

The OBSERVER

The Newsletter of the Twin City Amateur Astronomers, Inc.

July 2006 Volume 31, Number 7



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CALL FOR NEW EDITOR

It has been a great pleasure for me to serve as the TCAA's *Observer* editor these past two years. However, starting in the spring of 2007, I will begin student teaching at Clinton High School in preparation to receive my degree in physics teaching. As a result, I will no longer be able to perform the duties of the TCAA *Observer* editor – this includes collecting articles for publication, formatting the articles, printing, folding, and stamping. I would like to both announce my resignation for November 30, 2006, and make an official call to any members of the TCAA who may be interested in taking over the position. While the board of directors will make the final appointment, nominations (including self-nominations) are very much needed. If you are interested in serving as the *Observer* editor, please contact any of the board members listed in the newsletter. If you have any questions regarding the duties of the editor, please contact me at rwennin@ilstu.edu.



CELEBRATING 40 YEARS OF INTENT LISTENING

By Diane K. Fisher

In nature, adjacent animals on the food chain tend to evolve together. As coyotes get sneakier, rabbits get bigger ears. Hearing impaired rabbits die young. Clumsy coyotes starve. So each species pushes the other to “improve.”

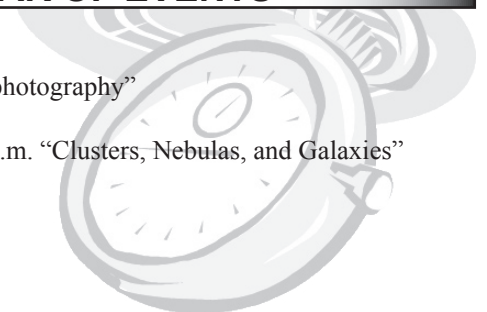
The technologies pushing robotic space exploration have been like that. Improvements in the supporting communications and data processing infrastructure on the ground (the “ears” of the scientists) have allowed spacecraft to go farther, be smaller and smarter, and send increasingly faint signals back to Earth—and with a fire hose instead of a squirt gun.

Since 1960, improvements in NASA's Deep Space Network (DSN) of radio wave antennas have made possible the improvements and advances in the robotic spacecraft they support.

“In 1964, when Mariner IV flew past Mars and took a few photographs, the

TCAA CALENDAR OF EVENTS

- July 22, MOOS/Picnic at SGO
Coordinators: 1. Lee Green “Astrophotography”
- July 29, POS at SGO, 8:45 p.m. - 10:45 p.m. “Clusters, Nebulas, and Galaxies”
Coordinators: ?
- August 19, MOOS/Picnic at SGO
Coordinators: ?



The Observer

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The Observer is a monthly publication of the Twin City Amateur Astronomers, Inc., a registered 501(c)(3) non-profit educational organization of amateur astronomers interested in studying astronomy and sharing their hobby with the public.

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rwennin@ilstu.edu each month.

Membership Dues

Individual Adult/Family \$40
Full-time Student/Senior \$25

To join the TCAA, send your name, contact info, and dues payment to:

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Normal, IL 61761

limitation of the communication link meant that it took eight hours to return to Earth a single photograph from the Red Planet. By 1989, when Voyager observed Neptune, the DSN capability had increased so much that almost real-time video could be received from the much more distant Planet, Neptune," writes William H. Pickering, Director of JPL from 1954 to 1976, in his Foreword to the book, *Uplink-Downlink: A History of the Deep Space Network, 1957-1997*, by Douglas J. Mudgway.

Mudgway, an engineer from Australia, was involved in the planning and construction of the first 64-m DSN antenna, which began operating in the Mojave Desert in Goldstone, California, in 1966. This antenna, dubbed "Mars," was so successful from the start, that identical 64-m antennas were constructed at the other two DSN complexes in Canberra, Australia, and Madrid, Spain.

As Mudgway noted in remarks made during the recent observance of the Mars antenna's 40 years of service, "In no time at all, the flight projects were competing with radio astronomy, radio science, radar astronomy, SETI [Search for Extra-terrestrial Intelligence], geodynamics, and VLBI [Very Long Baseline Interferometry] for time on the antenna . . . It was like a scientific gold rush."

In 1986 began an ambitious upgrade program to improve the antenna's performance even further. Engineering studies had shown that if the antenna's diameter were increased to 70 m and other improvements were made, the antenna's performance could be improved by a factor of 1.6. Thus it was that all three 64-m DSN antennas around the world became

70-m antennas. Improvements have continued throughout the years.

"This antenna has played a key role in almost every United States planetary mission since 1966 and quite a few international space missions as well. Together with its twins in Spain and Australia, it has been a key element in asserting America's pre-eminence in the scientific exploration of the solar system," remarks Mudgway.

Find out more about the DSN and the history of the Mars antenna at <http://deepspace.jpl.nasa.gov/dsn/features/40years.html>. Kids (and grownups) can learn how pictures are sent through space at http://spaceplace.nasa.gov/en/kids/phonedrmarc/2003_august.shtml.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



For over 40 years, the "Mars" 70-m Deep Space Network antenna at Goldstone, California, has vigilantly listened for tiny signals from spacecraft that are billions of miles away.



TCAA Treasurer's Report – June 2006

OPERATING FUND BALANCE – May 31, 2006 - \$ 1,995.58

Income

Todd Lindsey (Dues) - \$ 40.00

Expenses

Abrams Planetarium (sky calendars) - \$ 158.40

Astronomical League (dues) - \$ 260.00

Rebecca Wenning (June Observer) - \$ 17.64

OPERATING FUND BALANCE – June 30, 2006 - \$ 1,599.54

OBSERVATORY FUND BALANCE – May 31, 2006 - \$ 1,350.74

Income

None - \$ 0.00

Expenses

None - \$ 0.00

OBSERVATORY FUND BALANCE – June 30, 2006 - \$ 1,350.74

TOTAL TCAA FUNDS – June 30, 2006 - \$ 2,950.28

Respectfully submitted,
L. Duane Yockey, Treasurer

Sugar Grove Observatory

Listing of Official Keyholders (Paid \$10 deposit/\$5 renewal)

- Duane Yockey (April 2001, renewed through 2006)
- Michael Rogers (August 2001, renewed through 2006)
- William Carney (March 2002, renewed through 2006)
- Carl Wenning (January 2004, renewed through 2006)
- Brian Barling (February 2004, renewed through 2006)
- Lenore Trainor (December 2004, renewed through 2005)
- Kevin Brown (May 2005, renewed through 2006)
- Sothilingam family (June 2005)
- Christopher Franklin (July 2005, renewed through 2006)
- Kal Kumar (renewed August 2005)
- David Osenga (January 2006)
- Gerry Schroeder (February 2006, renewed through 2007)
- Karen & Ed Duran (February 2006)



The Welcome Mat

Todd Lindsey
200706



The OBSERVER

Newsletter of the TCAA, Inc.

Rebecca Wenning, Editor
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Are Your Dues Due?

The Dues Blues?

If you see a check in the box above, it means your dues are due. To retain membership, please send your dues renewal to our esteemed Treasurer:

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Normal, IL 61761