



The Prairie Astronomer

Volume 22, Number 6
June 29, 1982

6-82

NOW IT'S RINGS FOR NEPTUNE, TOO

It all began back on April 7, 1968. Edward F. Guinan, now of Villanova University, in Villanova, Pa., travelled to Mount John Observatory in New Zealand to do a photometric observation of the planet Neptune as it was occulting the star BD-17^o4388, which, at magnitude 7.8, is about as bright as Neptune is. Guinan was interested in Neptune's atmosphere. He figured that, for two very brief instants, as the star ducked behind the planet and re-emerged, its light would pass through Neptune's atmosphere. By analyzing the light that managed to get through, he could make some estimates of the density and composition of the Neptunian atmosphere.

Guinan got his data, recorded two ways: on a strip chart and on punched cards. The chart had very precise time resolution, and was his primary data source--the punch cards were merely a backup. Having got the data he came for, Guinan returned to the United States, passing through the Soviet Union on his way.

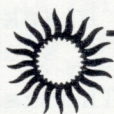
Somewhere along his route through Russia, Guinan's data strip and a copy of *Time* magazine disappeared. They were never recovered, and since the backup cards were considered inadequate for conclusive research on the atmosphere question, they were stashed away and forgotten. Fourteen years passed.

Craig Harris, a graduate student at Villanova was looking for some-

thing to do a thesis on. Somebody dredged up those old punch cards and suggested that, since rings had been discovered around Jupiter and Uranus since those old data were acquired perhaps they might show similar features around Neptune.

Harris set to work. The cards were warped because they had been dampened on the way back from New Zealand. They had to be fed, one at a time, through a card reader. Some even had to be repunched because they were stuck together. But when Harris completed the job, sure enough, the data show the expected sharp dropoff when the planet cut across the star, but they also reveal an irregular drop of about 30 percent near the

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June Meeting

The June meeting of the Prairie Astronomy Club will be held on the 29th at 7:30 pm under the roof of Hyde Observatory. The program chairman will be gone again this month (he promises for the last time) as he will be visiting in-laws in New Jersey and hopefully making a stop at the Smithsonian. The show will go on, however, through the much-appreciated help of Jack Dunn, who "volunteered" to take over for the month.

Jack, in turn, delegated the pro-
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President's Message:

This month's meeting will find you minus your President, as I will be in Wisconsin on business. What, you say? How can our meeting exist without our President? Well, how nice of you to say something like that. But don't worry, our Vice President, Ron Veys -- you do remember him, don't you? -- will take over for me.

We had a good viewing session at our last star party and Ron should cover that. We had a good turnout and one of our out-state members, Larry Stepp, drove all the way from Texas to be out there. Well, maybe he wasn't up just for our star party.

Also this next month brings with it a very good (dark) lunar eclipse, July 5-6. Although I won't be there for the meeting, I very much promote that we gather at Earl's that night and morning for one of our rare "full moon" star parties. From all accounts, this should be a spectacular eclipse. Consult your Sky & Tel for notes on viewing this.

The article also mentions that readers should make their own timings for the various contacts of the umbra's passage across the various craters. So, some of us might wish to do that. Remember, for you younger ones or other members who have no telescopes, or small ones, this is a good viewing session for lawn chairs, blankets, binoculars, or small telescopes. So, get plenty of sleep Sunday night and come on out.

Also, thanks to Lee Thomas, who is producing our taped messages for the phone answering service at the observatory. Needless to say, his first message for June which started out with "THIS IS A SOLAR FLARE ALERT--" caught my attention for the entire message. The next day I gave the observatory phone number to half a dozen of my office workers and told them to call it with no other explanation. They were up every night of the week after that looking for auroras!

-- RUSS GENZMER

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:

Start your summer viewing with the spectacular globular cluster M13 in Hercules. Located $2\frac{1}{2}$ degrees south of Eta Herculi, this cluster shows stars even in a four-inch telescope. Best magnifications to use are those in excess of 100X. Less than a degree north of M13 is a faint galaxy that should be a good test for a six-inch. It is probably an elliptical galaxy or a nearly edge-on spiral. Look about six degrees north and $\frac{1}{2}$ degree east of Pi Herculi for the globular cluster M92. It is more compact than M13 and shows stars easily in a six-inch reflector.

In Serpens Caput look near the star 5 Serpens Caputis for the brilliant globular cluster M5. This cluster is very dense, requiring at least 150X on a six-inch to show any of the stars, so push the power as high as you can.

SEE THE SPACE SHUTTLE: Yes, during Columbia's last test flight you, too may be able to catch the orbiter's image with your telescope. Sound ridiculous? Well, I thought so too until I calculated the angular size of the shuttle as it passes overhead. It turns out that it would appear 41 seconds of arc across. (For comparison, Jupiter at opposition is about 49 seconds of arc in diameter), so you should at least be able to see the orbiter's shape at about 60X. If you have a guide telescope and a willing assistant, you can use higher magnification and get somewhat more detailed images by having your helper track the shuttle at low power while you watch through your main instrument.

As the shuttle clears the horizon, it will be less than 8 seconds of arc in length, but that's only slightly smaller than Mars is now, so you should have a halfway decent chance of seeing something if the shuttle passes overhead. Check your local papers or news media to learn which times may be best for you. Look generally during the first 90 minutes after sunset.

--DAVID KNISELY

NEPTUNE, *Continued from Page 1*
planet's edge. This "soft drop" is characteristic of the combination transmission/obscuration caused by a ring system.

The data indicate Neptune's rings, if that's what they are, lie in the planet's equatorial plane, with the inner edge about 3,600 kilometers from the surface, and the outer edge about 7,900 kilometers out.

Everything is not letter-perfect in this interpretation. There have been other Neptune occultations, and no rings have ever manifested them-
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June Meeting, *Continued from Page 1*
gram to Ron Veys. (Those familiar with management fundamentals will recognize that delegation is basic operating procedure for a busy executive. It is also basic operating procedure for getting a problem off your back.)

In any case, after all this buck-passing, Ron came up with two films, THE SOLAR SYSTEM (20 minutes), National Geographic Society, 1980, and THE MARS MARINER MISSION (14 minutes), NASA, 1970.

Neptune Rings Discovered

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selves. However, since each occultation has a unique trajectory, it is possible that all the other examinations have missed the very thin, close rings. Guinan and Harris must adjust the assumed rotation axis for Neptune by about 3 degrees to make the geometry come out, but there is at least that much "give" in the accepted axis figure for the planet, so that is no major problem.

Neptune is due for two more occultations in the next two years, on June 15, 1983 and July 22, 1984. Then, in 1985, Voyager 2 flies by the planet. It is almost certain now that Voyager will be programmed to search for rings around the last of the gas giants.

U.S.: "NO MORE EXCHANGES WITH RUSSIA"

As the U.S. winds down its space program, astronomy fans have increasingly relied on news of the Soviet Union's exploits. Now comes word that even this source of science progress may be cut off. The U.S.-Soviet agreement for exchange of scientific data on space exploration was quietly allowed to expire on May 24 by the Reagan administration. Discussions of areas of future cooperation on planetary science through the 1980's were cancelled last month by NASA on instructions from the State Department.

TELESCOPE MAKING MAGAZINE, Number 15 has arrived. If you ordered a copy, bring your \$1.50 to the meeting.

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