

# The OBSERVER



The Newsletter of the Twin City Amateur Astronomers, Inc.

April 2001 Volume 26, Number 4

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*Join the festivities (please!)*

## The Inaugural Address **News & Views**

—Sandy McNamara

I WOULD like to thank those who seem to feel I am qualified to direct TCAA activities in the upcoming year. I promise to do my best to not abuse your trust!

There are two primary goals I'd like to address in the upcoming year:

1) Promote the feelings of comradeship and community which have always been a prime reason for joining and remaining a member of the TCAA.

2) Continue to develop the chartered purpose of the TCAA to promote education in astronomy and science education.

To help implement the first goal, I'd like to reestablish the former TCAA tradition



*The site of our new monthly meetings? You decide!*

of holding general monthly meetings of the membership. This is not meant to replace any of our current observing sessions, public library presentations, or reading group gatherings. A general meeting provides the opportunity for

*continued on next page*

**Celebrate the Science. Admire the Art.  
Astronomy Day @ Eastland, April 28th.**

## TCAA Calendar

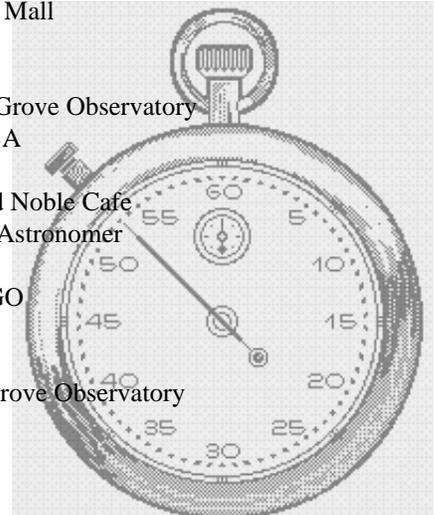
Saturday, 28 April, 10 AM - 4 PM, Eastland Mall  
Astronomy Day Exhibit

Saturday, 28 April, 8:30 - 10:30 PM, Sugar Grove Observatory  
Public Observing Session. Coordinator: TBA

Monday, 6 May, 7:30 - 9:00 PM, Barnes and Noble Cafe  
TCAA Reading Group. Selection: Brother Astronomer

Saturday, 19 May, 2001, 7:00 - 8:00 PM, SGO  
Pre-MOOS Clinic. Topic: Collimation

Saturday, 19th May, 8:30 PM - ???, Sugar Grove Observatory  
Members Only Observing Session.



## The Observer

The Newsletter of the TCAA, Inc.

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

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The OBSERVER Editors  
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Bloomington, IL 61701

Articles, ads, etc., are due by the 1st weekend of each month. Items may be e-mailed to: mprogers@mail.millikin.edu, or jmemken@ilstu.edu

#### Dues

\$25.00 per household, per year  
\$15.00 for members over 60  
\$12.00 for newsletter only  
\$ 1.25 for a single newsletter copy

*continued from p. 1*

short “edutainment” presentations on various topics of specific interest to our members (as opposed to presentations prepared for members of the general public). It also provides an opportunity for new members to meet others in our group as well as providing a forum for all to input opinions, offer advice, and hopefully become more involved in TCAA activities. Although the TCAA has an active email discussion group, there are many members who do not either do not have Internet access or who, for various reasons, prefer face-to-face discussions. Additionally, a predetermined time and date for meeting, regardless of the weather, provides an opportunity for those new to the community to get in contact with the TCAA. The new director of the ISU planetarium, Tom Willmitch, has graciously offered use of the planetarium building as a convenient place in town to hold our meetings. Dates/times for the meeting are still under discussion; if you wish to have a voice in when these will be held, please contact any member of the board of directors.

In the meantime, everyone is invited to come to the Sugar Grove Nature Center on May 19 from 7 PM to 8 PM, prior to the Member Only Observing Session (MOOS) scheduled for that date. Topic for the evening, to be held rain or shine, will be “telescope collimation”. Have you ever wondered if your telescope is adjusted for best performance? Do you even know what collimation IS? Would you like to know how easy it is to keep your equipment in good shape by yourself? Would you just like to hang around quietly in the background and link a face to some of the names you’ve seen in the newsletter? Once your telescope is collimated, you can stay and enjoy the MOOS (providing the skies are clear). Please come even if you’re already an expert in this. Especially if you already know how to collimate a telescope – we need your help!

Construction of the Sugar Grove Observatory is only the first step in implementing my second goal of the year. In addition to providing a home for the 14-in SCT and access to a dark sky observing site, the SGO provides a location to centralize the currently scattered resources of the TCAA. It is planned to keep the TCAA loaner telescopes at the SGO between uses. Not only will these be available for use at the SGO, they will be more readily accessible for sign out by any authorized member of the board of directors (as opposed to trying to catch me at home to pick them up at my garage!). The TCAA library will soon be relocated there and it is hoped that those of you who have materials stored in your personal library that you’ve used for various presentations will bring some of these items to also be made available for all members to access. We’ve had one computer donated (and hopefully will have more) on which we will soon be installing various astronomy programs for everyone to use when at the site as well as printing out information and/or star charts as needed. (HINT: we still need a printer!)

Dan Miller has offered to develop presentation outlines in compliance with the new national education standards in science and technology that incorporate various aspects of astronomy and space science. The board of directors has recently authorized purchase of several prepared slide/script and PowerPoint presentations that members can utilize to give presentations regardless of their level of astronomy expertise. New member Jim Swindler has heroically offered to serve as educational liaison. He will serve as a contact person for area educators or other groups seeking our help, as well as a coordinator to match willing TCAA members with specific requests for speakers. If you would be willing to help with any of these projects, please contact Dan, Jim, myself, or any member of the board of directors (see contact info on this page).

## The Fallen Astronomer

— Michael P. Rogers

**W**HAT do you say to an erst-while astronomer, one who has lost interest in the hobby? My reaction is the same as if I were to come face-to-face with an alien hovering 5 metres above ground, with no visible means of support: a combination of annoyance - how dare you defy gravity like that? and incredulity - how can you defy gravity like that?

True, my reaction to the alien is speculative - sadly the opportunity simply has not presented itself - but I know for certain how I would react to the astronomer, by paraphrasing Samuel Johnson: "When a man is tired of Astronomy he is tired of life; for there is in Astronomy all that life can afford".

Think for a moment about all that one can do in astronomy - the field is as vast as its subject matter. Consider this imperfect, incomplete, and entirely off-the-cuff taxonomy of the many areas of the hobby and science:

Observational Astronomy: Solar, Planetary, Lunar, Eclipses, Comets. Asteroids, Constellations, Deep sky astronomy (Clusters, Galaxies, Variable stars), Radio Astronomy

Virtual Astronomy: Desktop planetarium programs, Real planetaria (e.g., the ISU Planetarium!), Gravity laboratory (e.g., Newton's Aquarium)

Do-It-Yourself Astronomy: Tele-

scope construction (Mirror grinding, Mount making), Observatory construction

Astrophotography (of any or all of the items listed in observational astronomy): Star trails, Piggy-back, Prime-focus, CCD work, Schmidt Camera work

Theoretical Astronomy: Cosmology, Planetary science, Stellar Evolution/Dynamics, Black Holes :-)

Each can occupy a lifetime, and each can stop time in its tracks. How many times have you sat transfixed at the eyepiece, gazing at some wonder? Or sat with your nose in a book, lost in contemplation? If this hasn't happened, then make it happen!

A chorus of "yes, but" just arose from the pragmatic section of the choir (that's next to the altos, for those of you keeping

track). I have to take kids to this, I have to study for that, I'm exhausted at the end of the day, it's \*dark\* out there, it's dark out there and there's probably somebody scary lurking in the bushes out to steal my star charts. (Lest anybody think I'm singling them out, I most emphatically *\*am not\**. These are *\*my\** excuses, and if yours happen to coincide, my sympathies).

What is an interested but reluctant would-be astronomer to do? A time-tested solution, one that will go a long way towards drowning out your own "yes, but" objections, is to

find yourself an astronomy buddy. To paraphrase another great Englishman, speaking through a rather stout stuffed bear, "It's so much friendlier with two or three, or, ...".



*Samuel Johnson, in the bronze, outside St. Clement Danes Church, in London*

*Make a date with*

# StarDate

*on*

## WGLT, 89.1 FM

*Weekdays @ 6:58AM & 6:58PM*

*Sponsored by the TCAA*

*Partners in Astronomy Education  
with the ISU Planetarium*

*@*

*309-438-5007*

## Constellation Spotlight — Corvus

— Sandy McNamara

**O**PEN any current astronomy periodical and you'll find the premier constellations of spring highlighted: usually Ursa Major and/or Virgo. Unfortunately the Bear and the Lady have waaaaay too many nice objects to pick just a few this month so, TCAAers never being the type to follow the crowd anyway, our spotlight this month is more in keeping with our corn country heritage. We're going hunting for a big, black crow!

Step outside around 8 PM toward the end of this month and look due south. Just over 2 fist-widths above the horizon, 2 fist-widths to the west of the bright star Spica, you will find a distinctive crooked square of 3rd magnitude stars. Although the constellation is not large, it stands out nicely and using a LOT of imagination, this is our bird of the month. Corvus, the Crow, is one of the oldest constellations and is a member of the 48 constellations originally drawn up by Ptolemy in the 2nd century. Several legends are attached to our bird, among them, that being sent by Apollo with a cup to get water, he waited under a fig tree for the fruit to ripen. He then returned to the god carrying a water snake, alleging that this was the cause of his delay. In punishment for his lie, he was thrown into the sky with the Cup (Crater, just to the west of Corvus) and Snake (Hydra, winding its way along most of the southern horizon).

ences in the four corner stars of the Corvus trapezoid? Gamma (at the NW corner) is a spectral type B star with a silver-blue color, epsilon (SW corner) is an orange type K, and beta (SE corner) is a yellow type G. Delta (NE corner), a bluish type A, is also an attractive telescopic double star; examine it at around 100x to spot the fainter secondary.

Located due west of Spica, in Virgo, galaxy M104 actually is more easily located by starting in Corvus. Extend a line connecting the SW corner of Corvus to the NE corner and keep going for the same distance again to locate it. An equally good method with binoculars or finder scope is to position the bright pair delta and eta Corvus (at the top left corner of the Corvus square) at the SW edge of your field of view and look for a nice Y-shaped asterism about 3 degrees north of the pair; the base of the Y points to M104 like an arrow. M104 is easily seen in even the smallest telescopes; it appears in my 8-in telescope as a bright spindle oriented E-W with round nuclear section. A slightly larger telescope will show the dark lane that cuts off one side of this galaxy and earned it the nickname of the "sombbrero galaxy".



Ole! The Sombrero Galaxy, aka M 104

with M68. A globular cluster actually claimed by the snake Corvus is sitting on, M68 can be found 3 degrees south of beta Corvus (the lower left corner of the Corvus square), just NE of a bright (mag 5) star in the same field of view. In my 8-inch, it is a mod bright round glow, brighter to the center. The edges just fade from view with no stars resolved.

From M68, drop south 2.5 degrees then sweep due east to find galaxy M83. Also actually in Hydra, M83 appears in my 8-in as a moderately large softly glowing irregular oval oriented E-W. It brightens gradually to a sl central condensation and dim foreground stars are visible at the middle and W end.

Planetary nebula NGC 4361 is easily located with Telrad since it is equidistant from the two top stars of Corvus, 2 degrees from each, in the middle of the

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Can you detect the subtle color differ-

Corvus keeps being deprived of custody

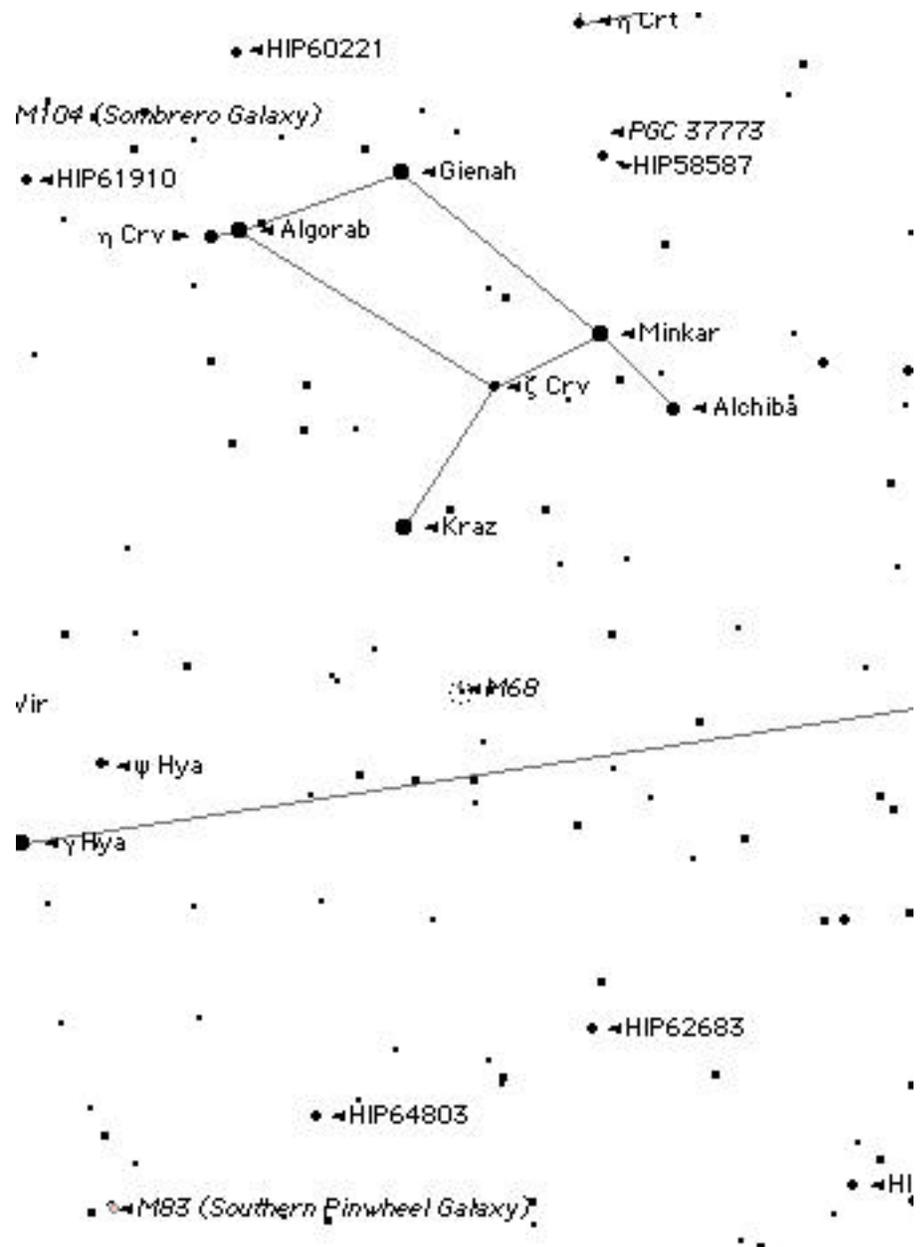
Object	Type	RA	DEC	Mag	Size/Sep	Notes
NGC 4027	Gal	12h 00m	-19d 16m	11.1	2.4' X 2'	H
NGC 4038/4039	Gal	12h 02m	-18d 52m	10.7	1.7'x1.2'	H, H2
NGC 4361	PN	12h 24m	-18d 48m	10.9	80"	H
Delta (7) Crv	DS	12h 30m	-16d 31m	3.0/9.2	24.2"@214	
NGC 4594, M104	Gal	12h 40m	-11d 37m	8.3	8.9' x 4.1'	M
NGC 4590, M68	GC	12h 40m	-26d 45m	7.7	12'	M
NGC 5236, M83	Gal	13h 37m	-29d 52m	8.2	10.0' x 8.0'	M

Note: For those of you working on various observing projects, "M" = Messier and Binocular Messier list, "H" = Herschel 400 list, "H2" = Herschel II list

*continued from previous page*

Corvus square. In the 8-inch, it appears as a circular hazy spot almost resembling a faint globular cluster; the central star, magnitude 12.9, is difficult to see unless using a larger telescope.

**CHALLENGE FOR LARGER TELESCOPES:** NGC 4038/4039, the “antennae” or “rattail” galaxy is actually two colliding galaxies appearing to be joined at right angles on one end. To locate it, move from delta to gamma Corvus and continue west for the same distance. While it takes a 16-in or larger telescope to discern the two components, an 8 or 10-in telescope should reveal that the galaxy seems to have an irregular shape with a notch missing in the SW area. I have seen this galaxy described as “cashew” or “kidney” shaped and either would describe how it appears in a 12-in or larger telescope. In my 12.5-inch telescope under typical dark Illinois skies, the galaxy is a faint comma shaped smudge of light, moderately large, covering about 1/8 of the field of view using an eyepiece with a 22' FOV. If you successfully locate the antennae, look about 1/2 degree SW to find galaxy NGC 4027. It appears in my 12.5-in as a faint, irregularly round glow that gradually brightens a bit toward the center.



***Skyline!***

The Official Voice of the ISU  
Planetarium/TCAA

**438-5007**

## SGO FAQ

—Michael P. Rogers

**Q**: WHAT, pray tell, is an FAQ?

A: FAQ is an acronym for Frequently Asked Questions, and denotes a topic that addresses commonly posed questions on a particular subject. (For some reason CPQ didn't catch on.)

The term, if it did not originate on the Internet, certainly became popular as a result of the many FAQs that have made their way there. The FAQ was really an act of desperation on the internet, to avoid gridlock as a result of hundreds of thousands of people asking the same questions over and over.

**Q**: What is the SGO?

A: SGO is an acronym for the Sugar Grove Observatory, built by the blood, sweat and tears of many TCAAers and non-TCAAers alike.

**Q**: Where is the SGO?

A: The SGO is located at the Sugar Grove Nature Center, southwest of Funk's Grove. The map at right provides more detail.

**Q**: What is in the SGO?

A: At the heart of the SGO is a C-14 schmidt cassegrain telescope, manufactured by Celestron. A library, desks, a computer, and some other paraphernalia are slowly making their way into the building, too.

**Q**: Who operates the SGO?

A: The TCAA operates the observatory. Our observatory manager is Dan Miller (damiller@mail.mil-likin.edu, 309-473-3465).

**Q**: Who can use the SGO?

A: Any TCAA member can use the SGO, and any member of the public

can use the SGO provided they are supervised by a designated TCAA member.

**Q**: What is a keyholder?

A: A keyholder is a TCAA member who has gone through a rigorous training program, and after paying a maintenance fee, been granted a key to the SGO.

**Q**: When is the SGO open?

A: The SGO is open for public observing sessions (see the schedule on the next page), for members only observing sessions (during new moon weekends).

**Q**: What if I want to use the SGO? Am I limited to POS and MOOSs?

A: Absolutely not! If you are a keyholder, you can go out anytime the spirit moves you. If not a keyholder, merely contact a keyholder to arrange a private observing session.

**Q**: I organize girl scouts/boy scouts/some other civic organization. Can my members have their own observing session?

A: Absolutely yes! Just contact any of the board members (see the contact information on p. 2 of this newsletter) to arrange a session or sessions.

**Q**: What should I bring to an observing session at the SGO?

A: The eyepiece selection at the SGO is currently somewhat limited (although the board of directors has authorized the spending of some \$\$\$ to rectify this). So, to start you'll want to bring some eyepieces (either 1.25 or 2 inch). Next, you'll want to bring out some star charts. Many observers find it a Very Good Idea to set out an observing agenda, based on what will be visible when.



## Directions

Note: If you haven't visited this site before, do so during the daytime, not only to enjoy the wonderful scenery, but to make sure you don't get lost!!

1. Head southwest on I-55 towards Shirley
2. Take the Shirley exit
3. Turn right at the end of the off-ramp
4. Turn left at the T (with old route 66)
5. Proceed (several miles) along Route 66 until you reach Funk's Grove
6. Take the first left at Funk's Grove towards the Funk's Grove Church
7. Proceed along the road -- do not turn right at the Church, but proceed south on the "dead-end" fork



## Public Observing Sessions (POSSs)

Date	Time	Astronomical Twilight
31 March, 2001	7:30 - 9:30 PM	7:20 PM
28 April, 2001	8:30 - 10:30 PM	8:32 PM
26 May, 2001	9:00 - 11:30 PM	10:14 PM
23 June, 2001	9:00 - 11:30 PM	10:36 PM
28 July, 2001	9:00 - 11:30 PM	10:17 PM
25 August, 2001	8:30 - 10:30 PM	9:17 PM
22 September, 2001	8:00 - 10:00 PM	8:24 PM

All POSSs are free and open to the public, but TCAA members are especially encouraged to come out. Sky charts and munchies will be provided by the coordinators and/or their seconds. In the event of rain, the event will be canceled.

# Farthest Supernova Ever Seen Sheds Light on Dark Universe

— StScI

NASA's Hubble Space Telescope has seen a burst of light from an exploding star located much farther from Earth than any previously seen — a supernova blast in the early universe that is casting light on a mystery of truly cosmic scale.

This stellar explosion is extraordinary not only because of its tremendous distance, 10 billion light-years from Earth, but also because its discovery greatly bolsters the case for the existence of a mysterious form of "dark energy" pervading the universe. The concept of dark energy, which shoves galaxies away from each other at an ever-increasing speed, was first proposed, and then discarded, by Albert Einstein early in the last century.

The Hubble discovery also reinforces the startling idea that the universe only recently began speeding up, a discovery made about three years ago when the unusually dim light of several distant supernovas suggested the universe is expanding more quickly than in the past, but there were alternate explanations. The more distant supernova (redshift  $z=1.7$ ) refutes these alternatives and offers the first tantalizing observational evidence that gravity began slowing down the expansion of the universe after the big bang. Only later did the repulsive force of dark energy win out over gravity's attractive grip.

"The supernova appears to be one of a special class of explosions that allows astronomers to understand how the universe's expansion has changed over time, much as the way a parent follows a child's growth spurts by marking a doorway," said Adam Riess of the Space Telescope Science Institute (STScI), Baltimore, MD. "This supernova shows us the universe is behaving like a driver who slows down approaching a red stoplight and then hits the accelerator when the light turns green." The team of astronomers, led by Riess, made the discovery by analyzing

hundreds of images taken by Hubble in infrared and visible light to study how galaxies formed. Fortuitously, one of those galaxies contained a supernova previously discovered by astronomers Ron Gilliland, STScI, and Mark Phillips, Carnegie Institutions of Washington.

The record-breaking supernova appears brighter than it should if the universe had been expanding at a steady rate. The reason is that a decelerating universe holds galaxies relatively close together and objects in them would have appeared brighter because they would be closer. "Long ago, when the light left this distant supernova, the universe may have been slowing down due to the mutual tug of all the mass in the universe," said Riess. "Billions of years later, when the light left more recent supernovas, the universe had begun accelerating, stretching the expanse between galaxies and making objects in them appear dimmer."

"Hubble's ability to find titanic stellar explosions at these extreme distances is what it takes to confirm this theory that the universe must have been slowing down before it switched into high gear," said Dr. Anne Kinney, director of NASA's Origins program at NASA Headquarters, Washington, DC. "Later this year, astronauts will install a new camera on Hubble that will give us 10 times better resolution than the current camera, which will give us an even better capability to find answers to grand cosmic questions like this."

Observations of several distant supernovas by two teams of astronomers in 1998 led to the prediction that the universe got the "green light" to accelerate when it was half its present age. Astronomers say the new Hubble findings rule out other explanations.

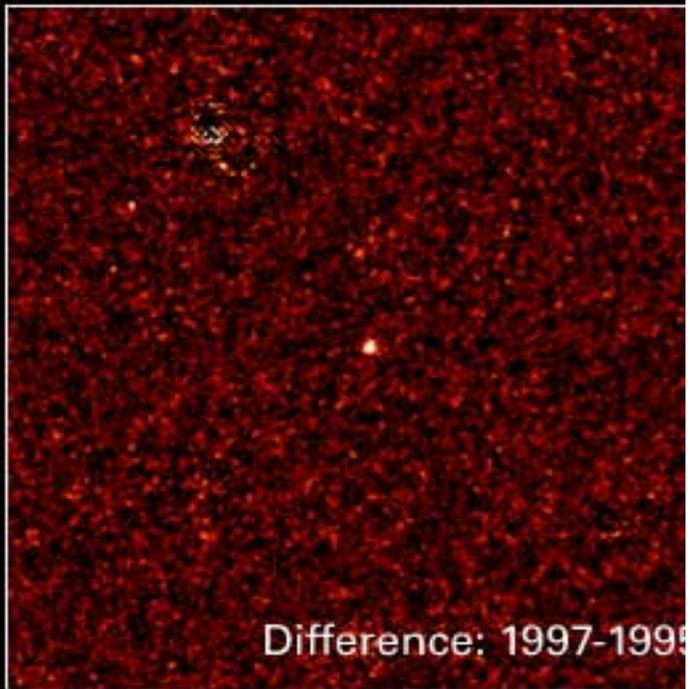
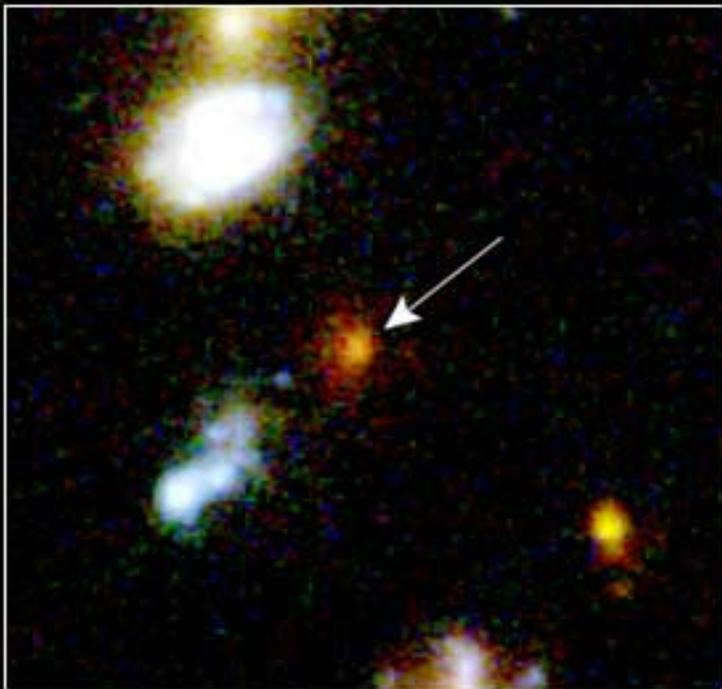
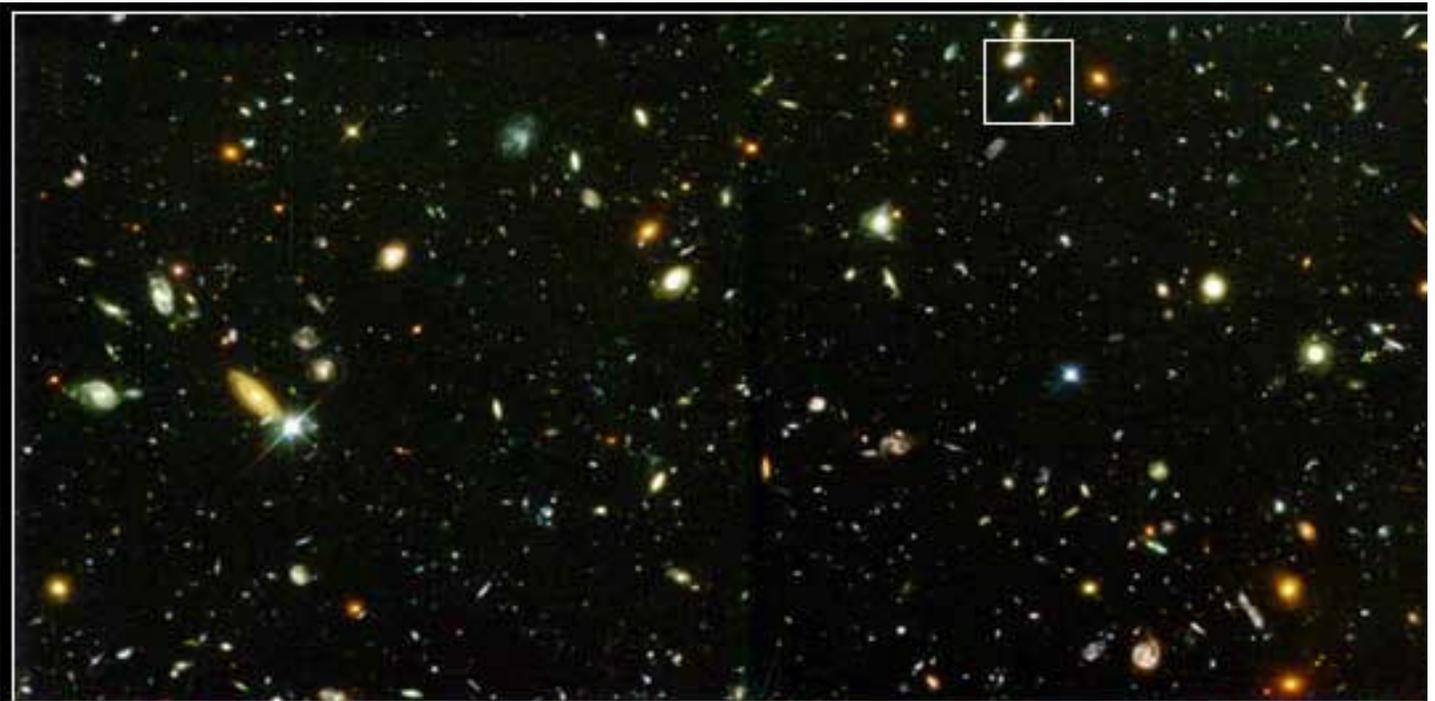
Nearly a century ago, Albert Einstein's Law of General Relativity concluded the universe must collapse under the relent-

less pull of gravity. However, like many scientists of his time, he assumed the universe to be static and unchanging. To make his equations fit those observations, Einstein added something he called the "cosmological constant" whose gravity is repulsive, though he had no idea if it was real.

Shortly afterwards, astronomer Edwin Hubble made the celebrated discovery that the universe was expanding. He assumed that the universe must be slowing down under gravity and might even come to a halt, leading Einstein later to say that his cosmological constant was the biggest blunder of his career. Now it appears Einstein was on the right track after all.

The source of the repulsive gravity may be something akin to Einstein's cosmological constant, referred to as the energy of the "quantum vacuum," a subatomic netherworld pervading space that provides a source of energy, or it may be something entirely new and unexpected. "While we don't know what dark energy is, we are certain that understanding it will provide crucial clues in the quest to unify the forces and particles in the universe, and that the route to this understanding involves telescopes, not accelerators," said astrophysicist Michael Turner of the University of Chicago.

Riess' collaborators include Peter Nugent (Lawrence Berkeley National Laboratory), Brian Schmidt (Mount Stromlo Observatory), and John Tonry (Institute for Astronomy). NASA's Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency.



Difference: 1997-1999

**Distant Supernova in the Hubble Deep Field** HST • WFP  
NASA and A. Riess (STScI) • STScI-PRC01-09

# Treasurer's Report — March 2001

— Duane A. Yockey, Treasurer

OPERATING FUND BALANCE – February 28, 2001 -		\$1,556.89
Income		
Joe Kennedy (dues) -		\$ 25.00
Kim McRoberts-Wilson (dues) -		\$ 25.00
Roy & Diane Lawry (dues renewal) -		\$ 25.00
Orlyn Edge (dues renewal) -		\$ 25.00
Jim Swindler (dues) -		\$ 25.00
Expenses		
Dr. Jim Brown (Honorarium & Expenses)		\$ 84.00
VanGundy Insurance (Liability Insurance)		\$150.00
OPERATING FUND BALANCE – March 31, 2001 -		\$1,447.89
-----		
OBSERVATORY FUND BALANCE – February 28, 2001 -		\$ 309.54
Income		
Interest		\$ 1.77
Donation		\$ 30.00
Expenses		
None		
OBSERVATORY FUND BALANCE – March 31, 2001 -		\$ 341.31
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TOTAL TCAA FUNDS – March 31, 2001 -		\$1,789.20
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# The Observer Crossword

## —Observer Staff

**ACROSS**

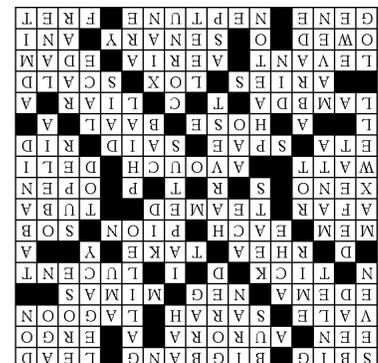
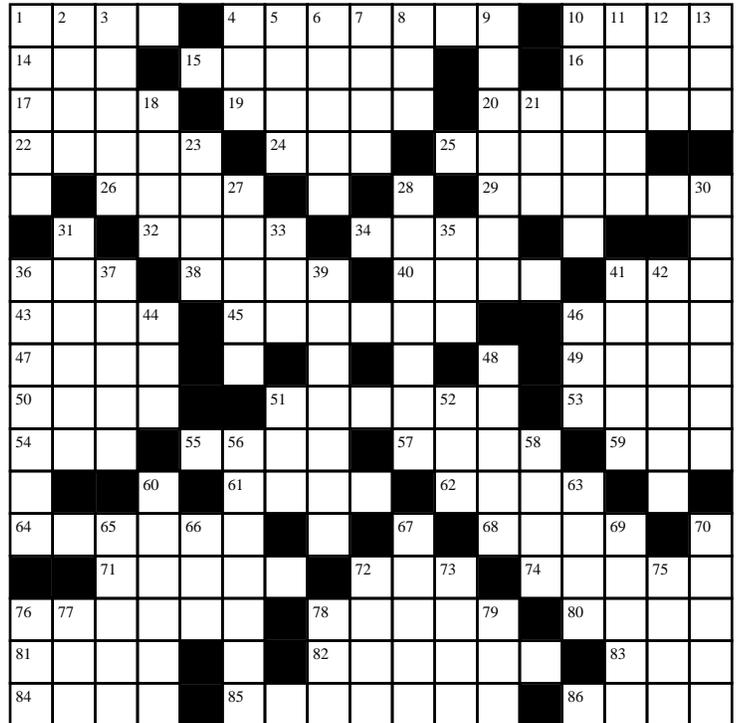
- 1 Famous initials in CCD
- 4 Cosmological theory (3,4)
- 10 Metal
- 14 Even (poet.)
- 15 Luminous atmospheric phenomenon
- 16 Therefore
- 17 Dell
- 19 Mother of Isaac
- 20 A wet nebula?
- 22 Dropsy
- 24 Negative
- 25 Moon of Saturn discovered in 1789
- 26 Bloodsucking insect
- 29 Shining with light
- 32 Moon of Saturn discovered in 1672
- 34 Grasp
- 36 13th letter of the Hebrew alphabet
- 38 Apiece
- 40 Alternative name for Pi Meson
- 41 Weep
- 43 From a distance
- 45 Joined
- 46 Brass wind instrument
- 47 Combining form meaning "strange"
- 49 Not closed
- 50 The physical unit for measuring power
- 51 Guarantee
- 53 Delicatessen
- 54 7th Greek letter
- 55 Foretell
- 57 Stated
- 59 To free
- 61 Flexible tube
- 62 False god
- 64 11th Greek letter
- 68 Person who lies
- 71 Constellation : The ram
- 72 Brine-cured salmon
- 74 Parboil
- 76 Run away from a debt
- 78 Operatic feature/bright region on Mars
- 80 Yellow cheese coated with red wax
- 81 Was indebted to
- 82 Pertaining to the number six
- 83 Black bird
- 84 Basic unit of heredity
- 85 Eighth planet from the sun
- 86 Worry

**DOWN**

- 1 John Glenn's Number
- 2 Glass ornament
- 3 Bay
- 4 Passenger vehicle
- 5 Republic in SW Asia
- 6 Pierced with horns

- 7 Boast
- 8 Exclamation of surprise
- 9 First to use a telescope in astronomy
- 10 Bequest
- 11 Uneven
- 12 Gone by
- 13 Spanish title
- 18 Islamic chieftain
- 21 Atomic mass unit
- 23 Continuous dull pain
- 27 English poet
- 28 Second satellite of Saturn
- 30 Bloodsucking fly
- 31 Vanquish
- 33 Very skilled person
- 35 Young goat
- 36 Developer of theory of electromagnetism
- 37 Devilfish
- 39 Full autumn moon
- 41 The highest degree
- 42 Colonial marine hydrozoan
- 44 Decay
- 46 Former weight for wool
- 48 Vial
- 51 Anglo-Australian Observatory, for short
- 52 Taxicab
- 56 Light four-wheeled carriage
- 58 Raised platform
- 60 Scrape off

- 63 Ornamental fabric
- 65 Expert
- 66 Loud noise
- 67 Horn-shaped bone
- 69 Radio location system
- 70 Allow to enter
- 72 English court
- 73 Capital of Shaanxi province, China
- 75 Alley
- 76 Limb of a felled tree
- 77 Female sheep
- 78 Viper
- 79 Part of verb to be



# Astronomy Day

April 28, 2001

Eastland Mall, 10 AM - 4 PM

ISU Planetarium, 2 PM

SGO, 8:30 PM - 10:30 PM

**Celebrate the Science.**

**Admire the Art.**

*Games & gabbing, telescopes to talk about, magnificent mirror grinding, super software... what's missing? **YOU!!!!** Join us anytime, or all the time, @ Eastland Mall on April 28th. Bring a telescope or just yourself. Wear TCAA Garb if you have it, to show the colors!*

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## The OBSERVER

The Newsletter of the Twin City Amateur Astronomers, Inc.

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Dues Due?

## The Dues Blues

If you see a check in the box above, it means **your dues are due**. To retain membership -- and with a new observatory, why quit now??? -- please send \$25 to our esteemed treasurer:

Duane Yockey  
508 Normal Avenue  
Normal, IL, 61761

As always, thank you for your support!!