically known as B33 (Barnard 33), is a small dark nebula located about half a degree south of Zeta Orionis -- the southeastern star in Orion's belt. It is visible only because it is silhouetted against the "bright nebula" (actually a very faint nebula) IC 434. The Horsehead is small in angular size. From the tip of the "nose" to the back of the "skull", the "head" is only a few arc minutes across. The head is not upright -- the horse faces north, toward Zeta. A long neck stretches out to the east of the head proper, for a total distance several times the length of the head itself. This neck is even more difficult to see than the head, since the background nebulosity is fainter.

Burnham's Celestial Handbook (pages 1303 to 1344; bound editions) provides a variety of photographs, which can be useful in locating this celestial steed. The photo on page 1329 shows the "neck" well. Burnham states that the photo on page 1344 "hints at the difficulty of visual observations of the Horsehead". In my opinion, this comment is a severe understatement. To simulate the difficulty properly, I had to take the photo in question into a bedroom lit only by light shining through the door from the living room, stick my head and the book into a closet, hold the book at arm's length, and squint! Nevertheless, the object can be seen with a small- to medium-sized telescope. My first view of it was through a six-inch hand-held Newtonian at 36x. This also happens to have been the best view I have had so far. It was from Henry Coe State Park, on a very clear September night, while a dense fog blocked city and town lights for miles around. I could hold the "head" with direct vision, and see two or three head-lengths of "neck" with averted vision.

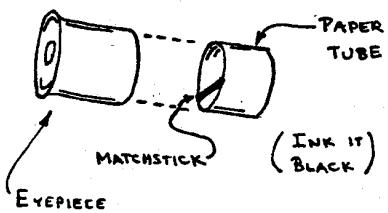
NGC 2024,
THE "TANK TRACKS"



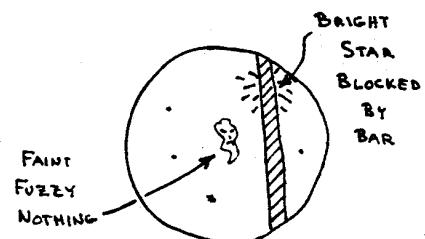
THE FIELD OF THE HORSEHEAD NEBULA (Drawn unreversed, as it appears in a Newtonian, binocular, or a Schmidt-Cassegrainian with no star diagonal.)

In the first figure, I have diagrammed some of the stars and nebulae near Zeta Orionis. Here is the star-hopping technique that I use to find the Horsehead: (1) Starting from Zeta, move the field southward about half a degree to pick up three approximately eighth magnitude stars, #'s 1, 2, and 3 in the drawing. The easternmost star of this trio (#1) is surrounded by the bright nebula NGC 2023. If conditions aren't good enough to allow you to see NGC 2023 (it has a higher surface brightness than IC 434), then the Horsehead will probably also not be visible. (2) In any case, to find the Horsehead, move the telescope from star #1 to star #2, make an almost right angled turn southward, and move the telescope by a distance equal to that separating star #1 from star #2. At the low powers you should be using while looking for this low surface-brightness object, all three stars, plus the Horsehead, might well be in the field at once. So, you will not have to move the telescope. Just look in the place indicated.

Zeta Orionis might also be in the field of view, thereby causing a problem. The glare from Zeta can dazzle your eye, or be scattered by your optics, and render the Horsehead undetectable. To fix this difficulty, I suggest using as many of the following hints as possible: (1) Maneuver Zeta out of the field. (This might not help if light from Zeta is reflected from the inside of your eyepiece barrel or focuser tube into the eyepiece's front lens. Some fuzzy black paper rolled to fit inside the eyepiece barrel might help.) (2) Make sure your optics are clean and free of dust and dew. (3) Try a multicoated eyepiece. (4) Try an occulting bar. (See the second figure.) To make a simple one, roll a piece of paper into a tube that fits snugly inside the barrel of your low-power eyepiece. Glue the tube together along an overlapping seam, and cut one end off square. Glue a wooden matchstick, or some similar object, chordwise across this squared-off end. Blacken the whole thing with ink or paint. Then, carefully push the tube, matchstick-end first, into the front end of the eyepiece barrel until the matchstick comes into sharp focus. Be cautious, and do not let anything touch the front lens of the eyepiece. (This occulting bar will not work with a Huygenian eyepiece, for which the bar has to be inside, between the lenses.) With this device in place, you can center the location of the Horsehead nebula in the field of view, and rotate the eyepiece until the bar blocks out the light from Zeta Orionis. Happy roundup!



Construction OCCULTING BAR In use



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PRATT II	DAVID K.	3059 ALVIEA DR.	SAN JOSE, CA	95133	408-258-5831
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~~SQAA~~

SATCOM-IIIIR. RCA's domestic communications satellite, SATCOM-IIIIR, was launched into orbit on November 19th from the Kennedy Space Center by a Delta 3910/PAM-D vehicle.

New Venus Probes. The Soviet Union's Venera 13 and 14 were launched on October 30th and November 4th, and are scheduled to reach Venus on March 1st and 5th.

A New Record. By November 20, the Soviet Union had launched 92 space missions, the largest number in any 11-month period. (In 1976, they launched 99 missions during the year, a record now being rapidly approached.)

A New Large Satcom. A consortium of European companies, headed by British Aerospace, has been awarded a contract (valued at \$300,000,000) by the European Space Agency to build its large communications satellite (L-SAT). It is planned as a multi-purpose platform for a number of communication payloads, including direct broadcast television, and specialized advanced-concept communications, including data transmission, facsimile, electronic mail, and video conferencing facilities. It has been proposed that L-SAT be made compatible with ESA's Ariane rocket and NASA's Space Shuttle. A mid-1985 launch has also been proposed.

Space Shuttle Update. Tentative dates have been established for shuttle launches in 1982: STS-3 - the week of 22 March; STS-4 - 7 July; STS-5 - 1 November; and STS-6 - 6 December. STS-5 is expected to be the first operational flight of Columbia, and STS-6 should be the first flight of Challenger. NASA has announced the crews for STS-5 and 6. They are: Vance Brand, Col. Robert Overmyer, William Lenoir, and Joseph Allen; and, Paul Weitz, Col. Karol Bobko, Story Musgrave, and Donald Petersen, respectively.

Joint Space Mission. A mid-1982 launch date has been set for a joint Soviet/French space mission to a Salyut space station. The prime crew will be Alexander Ivanchenkov, Yuri Maleshev, and Jean Loup Chretien. Their backup crew will be Leonid Kizim, Vladimir Solov'yov, and Patrick Boudry.

Military's Space Budget Larger Than NASA's. President Reagan's September decision to cut NASA's Fiscal Year '82 budget by \$367 million (to \$5.755 billion) makes the Department of Defense's space budget (\$5.824 billion) larger than NASA's for the first time.

New NASA Deputy Associate Administrator Named. Phillip E Culbertson, Assistant for Space Transportation Systems (the shuttle: Ed.) since 1979, has been named Deputy Associate Administrator of NASA. He succeeds Robert F. Allnut, and has a special assignment: planning for the development and operation of a manned U.S. space station or space platform.

U.S. Space Policy Report? A study by President Reagan's Science Advisor, Dr. George (Jay) Keyworth, to determine the space program's future direction, was to be finished by December 1981, to help prepare the FY '83 budget. Dr. Keyworth has announced that it will not be ready for six months.

U.S. Planetary Exploration? The Galileo Jupiter Orbiter/Probe has been cut from the FY '83 budget by the Office of Management and Budget. Prior to this action, NASA's Associate Administrator, Dr. Hans Mark, and Presidential Science Advisor Keyworth had officially said (in addresses to Congress and the National Space Club) that they supported Galileo, but the rest of the planetary program should be ended. (Keyworth said the program should be halted because of its limited "show biz" value, compared to other scientific investigations.) However, in conferences with the OMB, Dr. Keyworth failed to defend the Galileo mission. NASA administrator James M. Beggs is expected to appeal the OMB's decision directly to the President. (For an assessment of his chances, see this month's Astronomy, pp. 24-32: Ed.)

Doubts The Need For a Space Station. Victor H. Reis, Assistant Director for National Security in the White House Office of Science and Technology told Johnson Space Center personnel that he foresees no need to establish a goal of manned performance in space, or a space operations center (space station: Ed.) as the next NASA project after the shuttle program. (See this month's S & T, pp. 32-34, for another viewpoint on the matter: Ed.)

Merry Christmas, NASA. During Christmas week, the European Space Agency should deliver the first complete "Spacelab" module (neatly wrapped inside a C-5A: Ed.) to Kennedy Space Center for testing purposes. The estimated \$1 billion development cost of the "Spacelabs" is being borne solely by ESA. This compact scientific laboratory includes a control and data recording center, and living quarters. From this shirtsleeve environment, scientists will observe experiments mounted on four pallets attached to "Spacelab" and exposed to space when the shuttle bay doors are opened. The first launch is scheduled for 1985.

from pg. 4

About half a day later, after another whole hour of sleep, I drove down to Edwards AFB, and set up my equipment on the edge of Runway 23 to record the STS-2 landing. An interesting entertainment was provided: I call it "Musical Runways". Here are the rules: Start with 100 photographers; 75 cars, vans, and pickups; and a ton of assorted photographic equipment. Announce months in advance that a space shuttle is going to land on Runway 23. Four hours before the actual landing, announce a change to Runway 15. Sit back, relax, and watch the mad scramble until all the vehicles disappear in a cloud of dust on a five mile long dirt road to a site already filled with other photographers. Next, wait until five minutes before the road to Runway 23 will be closed, one hour before the scheduled touchdown. Announce that the landing has been shifted back to Runway 23. Count the vehicles that can make it past the roadblock before the five minute deadline. Extra points are given to drivers raising dust clouds higher than 50 feet (thus blinding more than one car in back of them) or to those able to maintain an average speed in excess of 60 mph while blinded by dust. By actual count, over 40 vehicles and 50 photographers survived. I can hardly wait to see what's going to be set up for us next time.

(On December 10th, NASA tentatively scheduled STS-3 for a landing on Runway 17. It looks like all the press sites will have to be moved to new locations.)

My biggest thrill of the landing came just after touchdown. I saw the stream of brown dust kicked up by Columbia's wheels turn black, and couldn't imagine what had happened. About a minute or so later, because of the strong wind blowing from the shuttle to me, I smelled burning rubber and hot metal. Now, there was a reality I could comprehend. At the same time, it occurred to me that Columbia's highly toxic propellants couldn't possibly be leaking. Nope, if they were leaking, I would have smelled them also. What a way to get a scoop!