The Prairie Astronomer

Volume 22, Number 2
February 23, 1982

2-82

Uranus: Can Voyager 2 Make It?

A recent analysis of Voyager 2's condition by engineers of the Jet Propulsion Laboratory in Pasadena shows that the intrepid little explorer will make it to Uranus maybe. There are five major problems with the craft:

• THE SCAN PLATFORM that conked out after the Saturn ring plane crossing now appears to be a victim of a leaking lubricant which caused a drive gear to bind in its spindle. The unit should have been capable of doing 4,000 maneuvers. It failed at #350. A twin unit tested in the lab succombed at #348 because of the leak problem. Engineers think they can eak another 50 to 100 rotations before the platform seizes up completely, and they can always fall back on rolling the entire spacecraft.

• THE NARROW-ANGLE CAMERA may not have the lifetime originally predicted for it. A decline in the "erase current" indicates a useful life of 3,000 hours instead of the 6,500 anticipated. Solution: turn off the camera until closest approach when it is more useful anyway.

• ONE OF 2 COMPUTER MEMORIES used to store and manipulate scientific data has a partial block because a 256-byte chip has failed. Slower data transmission from Uranus- Neptune space means either reducing the number of photos or observations, or resorting to "data compression", using one memory to format the data and the other to compress it. Fine, so long as no more chips go.

• ONE OF THE TWO RECEIVERS failed in 1978, and Voyager 2 has been on the spare ever since. Just in case the backup fails, a set of maneuvering plans sufficient to fly by Uranus on a quick and dirty basis have been stored in the craft's memory. It's too soon to do that for the later Neptune flyby, so it is unlikely that Neptune could be targeted if the receiver fails prior to Uranus encounter.

• A PAIR OF "TRAVELLING WAVE TUBES" in the craft's X-band transmitter were manufactured with too high a "cathode conversion temperature", which may reduce their lifetime well below the design criteria of 2,000 on-off cycles. Solution: The X-band transmitter is being left on continuously, rather than switching on-off, which leaves only the question of whether the tubes have enough operating hours to span the voyage.

It's touch and go, but Voyager 2 is still "go" for Uranus, at least.

February Meeting

Because of the appearance of some new telescopes in the ranks of PAC members (i.e., Russ Genzmer and John Lortz), this month's program

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President's Message:

Now that we are getting some warmer weather (almost a heat wave), it's time to dust off the optics after a winter of idleness. Now, I know that in a few days it will still only find March creeping up on us, but there are a few things you can do in March that will get you better prepared for the coming spring and summer viewing.

First off, if you do have a telescope and mount, get it out and look at it. Believe me, I have gone all the way out to the viewing site late at night only to find I was missing a bolt or support for the mount or a retaining screw for the focusser or something was so rusty it would not adjust right.

Also, clean your optics--with cotton swabs, cool water, mild soap and rubbing alcohol. Not camera lens paper and lens cleaning fluid as popularly noted. And get your star charts, maps and other viewing aids. Start planning your viewing sessions now. Many times, we wait until the last minute and then rush through our charts--or, worse yet, we set up, then gaze up and ponder, "What should I look at?" Only after the viewing session is over and we're on our way home do we realize we missed something that we now have to wait a week or two to observe again.

For the advanced amateurs, start looking into observing projects. There are several books available that describe projects of interest. Also, you can contact the Association of Lunar & Planetary Observers (ALPO), or the American Association of Variable Star Observers (AAVSO). For the beginner without telescopic gear, you can start to observe the many planets that will be available. You can also line up observing sessions and all the particulars that go with the various meteor showers that will be present through the year. You can contribute a great deal in this field with the most expensive equipment you have that didn't cost you anything--your eyes.

Don't think advanced planning and organization is only for the professionals. It can help the amateur spend many a night in productive and enjoyable viewing.

One last note: we have a conflict on scheduling of Astronomy Day.

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THE PRAIRIE ASTRONOMER is published monthly by the Prairie Astronomy Club, and is free to all club members. Yearly subscription without club membership is $6.00. Regular membership, $16.00. Family membership is $18.00. Memberships include 1-year subscription to SKY & TELESCOPE, the club newsletter, and 4 quarterly issues of THE REFLECTOR, Journal of the Astronomical League. Address correspondence and membership renewals to: PRAIRIE ASTRONOMY CLUB, INC., P.O. Box 80553, Lincoln, Nebraska 68501.

OBSERVING CHAIRMAN'S REPORT:

March skies bring to the observer one major subject, galaxies! If you don't have the telescope for these faint objects, then come to a star party and use the club 12½-inch reflector to hunt them down. It begins to show detail in some spiral galaxies and its great light gathering power makes hunting them easier. To start, try the bright pair of galaxies in Ursa Major, M81 and M82. Look about two degrees east of the 4.5 magnitude star d-Ursa Majoris for M82, an elongated patch of light visible clearly in a 2.4-inch refractor. A 3-inch will show a dark belt near the center and larger instruments show many dark lanes and dust patches in this irregular galaxy. Less than a degree south of M82 is M81, a somewhat brighter egg-shaped patch of light with a faint hazy border. I have seen M82 in telescopes as large as 30 inches and it looked about the same as it does in a 6-inch except it was brighter. A degree southeast of these galaxies is NGC3077, a circular patch visible in a 6-inch. Also, southwest about 1.5 degrees from M81 is a fainter patch, NGC2976, visible in a 6- or 8-inch telescope.

In Camelopardalis, look for the spiral NGC2403 about five degrees north and six degrees west of Omicron Ursa Majoris. Near Beta Ursa Majoris begins the Ursa Major cluster of galaxies. M108 shows up in a four-inch as a faint streak of light located 1.5 degrees southeast of Beta. One degree southeast of this galaxy is the planetary nebula M97, a circular patch of light that is sometimes referred to as the Owl Nebula. The "eyes" of the Owl are not clear in telescopes smaller than 6 inches and I have only seen one with my 8-inch. Less than a degree southeast of Gamma Ursa Majoris is the faint galaxy M109, which is probably the most difficult Messier object. I have heard reports of it being visible in a 3- or 4-inch, but to see it easily you need a 6-inch. More galaxies will be featured next month.

-- DAVID KNISELY

President's Message, *from Page 3*

It was planned for April 24th, but it looks like Gateway is booked on that weekend, so we have taken the only available weekend, which is April 17. We need to start looking for help on specific projects for it as well as general discussion on it. So please plan to attend.

-- RUSS GENZMER

LATEST ON SPACE SHUTTLE

Because President Reagan's top priorities are "reviving the economy and strengthening the national security", the space shuttle program got a monetary shot in the arm from the administration's proposed budget. Under the plan, NASA will receive $6.6 billion next year (an 11% increase) with $3.5 billion of that amount going into the shuttle. NASA's Jim Beggs announced there will be 18 shuttle launches in the years from 1983-1985.

And, Columbia was pushed onto its launch pad five days early, making an earlier-than-planned launch likely.

At Last Month's Meeting...

The main orders of business at the January meeting were the upcoming Mid-States Convention and the 1982 Astronomy Day display. The Mid-States Convention (June 17-19) will this year be held in Fayetteville, Arkansas at a mountaintop Methodist campground. A few of the club members received notices, and anyone interested was told to inquire.

Astronomy Day 1982 was slated for April 24th at the usual site, the Gateway Mall. John Lortz was asked to be the principal organizer and various ideas for displays were thrown around. A signup sheet for work times was passed among those present and will also be available at the next meeting. Everyone was urged to continue brainstorming for possible eye-catchers and new display ideas.

Other January meeting topics included a possible return trip to the Cosmosphere in Hutchinson, arrival of the Hansen Planetarium calendars, sale of Earl Moser's astronomy books and periodicals, and a program on rocketry by Jim Riemnitz.

This Month's Meeting...

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will be by Rick Johnson who will offer the What, Where, How (and Why?) of telescope eyepieces. There will also be a short slide/tape show on ...a surprise subject!

The Prairie Astronomer
c/o PRAIRIE ASTRONOMY CLUB, INC.
P.O. Box 80553
Lincoln, NE 68501

LINCOLN NE 1982

LINCOLN NEBR. FEB 21 '82 U.S. POSTAGE 0.20 P.B. METER 1240038

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