Below are new items added to our growing collection. Please feel free to suggest Transit of Venus resources or links for teachers, parents, educators, the media, and observers in general. You may e-mail us at bueter@transitofvenus.org.

### Year 2009

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 8</td>
<td>Link added to PHM Planetarium Schedule page: New 2009-2010 Public Show Schedule</td>
</tr>
<tr>
<td>January 9</td>
<td>Correction to napoleon3.htm: An image labeled as Foucault was erroneously an image of Hippolyte Fizeau. Thanks to William Tobin for noting the gaffe. (See caveat from our companion site.)</td>
</tr>
</tbody>
</table>

### Year 2007

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 6</td>
<td>Image added to &quot;Historical Observations&quot; page: cowans.jpg &quot;Boudoir Photograph of Territorial Transit of Venus Party, anonymous image of a large mixed party of observers...likely of local Denver citizenry with several telescopes and a few theodolites set up for viewing the transit.&quot; Image courtesy of Cowans Auctions, Inc., Cincinnati, Ohio. Link added to &quot;Education&quot; page: <a href="http://www.awapress.com">www.awapress.com</a> Book: The Transit of Venus, How a Rare Astronomical Alignment Changed the World, a compilation by scientists and historians, adapted from Royal Society lecture series. ISBN: 978-0-9582629-7-2. Links added to &quot;Home&quot; page:</td>
</tr>
</tbody>
</table>
MySpace page supports the International Year of Astronomy in 2009
Six major themes support the U.S. goal for the International Year of Astronomy in 2009: “To offer an engaging astronomy experience to every person in the country, and build new partnerships to sustain public interest.”

(Note: Five years until the 2012 Transit of Venus.)

Image added to "Transit of Mercury" page:
mercury-marschall.jpg
Transit of Mercury, 1914 November 7, photograph taken at Greenwich; image courtesy of Laurence Marschall.

Link added to "Historical Observations" page:
http://home.hetnet.nl/~smvanroode/history.html
Overview with images from many historic sites from which the transits of Venus was observed and timed; notes the current status of the observing site, such as remnant equipment or commemorative plaques. From Steven van Roode.

Link added to "Black Drop Effect" page:
http://home.hetnet.nl/~smvanroode/blackdrop.html
Describes history of black drop effect through modern understanding of the phenomenon and implications for observers. Cites literature that concludes "the true time of interior contact is halfway between the formation of the black drop and the breaking of the thread." From Steven van Roode.

Link added to "2012 Transit of Venus" page:
http://home.hetnet.nl/~smvanroode/details.html
Details and prospects for the 2012 transit. This website automatically detects your location and depicts it on a map. It then calculates your local circumstances (such as interior and exterior contact times) for the 2012 transit of Venus. Your time zone and daylight saving time (DST) option are automatically selected. Or you can drag a marker to a different observing site on a map or search for an address and it will instantly update the data. Website also includes observing guidelines, weather prospects, a calculator to compute the solar parallax using the timings from two sites (e.g., yours and someone else's), details about historic transit of Venus expeditions, and more. Courtesy of Steven M. van Roode.

January 30

January 24
To start the new year, we are switching the host of this website to Dreamhosters.com. Thank you to the people who are still sending new Transit of Venus material.

Year 2006

December 8
New "US Naval Observatory II" page added:
usno2.htm
Over 150 images from the archives of the United States Naval Observatory Library chronicle the 19th century expeditions to time the transit of Venus around the globe. Images include rare photos, handwritten notes, stereographic cards, log entries, and diagrams.

November 27
Links added to "Transit of Mercury Images" page:
  3D composite of the sun and Mercury, to be viewed through red/blue glasses; by Greg Piepol.
  Images from Nevada; by Bart Benjamin.

November 20
Links added to "Transit of Mercury" page:
- mercury-images.htm
  Images of the 2006 transit of Mercury as seen at a public gathering in Mishawaka, IN.
- http://www.spaceweather.com/eclipses/gallery_08nov06.htm
  Collection of images of the transit of Mercury as seen from around the world.
November 8

**Transit of Mercury**

Link added to "Transit of Mercury" page: [http://www.williams.edu/astronomy/eclipse/transits/transitofmercury.htm](http://www.williams.edu/astronomy/eclipse/transits/transitofmercury.htm)

Jay Pasachoff and Glenn Schneider explore the science of the inner planets during transits. For the 2006 Mercury transit, they will "attempt to measure the sodium component of Mercury's extremely tenuous 'atmosphere,' measure its height, and determine how it varies from Mercury's pole to its equator. They will additionally use the polarimetry capability of the instrument to try to detect the weak Mercurian magnetic field against that of the Sun." See [November 2006 press release](http://www.williams.edu/astronomy/eclipse/transits/transitofmercury.htm) for event details, as they will be part of webcast from Hawaii.

Added to "Air/Space Autographs" page: [phm/autographs.htm](http://www.williams.edu/astronomy/eclipse/transits/transitofmercury.htm)

Autographed photos of the following key figures are among the collection at the PHM Planetarium & Air/Space Museum:

- Lieut. Gen. James H. Doolittle
- Capt. Eddie Rickenbacker
- Jerry L. Ross
- Neil Armstrong
- Orville Wright
- Dr. Wernher von Braun
- Milton O. Thompson

November 3

New "View the Transit" page added: [mercury-view.htm](http://sunearthday.nasa.gov/2007/events/mercurytransit.php)

  See "Local Happenings" on left navigation bar for events in your area. Because observing opportunities are rapidly growing as the November 8, 2006, transit of Mercury approaches, we encourage organizers to list their event at the NASA Sun-Earth "Local Happenings."

- [phm/mercury.htm](http://sunearthday.nasa.gov/2007/events/mercurytransit.php)
  The PHM Planetarium in Mishawaka, IN, will have a special program on Tuesday, November 7, 2006, at 6:30 p.m. that will convey the significance of the transit of Mercury, what observers can expect to see, and insight into the planet closest to the sun. On Wednesday, November 8, 2006, the planetarium will set up solar-filtered telescopes for the public to view the transit of Mercury.

- [http://astrodaily.net/MercTransit06.html](http://astrodaily.net/MercTransit06.html)
  Mercury Transit Hawaiian Style offers webcasts through multiple telescopes and wavelengths (including attitude). "Learn about solar research on Maui, image restoration algorithms, the NASA Messenger mission to Mercury, total solar eclipse experiments in Libya, Hawaiian cultural astronomy and much, much more."

  Slooh.com, a live online observatory, will have a free page of the entire 5 hour transit with live commentary. David Levy, Eli Maor, and Bob Berman will be among the many astronomers and authors broadcasting during the live web show.

Links added to "Transit of Mercury" page:

- [http://messenger.jhuapl.edu/](http://messenger.jhuapl.edu/)
  Messenger is a NASA Discovery mission to conduct the first orbital study of the innermost planet. Now en route, the spacecraft will be inserted into orbit around Mercury in March 2011.

  Background on Mercury and our scientific understanding of the planet, with emphasis on images returned from the Mariner 10 spacecraft.

Note: Software, hardware, and time are not allowing all additions to be published at this time. Sorry about the limitations on adding new material as the transit of Mercury approaches.

Added to "Air/Space Autographs" page: [phm/autographs.htm](http://firmament.gmu.edu/astronomy/transitofmercury.htm)

Autographed photos of the following key figures are among the collection at the PHM Planetarium & Air/Space Museum:

- Charles Sweeney and Fred Olivi
- John Young
November 1

Links added to "Transit of Mercury" page:

- [http://nasadln.nmsu.edu/dln/content/catalog/details/?cid=546](http://nasadln.nmsu.edu/dln/content/catalog/details/?cid=546)
  NASA coverage of the transit of Mercury features a live webcast, a panel of scientists sharing their expertise, and lesson plans. Targets students and informal educators for grades 5-8; from the NASA Digital Learning Network.
- [http://www.exploratorium.edu/transit/](http://www.exploratorium.edu/transit/)
  The Exploratorium will provide a live webcast of the transit of Mercury from Kitt Peak. Additionally, animation shows Mercury passing between earth and sun during Mercury's orbits around the sun.
- [mercury-eckstein.htm](http://www.exploratorium.edu/transit/mercury-eckstein.htm)
  Auction item: Eckstein's painting of "The Transit of Mercury, on the 7th of May 1799."

October 30

  The Adler Planetarium in Chicago will be hosting a special Transit of Mercury observing event on Nov. 8 from 1 pm - 4 pm featuring telescope observing and live webcasts of the transit from other locations.

October 20

- [www.thechildrensmuseumct.org](http://www.thechildrensmuseumct.org)
  The Children's Museum of West Hartford, CT, will offer telescope viewing, a live webcast in the planetarium, Starlab programs on Mercury and transits, and children's crafts.

October 18

- [mercury.htm](http://home.hetnet.nl/~smvanroode/mercury.html)
  Find out if you will be able to see Mercury during the November 8, 2006, transit; compute your local circumstances by adding your latitude and longitude. From Steven van Roode.

October 16

- [www.thechildrensmuseumct.org](http://www.thechildrensmuseumct.org)
  The Children's Museum of West Hartford, CT, will offer telescope viewing, a live webcast in the planetarium, Starlab programs on Mercury and transits, and children's crafts.

October 11

- [mercury.htm](http://home.hetnet.nl/~smvanroode/mercury.html)
  The PHM Planetarium in Mishawaka, IN, will have solar-filtered telescopes available for the public to view the November 8, 2006, transit of Mercury.

September 30

- [http://home.hetnet.nl/~smvanroode/mercury.html](http://home.hetnet.nl/~smvanroode/mercury.html)
  Find out if you will be able to see Mercury during the November 8, 2006, transit; compute your local circumstances by adding your latitude and longitude. From Steven van Roode.

September 29

- [doppel-mercury.jpg](http://home.hetnet.nl/~smvanroode/mercury.html)
  In 1742, Johann Doppelmayer features transits of Mercury and Venus in *Atlas Coelestis* while describing...
In 1742, Johann Doppelmayer features transits of Mercury and Venus in *Atlas Coelestis* while describing phenomena associated with the inferior planets (Plate 7). Doppelmayer illustrates the path of Mercury across the face of the sun for the November 6, 1720, transit of Mercury.

**September 19**

New "Transit of Mercury" page added:
[mercury.htm](http://sunearth.gsfc.nasa.gov/eclipse/OH/transit06.html)

A transit of Mercury will be visible around much of the world on November 8, 2004. Details, local observing opportunities, images of past transits of Mercury, and safe viewing techniques are addressed. As new events are planned and announced they will appear at [mercury.htm](http://sunearth.gsfc.nasa.gov/eclipse/OH/transit06.html).

**September 12**

New "ISS Transit" page added:
[iss.htm](http://sunearth.gsfc.nasa.gov/eclipse/OH/transit06.html)

Witness the International Space Station (ISS) transiting the sun through a rear projection screen that was made for the transit of Venus.

**September 1**

Image added to "Miscellaneous" page:
[stereocard-camp.jpg](http://sunearth.gsfc.nasa.gov/eclipse/OH/transit06.html)


**August 18**

Images added to "Miscellaneous" page:
[stereocard6_pix.jpg](http://sunearth.gsfc.nasa.gov/eclipse/OH/transit06.html) and [stereocard6_text.jpg](http://sunearth.gsfc.nasa.gov/eclipse/OH/transit06.html)

*Rollins' Transit Series* of stereocards features images from Kerguelen Island in 1874. The text notes, "Ship, English vessel, one mile in Royal Sound...There were 73 days of snow and rain during the 84 days the party remained there, and the mercury ranged from 8 degrees to 23 degrees below zero."

**August 13**

Link added to "Images" page:
[http://www.ast.cam.ac.uk/~ipswich/Observations/ToV/ToV.htm](http://www.ast.cam.ac.uk/~ipswich/Observations/ToV/ToV.htm)

Observers affiliated with the Orwell Park Observatory (U.K.) sketch and photograph the transit and analyze their timings.

**August 12**


**April 10**

Link added to "Images" page:
[http://www2.eng.cam.ac.uk/~hemh/transit.htm](http://www2.eng.cam.ac.uk/~hemh/transit.htm)

Dr. Hugh Hunt uses a modified "pinhole camera" to project an image of a transiting Venus into a darkened room at Trinity College Cambridge.
March 9

Links added to "Lighting Issues" page:
- http://www.globe.gov/GaN/observe.html
  Family Packet for Globe at Night is online. Event is March 22-29, 2006.
- http://www.globe.gov/GaN/teacher_download.html
  Teacher Packet for Globe at Night is online. Event is March 22-29, 2006.

February 10

Links added to "Lighting Issues" page:
  Globe at Night is a worldwide campaign to observe and record the magnitude of visible stars as a means of measuring light pollution in a given location. Join this project of coordinated observations March 22-29, 2006. Website has an effective simulator to show the limiting magnitudes of stars in the constellation Orion.
  Long-term study suggests that bright light at night is a risk factor for breast cancer. Apparently light suppresses the nighttime production of melatonin, a hormone that has slowed breast cancer growth in lab experiments.
  Paper addresses subtle ecological consequences of night lighting.

Link added to "Solutions" page:
http://www.softlite.com/
Soft Lighting Systems claims its sports facility lights permit no direct light above the horizon.

January 29

Added to "Countdown" page:
countdown.htm
Pictures of "Countdown to Science Alive" show Orion the Hunter, "Albie" Einstein, and Sally Ride sharing their respective stories. Library visitors enjoy viewing stars in a planetarium and planets through telescopes, in spite of the rain.

January 19

Links added to "Lighting Issues" page:
lights.htm
The loss of the night sky in less than a century and a half is strikingly evident from these illustrations of the stars and the Milky Way over London and over Paris.
- http://www.atlascoelestis.com/guil%2025.htm
  Le Ciel, Paris 1866, Amédée Guillemin.

Year 2005 (below)

New "Time Zone" page added:
timezone.htm
As Indiana considers time zone changes, one feature seldom in the dialogue is the position of the analemma, the figure-8 path the sun makes through the seasons. The noon analemma shifts eastward from standard time to daylight time, as it does from Central time to Eastern time. If you are choosing your time zone and if you believe Daylight Time saves energy dollars, then the analemma shift can have significant implications.

New "Winter" page added:
phm/winter.htm
The Winter Village display is a highlight of the December 2005 holiday celebrations at the PHM Planetarium & Air/Space Museum.

New "Countdown" page added:
countdown.htm
"Countdown to Science Alive!" features astronomy programs for youths on Sunday, January 29, 2006, in South Bend, IN. Supported by AstroCamp at YMCA Camp Eberhart in Three Rivers, MI.

New "Paris Observatory" page added:

paris.htm

On a domed ceiling within the Paris Observatory is a magnificent painting representing the Transit of Venus. Images courtesy of Debra Lazar.

New "Workshop" page added:

workshop.htm

A light pollution workshop at the Great Lakes Planetarium Association (GLPA) 40th Annual Conference suggests techniques for addressing light pollution with a wide range of lighting stakeholders.

Links added to "Frequently Asked Questions" page:

  Path of Venus across the sun's disk in June 2012; from Fred Espenak.
- [http://home.hetnet.nl/~smvanroode/index.html](http://home.hetnet.nl/~smvanroode/index.html)
  Local circumstances for 2012 transit of Venus; from Steven van Roode.
  Contact times (Universal Time) and corresponding altitudes of the Sun for 121 international cities; from Fred Espenak.
  Contact times (Universal Time) and corresponding altitudes of the Sun for 60 cities throughout the USA; from Fred Espenak.
- [images.htm](images.htm)
  Images taken worldwide of the 2004 transit of Venus.

Link added to "PHM Planetarium" page:

[http://cleardarksky.com/c/PnnHrMPINkey.html](http://cleardarksky.com/c/PnnHrMPINkey.html)

The PHM Planetarium Clear Sky Clock allows skygazers to check the anticipated local observing conditions.

Links added to "Lighting Issues" page:

[lights.htm](lights.htm)

- [www.centerforhistory.org/vanishing_sky.html](http://www.centerforhistory.org/vanishing_sky.html), *The Vanishing Sky* exhibit is at the Northern Indiana Center for History from Sept. 3 to November 13, 2005.
- [www.glpaweb.org/conference.htm](http://www.glpaweb.org/conference.htm), *GLPA, We Have a Problem*, a light pollution workshop, will be featured at the Great Lakes Planetarium Association (GLPA) Annual Conference on October 23, 2005, in Grand Rapids, Michigan.

Link added to "NEI Focus Group" page:

[focus.htm](focus.htm)

NASA announces grant opportunities based on NEI Focus Group results:

- The final report of the first year of NASA Explorer Institutes is now available online at [http://education.nasa.gov/divisions/informal/overview/F_Explorer_Institutes_Report.html](http://education.nasa.gov/divisions/informal/overview/F_Explorer_Institutes_Report.html).
- There is also information online regarding the 2005 internal funding opportunity: [http://education.nasa.gov/divisions/informal/overview/F_2005_Funding_Opportunity.html](http://education.nasa.gov/divisions/informal/overview/F_2005_Funding_Opportunity.html).

Letters of intent are due this Friday, July 22. Proposals will be due Sept. 2, and selections are expected by Sept. 30. (July 18, 2005)

New "INSAP V" page added:

[insap5.htm](insap5.htm)

*Moved by a Rapid Transit* catalogs the artwork commemorating the transit of Venus from the 18th century.
July 16

Moved by a Rapid Transit catalogs the artwork commemorating the transit of Venus from the 18th century through 2004. Presented by Chuck Bueter at the Inspiration of Astronomical Phenomena (INSAP V) Conference at the Adler Planetarium & Astronomy Museum on June 28, 2005, the paper with images touts the role artists had in generating enthusiasm for this seemingly obscure celestial event.

July 15

Links added to Lighting Issues page:
lights.htm

- [http://www.inquinamentoluminoso.it/dmsp/index.html](http://www.inquinamentoluminoso.it/dmsp/index.html)
  *The Night Sky in the World* describes surveying and mapping of night sky with satellites; maps the effects of the light pollution on the night sky; predicts future effects of light pollution on the night sky; and maps the entire sky of individual sites.
- [http://www.bobcrelin.com/author.html](http://www.bobcrelin.com/author.html)
  *There Once Was a Sky Full of Stars*, a children's book by Bob Crelin, "offers hope and encouragement by describing simple things we can all do to help bring back the stars." Available from [Sky Publishing](http://www.sky-publishing.com).

Link added to "Music" page:
http://www.rtaylor.co.uk/cgi-bin/buy/Operation/ItemLookup/ItemId/B0009FHLGM/
*Once Around the Sun* by Joby Talbot includes new song entitled "June: Transit of Venus."

Links added to "Images" page:

- [http://www.muncie.k12.in.us/planetweb/transit_of_venus_activities.htm](http://www.muncie.k12.in.us/planetweb/transit_of_venus_activities.htm)
  Muncie, Indiana, celebrates the transit with music, planetarium program, and observing opportunity.
- [http://venustransit.pghfree.net](http://venustransit.pghfree.net)
  Photographs from Pittsburgh include a projection onto a white card (not shown).
- [http://www.astronomy.no/summary.html](http://www.astronomy.no/summary.html)
  Results and reflections from one of the most active observing sites--Frognerparken in Oslo, Norway.
  Astrophotographer Jerry Lodriguss applies color-coded gradient map and other techniques to his images.
  Kathy McLaughlin, winner in Women in Photojournalism contest, includes transit of Venus picture among her select photos.

Link added to "Black Drop" page:
*Sky & Telescope* magazine asks, "Where Was the Black Dot?" after the 2004 transit of Venus.

Link added to "2012" page:
[http://www nao rl ac uk/nao/transit/](http://www nao rl ac uk/nao/transit/)
The HM Nautical Almanac Office "presents an observational overview of the transits of Venus in the telescopic era as well as the six centuries or so at either end of this period." Details are provided for "the rare phenomena covering the interval from the 11th century through to the 27th century." The 2012 data, with emphasis on the view from the United Kingdom, is at [www nao rl ac uk/nao/transit/V_2012/index.html](http://www nao rl ac uk/nao/transit/V_2012/index.html).

May 11

Added to Lighting Issues page:
lights.htm
St. Joseph County Council, Indiana, has acted to protect the night sky by adopting a new County Zoning Ordinance that includes an inaugural Lighting Ordinance.

March 17

Link added to "Images" page:
lent.jpg
Craig Lent dodged sprinklers to capture this sequence from Niles, MI.
February 16

is imminent.

New County Contacts page added:
county.htm
Page lists contact information for St. Joseph County Council and Area Plan personnel who are involved in the proposed lighting ordinance.

New St. Baldrick's page added:
baldrick.htm
Chuck Bueter and the PHM Planetarium & Air/Space Museum are participating in the March 17, 2005, St. Baldrick's Celebration, an international fundraiser to benefit the search for a cure for childhood cancer.

February 3

Obviously I have been away pursuing other endeavors. Thank you to all who have continued to correspond about the 2004 transit of Venus. I am piggy-backing additional web pages related to other interests onto this website. Eventually I have to update the pages within transitofvenus.org and prepare for June 5-6, 2012. In the interim, I appreciate your ongoing support. -Chuck

Multiple items added to Lighting Issues page...

Year 2004 (below)

December 13

Links added to "June 8" page:
http://www.physics.nd.edu/venus%20at%20phm/index.htm
University of Notre Dame physics students watch the transit of Venus from the PHM site in Mishawaka, IN.

New Lighting Issues page added:
lights.htm
Addresses light pollution issues, with particular reference to northern Indiana.

New "Google" page added:
google.htm

- The Google Zeitgeist feature lists the transit of Venus as the single most popular event for the month of June, 2004.
- New Google search engine added to multiple pages; features the ability to search just this website for pages that have been crawled by Google. Please note that recently added items may take a few weeks to appear on the search results.
- Google artists kindly recognize the transit of Venus on their June 8, 2004, banner.

Links added to "Music" page, "Sousa" page, and "Peace" page:

- http://www.transitofvenus.org/phmband-intro.mp3
  Megan Dowell, Family Readiness Leader of the 428th MP Company, and Chuck Bueter introduce John Philip Sousa's Transit of Venus March at the Spring Band Concert; (audio only).
- http://www.transitofvenus.org/phmband.mp3
  The PHM Band performs John Philip Sousa's Transit of Venus March at the Spring Band Concert; (audio only).

Link added to "2012" page:
http://home.hetnet.nl/~smvanroode/
Details and prospects for the 2012 transit; courtesy of Steven M. van Roode.

Links added to "Images" page:

- http://members.rogers.com/science_sdc/science_photos/slides/transit_venus_chart.html
  Series of photographs from Ontario, Canada; courtesy Shawn Connelly.
  Images of Venus preceding June 8th culminate with transit of Venus images; courtesy H.G. Lindberg.

Images added to "June 8" page:
New table lists names of participating artists, their medium, and the title of their artwork. 


*Transit of Venus for Flutes* includes a solo study, a flute duet, and a concerto version, which commemorate the transit of Venus while noting the presence of flutes in the South Pacific as recorded by James Cook's expedition; from John Wesley Barker.

Press release (August 24, 2004): "Network of small telescopes discovers distant planet (TrES-1)." Image courtesy of NASA JPL.

"Approximate calculation of the AU based on the June 8 transit of Venus, meant for the level of high school or beginning college and uses only algebra and simple trigonometry. It only relies on simulated data--specifically, predicted times of 2nd and 3rd contact for Cairo and Durban;" from David P. Stern.

Projection device from a simple heliostat; from Ron Gross.

Email feedback added to "Black Drop" page:

"...Placing a small black circle inside and just in contact with a large white one (on a black background), I found that the degree of black drop increased when I zoomed out and decreased when I zoomed in. Likewise, viewing the screen from a distance I found that the black drop effect increased as I moved further away. I then reversed the colours of the image and produced an corresponding 'white drop effect'...Try this test: open the [blackdrop.gif](file). If you zoom in you will see that there is a distinct white separation between the two circles. As you zoom out this becomes less visible, and by zooming out (say) 8 times a marked black drop effect appears..." Courtesy of John Rushby-Smith.

Oil painting metaphorically depicts "Venus transiting the Sun (which doubles for a halo around an angelic/Luciferian Venus). The embodiment of Venus is sweeping her shield across the sword of war, as she flies over the 'Field of Mars', breaking the sword's blade and sending debris out over the city--the debris turning into flowers and peace." Courtesy of Stephen Marc Fox.
Birdhouse was an auction item to benefit the Clarke House Museum, Chicago's oldest house.

Link added to "June 8" page:
davis-report.htm
Brian Davis writes a descriptive observing report about his experience celebrating the transit of Venus in Mishawaka, IN.

Links added to "Images" page:

  Photographs and movies with homemade H-alpha coronograph of Venus straddling the sun's limb; from André Rondi.
- [images.htm](http://images.htm)
  John and Linda Hare share their transit of Venus images from the Royal Observatory in Greenwich, England.
  July 17, 2004: Transit of Venus Stereogram

August 17

Links added to "Black Drop" page:
In noting "an irradiation effect – the apparent spreading of light from bright areas onto any adjacent dark areas," author Tom Van Flandern asserts that the well-understood black drop effect "provides a timing advantage rather than a disadvantage."

Link added to "Historical" page:
[http://www.nojum.net/articles/venustransit/history/](http://www.nojum.net/articles/venustransit/history/)
Pouria Nazemi asserts in *Nojum, The Astronomy Magazine of Iran* that the Persian Islamic scientist Avicenna witnessed the 1032 transit of Venus. Avicenna claims in his book *Shifa*, "I say that I have seen Venus as a spot on the Sun’s face."

Link added to "Education" page:
The Sun-Earth Connection solicits feedback on NASA's services provided for the 2004 transit of Venus. Respondents to the survey receive free Sun-Earth Connection posters.

June 27

Links added to "Science & Math" page:
The Astronomical Unit from differential astrometry of the 2004 Transit of Venus? by Daniel Fischer. "Based on a handful of medium-quality photographs of the full solar disk taken during the 2004 transit of Venus, a first attempt to derive the AU by relative astrometry to two sunspots in AR 627 is made."

June 22

Links added to "Images" page:

  SOHO captures Venus ducking below the sun; shown is 284A at 16:15.
  What looks like a scuba diver's view upward--or the opening of the firmament above--is a numerologist's gem. From the SOHO spacecraft at 2004-06-08 10:12.

Images added to "U.S. Naval Observatory" page:
usno-heliostat1.gif
usno-heliostat2.gif
Diagrams of heliostats from the USNO expeditions; provided by Robert Havlik.
June 21

- [www.ocmboces.org/iss/mstssite/Graphics1/transitposter.jpg](http://www.ocmboces.org/iss/mstssite/Graphics1/transitposter.jpg)
  A poster from OCM BOCES shows a collage of images from Syracuse, New York, USA; courtesy of Susan Button.

- [www.astronomycafe.net](http://www.astronomycafe.net)
  A diary of the journey to webcast the transit of Venus from Greece; includes cultural experiences, the day of the transit itself, plus a post-mortem; from Sten Odenwald.

June 20

Links added to "Images" page:

  Tomáš Maruška and the Porter team capture the International Space Station transiting the sun from Bratislava. The handiwork of Thomas Fly and others sets up successful images of both the observers and the observed.

- [http://www-personal.umich.edu/~jimsmith/venus/](http://www-personal.umich.edu/~jimsmith/venus/)
  James Smith shares his images.

- [http://www.inquinamentoluminoso.it/download/mondo_ridotto0p25.gif](http://www.inquinamentoluminoso.it/download/mondo_ridotto0p25.gif)
  Some parts of the world missed the transit of Venus simply because of darkness—the sun never got above the horizon during the 6+ hours of transit time. Images from CONCAM project and Light Pollution Science and Technology Institute.

  Sequence of images by Andre Rondi shows Venus moving beyond the solar limb.

- [http://gong.nso.edu/venus2004/](http://gong.nso.edu/venus2004/)
  Overlay of the path of Venus as seen from multiple sites; from the Global Oscillation Network Group (GONG).

- [http://www.astro.uni-bonn.de/~dlfischer/mirror/277.html](http://www.astro.uni-bonn.de/~dlfischer/mirror/277.html)
  Daniel Fischer's *The Cosmic Mirror* links to transit of Venus image galleries, press releases, individual reports, and media coverage.

  Dutch Open Telescope

- [http://iota.jhuapl.edu/venus615.htm](http://iota.jhuapl.edu/venus615.htm)
  David Dunham's account of his trip to Springs, Pennsylvania, USA

  Bob Jensen's images from Montpelier.

- [June8.htm](http://June8.htm)
  Sunrise from Venice, Florida, USA

June 17

Links added to "Images" page:

  A crowd observes along the lakefront by the Adler Planetarium in Chicago, Illinois, USA; from Hinsdale Public Library Foundation.

- [http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/TRANSIT_04/TRACE/TOV_TRACE_INGRESS.html](http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/TRANSIT_04/TRACE/TOV_TRACE_INGRESS.html)
  More newly processed images from TRACE.

- [http://www.inquinamentoluminoso.it/download/mondo_ridotto0p25.gif](http://www.inquinamentoluminoso.it/download/mondo_ridotto0p25.gif)
  Images from CONCAM project and Light Pollution Science and Technology Institute.

  Sequence of images by Andre Rondi shows Venus moving beyond the solar limb.

- [http://gong.nso.edu/venus2004/](http://gong.nso.edu/venus2004/)
  Overlay of the path of Venus as seen from multiple sites; from the Global Oscillation Network Group (GONG).

- [http://www.astro.uni-bonn.de/~dlfischer/mirror/277.html](http://www.astro.uni-bonn.de/~dlfischer/mirror/277.html)
  Daniel Fischer's *The Cosmic Mirror* links to transit of Venus image galleries, press releases, individual reports, and media coverage.

  Dutch Open Telescope

- [http://iota.jhuapl.edu/venus615.htm](http://iota.jhuapl.edu/venus615.htm)
  David Dunham's account of his trip to Springs, Pennsylvania, USA

  Bob Jensen's images from Montpelier.

- [Sunrise from Venice, Florida, USA](http://Sunrise from Venice, Florida, USA)

Links added to "2012" page:

  World visibility map of 2012 transit of Venus; from Fred Espenak.

  Contact times (Universal Time) and corresponding altitudes of the Sun for 121 international cities; from Fred Espenak.

  Contact times (Universal Time) and corresponding altitudes of the Sun for 60 cities throughout the USA; from Fred Espenak.
Links added to "Historic" page:
  "Waiting for the Transit of Venus, Eden; Plate XXXVI."
- http://www.harryatkinson.com/
  "The 1882 transit observed in Nelson, New Zealand, by a local astronomer, Arthur Samuel Atkinson, on behalf of the Royal Society."

Link added to "Black Drop" page:
Figure of Black Drop Effect in article by Grant Christie; from Auckland Astronomical Society.

New "Images" page added:
images.htm
Images from the 2004 transit of Venus, including:
  Collection of VT-2004 images, including the VT-2004 Photo of the Day; from the European Southern Observatory;
- http://science.nasa.gov/spaceweather/venustransit/gallery_08jun04_page10.htm
  Several pages of images from SpaceWeather.com;
  Diverse images and video from professional and amateur observers alike;
  From the perspective of the TRACE spacecraft;
  Swedish 1-m Solar Telescope on La Palma; images and movies include black drop effect and the "elusive aureole outlining the disk of Venus."

June 15

New "June 8" page added:
june8.htm
A brief report on our transit of Venus experience at Mishawaka, Indiana, USA. We solicit links to your images and we appreciate written descriptions of your own transit of Venus experience. The pace at which material is uploaded to this site will slow down appreciably in the next few weeks.

June 8

Transit of Venus

June 7

The weather forecast in northeast Indiana is favorable. We invite you to join our Transit of Venus Celebration, which begins this evening at 6:00 p.m. Eastern Standard Time and continues through the transit of Venus on Tuesday morning. Thank you all for your ongoing support. We wish you clear skies.

June 6

New "Clouds" page added:
clouds.htm
What if cloudy weather threatens your view of the transit? There is always someone who has had it worse...

June 5

New "Instructions" page added:
instructions.htm
For the 1882 transit of Venus expeditions, the U.S. Naval Observatory printed a publication listing the duties of each member of the expedition team. Noting the experiences of the 1874 expeditions eight years prior, the book explains what the observer may expect to see and how to discern the instant of contact.

Link added to "Kid Stuff" page:
club.htm
New "Club" page displays some of the transit of Venus artwork done by youths from the Boys & Girls Club of St. Joseph County, IN.

Update added to "Monument" page:
monument.htm
"The stone is about completed, with much late night tapping..."

Link added to "Observing" page:
http://www.xs4all.nl/~carlkop/venus/transit.html
Large list of webcasts from across the globe, including Astronet's role from Netherlands and Belgium.

Note: Due to the number of webcasts being announced, I defer to the lists at Astronet (above) and the European Southern Observatory at http://www.vt-2004.org/central/cd-links/.

Added to "Roadtrip" page:
roadtrip.htm

New Calendar of Events and Timeline describes the multiple events unfolding at the Mishawaka, Indiana, transit of Venus celebration. Features include planetarium programs, artifacts on display, stargazing, webcasts, sunrise observation of the transit, music, giveaways, and transit of Venus camaraderie.

Link added to "Spacecraft" page:
http://newsrelease.uwaterloo.ca/news.php?id=4098

"The Canadian Space Agency satellite SCISAT-1 (ACE) is set to take Venus Transit measurements using its on-board high-resolution Fourier transform spectrometer. SCISAT-1 will observe the transit as part of the ACE studies that are measuring and understanding the chemical processes that control the distribution of atmospheric ozone in the Arctic;" from the University of Waterloo.

Link added to "Black Drop" page and "Projects" page:

Jim Huddle of the U.S. Naval Academy proposes "a variation of Halley's method that avoids the complications of the Black Drop Effect...and requests collaborators to test the method during the transit of Venus on 8 June 2004."

Observers simply photograph Venus at fifteen minute intervals, noting the times of the photos. (PDF file)

Link added to "Miscellaneous" page:
http://venustransit.free.fr/

Simulation of Venus crossing the sun in real time (1x) and speeded up (10x and 100x); in Flash.

Link added to "Non-English" page:
http://www.venusvoordezon.nl/index.htm

Live webcast of the Venus transit and a node for online calculation of the Sun-Earth distance.

New "Monument" page added:
monument.htm

Carving is well under way on a new monument by Croston Carvers to local hero Jeremiah Horrocks. In 1639 Horrocks predicted and was the first to observe the transit of Venus from Bretherton, Lancashire, UK.

New "Cicadas" page added:
cicadas.htm

Sten Odenwald writes: "As the countdown for the Transit of Venus continues, and many of us are counting down for the emergence of the east coast Brood-X cicadas, I was curious how often we get cicadas during a transit of Venus..."

Link added to "Black Drop Effect" page:
http://www.phys.uu.nl/~vgent/venus/venus_text2.htm#black%20drop


Note: Email service restored (643 messages awaiting).

Three notes from Chuck Bueter:

1. My email service has been disrupted since May 25. If you required a reply and have not heard from me, please resend your message to bueter@transitofvenus.org. If necessary, call.

2. As June 8th draws near, preparations for the transit celebration in Mishawaka, IN, (see roadtrip.htm) may prevent me from responding to all inquiries and requests. I appreciate your consideration in sending me your information. I’ll do my best to address all parties.

3. I recommend you soon print webpages that you deem important. I cannot guarantee that this website will support all traffic in June.

Link added to "Observing" page.
May 31

Links added to "Observing" page:

- http://www.dfconcepts.com/maps/
  Venus transit plots with cities and times from Daniel Falla overlaid with country boundary data provided by David Dunham.
- http://home.plex.nl/~gottm/doa/
  Free software to calculate the local circumstances of the June 8th Venus transit from any location that you specify; also includes an animated view of the transit at 1 hour, 1 min., or 1 second intervals; from Adri Gerritsen of the Dutch Occultation Association (DOA).
- http://v4.livegate.net/sjkastronomy/home.html
  "Pictures of the transit will be displayed every minute with a resolution of 640x480; broadcasting starts at 7.00 and ends at 13.30;" from Sander Klieverik.
  Webcam with "live images added on 2004 Jun 08, approximately every 15 minutes from 05:00 to 12:00 UTC;" from Worth Hill Observatory, Dorset, U.K.

Link added to "Shop" page:
http://www.spacewears.com
T-shirts with transit of Venus images. Buy a shirt and receive a free pair of "eclipse shades."

Link added to "Roadtrip" page:
http://www.publicbroadcasting.net/wvpe/news.newsmain?action=article&ARTICLE_ID=643223
NPR radio interview describes local events occurring in the "Michiana" area.

Link added to "Miscellaneous" page:
http://www.norristownpreservationsociety.org/
A lecture and a reenactment of David Rittenhouse observing the transit, from the Norristown Preservation Society and the Delaware Valley Amateur Astronomers (DVAA), sponsored by the American Philosophical Society.

May 27

Added to "Road Trip" page:
roadtrip.htm
More details about the schedule of events in Mishawaka, Indiana, and pictures of the Main Observing Site. Features include planetarium programs; multiple viewing aids with solar filters; concessions, restrooms and parking; free gifts; webcast from overseas; broadcast of WWV time signal; etc.

Added to "Matt Rumley" page:
rumley.htm
On Saturday, June 5, from 8:30-10:30 p.m. EST, Matt Rumley will perform at The Pub in Mishawaka, IN. Matt Rumley is the featured musician on Transit of Venus Program. The Pub, which serves Transit of Venus Sunrise Ale, is located on the northwest corner of Grape Rd. and Cleveland Rd. (S.R. 23), behind the MFB Bank.

Link added to "Historic" page:
rittenhouse-log.htm
Log observatory David Rittenhouse built for the 1769 observations at his Norriton farm; image courtesy of Historical Society of Montgomery County.

Links added to "Non-English" page:

  Portuguese Astronomical Club CA2000 maintain online, since December 2003, a dedicated page to June 8, Venus transit. We are also linked to the ESO observation program; site submitted by Mário Ramos.
  The European Southern Observatory is leading an extensive program that is loaded with information, and its website is continuously growing. This is a thorough website in multiple languages for transit of Venus observers, educators, and enthusiasts.

Links updated at "Music" page and "Sousa" page:
http://www.loc.gov/rr/perform/ihas/
The Library of Congress has compiled a thorough collection of music related to the transit of Venus, including John Philip Sousa's Transit of Venus March. You can see the entire history of Sousa's piece, hear a modern
May 24

John Philip Sousa's Transit of Venus March. You can see the entire history of Sousa's piece, hear a modern orchestrated version, and download a FREE band score. There are several other musical pieces by various artists detailed at this Library of Congress website.

Link added to "Observing" page:
http://people.cs.und.edu/~rmarsh/VENUS/venusindex.html
The University of North Dakota will provide a webcast of the Venus transit from India.

Link added to "Non-English" page:
  Observe, record, and have live webcast from Cairo, Egypt (in Spanish); site submitted by Antonio Sanchez.
  "Dates of transits, contact times on Portuguese cities, the traject of Venus on the sun, safe rules about optic materials, and links to Portuguese webpages and international webpage;" (in Portugese); site submitted by Jorge Almeida.
- http://www.venus-giessen.de/venus.htm
  "Science weekend in Giessen, Germany;" site submitted by Harald Schätzlein.

Link added to "Education" page:
http://www.nojum.net/transit2004/topics.asp
Workshop in Iran on amateur astronomy and astronomy education, with emphasis on the transit of Venus.

May 17

Link added to "Observing" page:
http://aa.usno.navy.mil/data/docs/Transit.html
Online calculator computes the local Venus transit circumstances for any location on the Earth; from U.S. Naval Observatory.

Link added to "Safety" page:
http://www.exploratorium.com/venus/index.html
You can track the transit of Venus live with no risk of eye damage from the sun by watching a narrated webcast from Greece; from the Exploratorium.

May 13

Link added to "Observing" page and "Education" page:
http://www.exploratorium.com/venus/index.html
The Exploratorium will provide a narrated webcast with four telescopes in white light filters and hydrogen-alpha filters. Watch the transit live, even if it is not visible from your site. [This webpage replaces http://www.exploratorium.edu/webcasts/ .]

Links added to "Shop" page:
- http://www.mishawakabrewingcompany.com/SpecialEvents.html
  The Mishawaka Brewing Company has crafted Transit of Venus Sunrise Ale to commemorate the transit of Venus. "Brewed using four malts and only one hop variety (Centennial) Transit of Venus Sunrise Ale is brewed in the style of an India Pale Ale. It contains only malted barley, hops, water and yeast. The tasty brew (6.1% alcohol) is available both on tap and individually bottled with 8 different labels that celebrate the event.
- art.htm
  Professional and amateur artists alike convey their interpretations of the transit of Venus experience at the Transit of Venus Art Exhibit. The collection of new art is displayed now through June at the Glance Eyewear Gallery, 1639 N. Ironwood Dr., Suite 2, South Bend, Indiana.

Link added to "Miscellaneous" page:
http://www.mediatracks.com/orderMAIN.html
05-09 broadcast of interviews of Sten Odenwald and Chuck Bueter addresses the transit of Venus; from Media Tracks Communication.

Link added to "Non-English" page:
May 12

Added to "Art" page:
Images of the Transit of Venus Art Exhibit at Glance Eyewear Gallery, which opened Monday, May 10.

Link added to "Observing" page and "Education" page:

The European Southern Observatory is leading an extensive program that is loaded with information, and its website is continuously growing. This is a thorough website for transit of Venus observers, educators, and enthusiasts. [Though ESO was an original link on this website, the Venus Transit 2004 consortium page has grown considerably and should be revisited for its new material in many disciplines.]

Link added to "Science and Math" page:

Approximated method for the calculation of the parallax (with examples); from Venus Transit 2004 consortium.

May 10

Change to "Black Drop Effect" page:
Text of the answer regarding the Black Drop Effect and hydrogen-alpha filters is modified, courtesy of Jay Pasachoff.

Link added to "Education" page:
http://son.nasa.gov

The Student Observation Network tracks solar storms and predicts the impact of solar activity, such as aurorae.

Link added to "Historical" page:
http://transits.mhs.ox.ac.uk/

"A browsable database of historical instruments and images from collections around the world; from the Scientific Instrument Commission (SIC) of the International Union of the History and Philosophy of Science. Institutions and individuals are invited to develop the site by contributing their own material."

May 5

Link added to "Observing" page and "Black Drop Effect" page:
http://home.hetnet.nl/%7Esmvanroode/venustransit/eng/eng_parallax.html#BD

At the critical moment when observers try to time when Venus touches the inside edge of the sun, strange phenomena such as the black drop effect suddenly emerge. This site guides observers in discerning at what instant internal contact occurs; from Steven van Roode.

Link added to "Education" page and "Science and Math" page:
http://home.hetnet.nl/~smvanroode/venustransit/eng/eng_parallax.html

Measure the distance to the sun by knowing only your location (lat/long) and the time(s) of internal contact. That is, "compute the mean equatorial solar parallax online from your own and others’ observations of the 2004 transit of Venus, employing either Halley’s or Delisle’s method." This is the easiest method for casual observers to quantify the distance to the sun from their own data.

Added to "Black Drop Effect" page:
Jay Pasachoff answers question about what an observer could expect of the black drop effect as seen through an H-alpha filter, particularly if there is a prominence on the limb of the sun near Venus at 2nd or 3rd contact.

May 4

Added to "Safety" page:
Fine print in big, bold letters addresses the requisite safety warnings. Also added were precautions against using Schmidt-Cassegrain telescopes and large-aperture reflector telescopes to project a solar image, due to potential heat build-up.

Link added to "Shop" page:
http://www.melbourneobservatory.com/bulletin.htm#sale

Reproduction of Gregorian telescope, 1742 atlas, Proctor map, etc.; from Brian Greig.

Link added to "Science and Math" page:
http://planetarynames.wr.usgs.gov/venus/venuTOC.html

The origins of the names of Venus features are listed by the U.S. Geological Survey; site noted by Joan Griffith.

Link added to "Peace" page:
flyer.htm

New page shows contents of flyer that accompanies Eclipse Shades sent to Iraq and Afghanistan. The text is
May 2

Link added to "Miscellaneous" page:
"Anecdotes and surprising sub-stories" appearing in old newspaper accounts that have been extracted from the ProQuest Historical Newspaper Service; from the NASA IMAGE mission's education and public outreach program (POETRY). Site submitted by Peter Abrahams.

April 28

Changes to "Index" page:
index.htm
New look on home page includes a few highlighted boxes and more concise descriptions of key web pages.

Links added to "Education" page:

- http://skyandtelescope.com
  Sky & Telescope magazine features the transit of Venus in a series of articles in the February, April, and June 2004 issues.

- Science News magazine (Vol. 165, No. 16, 17 April 2004) features the transit of Venus in an article.

  Physics Education (Volume 39, Number 3, May 2004) has several articles about the transit of Venus, including an illustrated teacher's guide by Robin Catchpole, senior astronomer at the Royal Observatory Greenwich, and a paper plate explanation of the frequency of transits. All papers published in the journal are made freely available for 30 days from the date of online publication.

- http://www.sciam.com/issue.cfm
  Scientific American magazine (May 2004) features the transit of Venus in an article by Steven J. Dick.

- kids.htm
  The transit of Venus is for kids, too! Enjoy these simple yet fun activities for younger audiences.

Links added to "Projects" page:

- www.sunderstanding.net
  Measuring the Universe with a String and a Stone  A series of activities allow students to measure the distance to the sun simply, with the lone assumption that Venus is the size of the Earth; from Vivek Monteiro.

- http://vamana.space-india.org/
  Vamana Project is a 3-phase activity in which students in India measure the radius of the earth using a gnomon; determine the maximum angular separation between the Sun and Venus; and determine the path that Venus takes across the solar disc on June 8th.

New "Celebrate" page added:
celebrate.htm
The former "Road Trip" page has been renamed, and material has been updated and added.

April 19

We invite you to join us as we celebrate the transit of Venus with multiple events in South Bend, Indiana, and surrounding communities. See roadtrip.htm. We are busy preparing for the transit; hence the updates have been fewer lately. Please continue to send your suggested links and we will soon upload them.

April 13

Link added to "Education" page:
http://www.astronomy.no/venus080604/webcast.html
A live webcast from several sites in Norway will include images with H-alpha filters. The webcast will start before first contact, probably just before 05 UTC, and will last until about half an hour after last contact (around 12 am UTC).

Link added to "Miscellaneous" page:
http://w1.217.telia.com/~u21702585/venus.htm
Watch Venus segue through her phases. A series of photographs features the planet as the transit of Venus nears.

April 12

New "Art Exhibit" page created:
art.htm
Artists are invited to commemorate the transit of Venus with their handiwork to be exhibited at Glance Eyewear Gallery in South Bend, Indiana, or online at a virtual gallery through this website.
### April 12

New "Projects" page created:
projects.htm

Global observing projects allow students to contribute data from their observing site through the Internet to international pools of data, from which the distance to the sign can be calculated.

### April 6

Added to "Peace" page:
An excerpt from William Sheehan and John Westfall's *The Transits of Venus* addresses Iraq and the historical significance of Venus in Mesopotamia.

Link added to "Education" page:
http://www.sil.si.edu/Exhibitions/chasing-venus/education.htm

The National Museum of American History features a *Chasing Venus* lecture series. This website from the Smithsonian continues to grow.

Link added to "Historical" page:
http://rathnasree.htmlplanet.com/Pathani.htm

"Samanta Chandrasekhar - a Siddhantic Astronomer from a remote region in Orissa who had perhaps been unaware of theoretical predictions for this transit and observed it through predictions of his own; from N. Rathnasree, Nehru Planetarium, New Delhi.

### March 30

Link added to "Education" page:
www.sunderstanding.net

Measure the universe with a string and a stone. A series of activities allow students to measure the distance to the sun simply, with the lone assumption that Venus is the size of the Earth; from Vivek Monteiro.

Links added to "Miscellaneous" page:

A "Science Friday" episode of *Talk of the Nation* on National Public Radio (NPR) features a discussion about the transit of Venus; with Bob Berman.

Links added to "Shop" page:
Effective April 1, 2004 and for limited time, T-shirts with transit of Venus images are available through e-bay.

- [http://cgi.ebay.com/ws/eBayISAPI.dll?ViewItem&item=3905980468](http://cgi.ebay.com/ws/eBayISAPI.dll?ViewItem&item=3905980468) Black and white Horrocks stained glass
- [http://cgi.ebay.com/ws/eBayISAPI.dll?ViewItem&item=3905981515](http://cgi.ebay.com/ws/eBayISAPI.dll?ViewItem&item=3905981515) Parallax angle of Venus
- [http://cgi.ebay.com/ws/eBayISAPI.dll?ViewItem&item=3905784785&category=15687&sspagename=STRK%3AMESSE%3AIT&rd=1](http://cgi.ebay.com/ws/eBayISAPI.dll?ViewItem&item=3905784785&category=15687&sspagename=STRK%3AMESSE%3AIT&rd=1) Nitzschke's transit at sea

Link added to "Safety" page:
http://www.astronomyindia.uni.cc/

Sun View goggles are mylar solar filters.

### March 24

New "Peace" page added:
peace.htm

Share the common experience of an uncommon event. You can help the troops stationed overseas and the local people with whom they interact to see the transit of Venus by sending protective eyewear to the region. Rainbow Symphony, in coordination with the Coalition Forces Land Component Command, is sending *Eclipse Shades* to 20 sites in Iraq and Afghanistan. For $1.00 USD you can send a pair of *Eclipse Shades* to the region that has the best viewing circumstances and weather prospects in the world.

Link added to "Observing" page:
http://www.occultations.astronews4you.com/

"Freeware program developed by the Dutch Occultation Association enables you to make accurate local predictions for the transit. It also supports both real-time and step-by-step instructions." Submitted by Steven van
March 18

Predictions for the transit. It also supports both real-time and step-by-step instructions. Submitted by Steven van Roode.

Link added to "Education" page:
http://www.venus2004.org

"To calculate the astronomical unit, two distant people are needed. These people can exchange their data coming from their observations. Register and contact other passionate people to work together." Submitted by Agnès Bugin.

Link added to "Safety" page:
Safety precautions to observe the transit.

March 14

Link added to "Historical" page:
http://skyandtelescope.com/observing/objects/sun/article_1187_1.asp
All 147 glass negatives recently discovered in the vault of the Lick Observatory are digitally stitched together into a movie, which "shows Venus's silhouette flickering strangely as it marches across the Sun's face" in 1882. From Anthony Misch and William Sheehan. (Site suggested by Hilmar Duerbeck.)

Link added to "Historical" and "Black Drop" pages:
Illustrations (plates) from the book Observations of the Transit of Venus, 9th December 1874, by Henry Chamberlain Russell; from the Institute for Astronomy at the University of Vienna.

Activity added to "Kids" page:
egg.jpg
Make sunny-side-up eggs, with pepper simulating sunspots and a peppercorn being Venus.

Link added to "Non-English" page:
http://perso.wanadoo.fr/club.astronomie.jura/transit%20Venus.htm
French site suggested by Jean-Louis Trudel.

Link added to "Miscellaneous" page:

  Transit of Venus animations as seen from different perspectives, such as from the moon or from the TRACE spacecraft; from Glenn Schneider, Steward Observatory, University of Arizona.
  The spacecraft Opportunity captures images of the transit of the Martian moon Deimos across the face of the sun; from Sky & Telescope.
  Cycles of the Heart: The Venus Passage by Nick Anthony Fiorenza. [Note: While I normally do not include or advocate websites that cite the "psychophysiology of Venus," I include this website for its graphics and animations. --CB]

March 5

Link added to "Education" and "Shop" pages:
http://www.amazon.com/exec/obidos/tg/detail/-/1581780230/qid%3D1077148792/ref=104-4875580-8768764

March 2

Added to "PHM What's Up" page:
phm/whatsup.htm
John Philip Sousa's Transit of Venus March will be performed April 21 at the Penn Spring Band Concert, beginning at 7:30 p.m. EST in the PHM Center for Performing Arts (in Mishawaka, IN).

March 1

Added to "Road Trip" page:
roadtrip.htm
Illustrations show the eastern horizon from sunrise through the fourth contact of the transit of Venus, as seen from South Bend, Indiana.
Corrections to "Travel" page:
Fixed a few broken hot links from thumbnail images and discontinued two dead sites. Thank you, Howard Cohen, for the corrections.

---

February 26

New "Kids Stuff" page:
kids.htm
The transit of Venus is for kids, too! Enjoy these simple yet fun activities for younger audiences.

New "Things Round" page:
round.htm
Round images related to the transit of Venus are abundant. Consider these images for the stained glass window activity shown on the Kids Stuff page.

New "Non-English" page:
non-english.htm
Many non-English websites address the transit of Venus. These links, suggested by international transit of Venus enthusiasts, are only a sampling of the material out there. Please send your suggestions.

*Note*: The following links that were already within this website have been re-located to non-english.htm. Therefore, your bookmarks to them may need to be updated.

- [http://perso.wanadoo.fr/pgj/transit%20080604.htm](http://perso.wanadoo.fr/pgj/transit%20080604.htm)
- [http://home.hetnet.nl/~smvanroode/venustransit/parallax2.html](http://home.hetnet.nl/~smvanroode/venustransit/parallax2.html)
- [www.venusovergang.be](http://www.venusovergang.be) and [www.venusovergang2004.be](http://www.venusovergang2004.be)
- [http://www.sonnenborgh.nl/](http://www.sonnenborgh.nl/)

---

Link added to "Non-English" page:
http://www.venustransit.at/
"The official Austrian node for the transit event with history, tips, science, and links. It is recommended and supported by the Austrian Society for Astronomy and Astrophysics [www.oegaa.at](http://www.oegaa.at)." Submitted by A. Univ. Prof. Dr. Franz Kerschbaum.

---

Link added to "For Teachers" page:
phm/teachers.htm
Two workshops for teachers and active observers will be on March 27 and April 24, 2004, in Mishawaka, IN. Reservations required; space is limited.

---

Link added to "Education" page:
http://www.astronomy.no/venus080604.html
Teacher activities address the circumference of earth, parallax, distance to the sun, and Kepler's Laws. Site also lists historic background, visibility times, current research, and more. The organizers in Norway seek other observers for global project.

---

Link added to "Spacecraft" page:

---

February 25

Link added to "Observing" page:
Pertinent data, such as sunrise times, contact times, and maps of the visibility zone; from Fred Espenak.

Link added to "Historical" page:
*The 1882 Transit of Venus as Seen from Chile*; from Hilmar W. Duerbeck.

Link added to "Travel" page:
Travel to Crete to view the 2004 transit of Venus.
Belgian astronomers view "black drop" effect from Chile in 1874; from Hilmar W. Duerbeck.

February 24
Link added to "US Naval Observatory" page:
http://justfurfun.org/astrohtml/heliostat.htm
An original heliostat from the USNO expeditions; in a private collection.

February 22
Links added to "Historical" page:
http://cho.uconn.edu/cgi-bin/scandoc.cgi?app=22&folder=2680&doc=1
http://cho.uconn.edu/cgi-bin/scandoc.cgi?app=22&folder=2679&doc=1
Illustrations of the 1882 German expedition to Hartford, Connecticut.

February 21
Link added to "Education" page:
Venus Transit Animation, from the NASA Goddard Space Flight Center Scientific Visualization Studio.

Correction added to "Historical" page:
http://home.europa.com/~telscope/ToV.1874.spectr.obs.doc
Reports of spectroscopic observations suggest the sun was seen in monochromatic light before the 1874 transit.

February 20
Link added to "Education" page:
http://connect.larc.nasa.gov/
On March 18, 2004, NASA Connect will broadcast a program with activities about scaling the solar system, the Astronomical Unit (A.U.), and the transit of Venus.

Link added to "Historical" page:
http://home.europa.com/~telscope/ToV.1874.spectr.obs.doc
Spectroscopic observations of the 1874 transit of Venus in monochromatic light, from Peter Abrahams, considers reports that Venus was seen in monochromatic light before the 1874 transit, while two observers recorded Venus against the chromosphere during the 1874 transit. [See Feb. 21 entry.]

February 19
Link added to "Education" page:
http://planetquest.jpl.nasa.gov/venus_transit.html
Broadcast schedule for the March 19 webcast Venus Transit and the Search for New Worlds, from JPL.

February 18
Link added to "Education" page:

February 17
Link added to "Observing" page:
http://skyandtelescope.com/aboutsky/pressreleases/article_1178_1.asp
Witness the celestial dance of the planets leading up to the 2004 transit of Venus. On February 23, 2004, Venus sizzles next to the crescent moon; from Sky & Telescope.

February 13
Link added to "Education" page:
http://vamana.space-india.org/
Vamana Project is a 3-phase activity in which students in India measure the radius of the earth using a gnomon; determine the maximum angular separation between the Sun and Venus; and determine the path that Venus takes across the solar disc on June 8, 2004.

February 10
Link added to "Historical" page:
http://rathnasree.htmlplanet.com/Nursinga%20Rao's%20Observations.htm
1874 Transit Observations of A.V. Narsinga Rao, at Visakhapatnam, India; from N. Rathnasree and Sanat Kumar, Nehru Planetarium, New Delhi.

February 9
Added to "Richard Proctor" page:
Eight images from Proctor's The Sun: Ruler, Fire, Light, and Life of the Planetary System, 1871.

February 6
New "Shop" page added:
Lists items for sale related to the transit of Venus, including a DVD and CDs; clothing; souvenirs; music; travel and tours; books and publications; and solar observing equipment.

New "Transit of Venus, June 5-6, 2012" page added:
<table>
<thead>
<tr>
<th>Date</th>
<th>Notes</th>
</tr>
</thead>
</table>
| February 5 | **Added to "PHM Planetarium & Air/Space Museum" home page:** <br>Transit of Venus workshops for educators and participants of global observing projects will be held March 27 and April 24, 2004, from 9:00 a.m. until noon. Details will follow. (This notice also appears on the "For Teachers" page.)<br><br>**Added to "PHM Planetarium & Air/Space Museum-Shuttle Crews" page:**<br>"The walls of the PHM Planetarium & Air/Space Museum are adorned with the official crew portraits from every space shuttle mission. These oak-framed photographs are signed by every astronaut to have flown on a shuttle."
| February 4 | **Links added to "Historical" page:**<br>- [http://www.ras.org.uk/html/library/vtransit.html](http://www.ras.org.uk/html/library/vtransit.html)  <br>   Royal Astronomical Society Library features images from 19th century transits.<br>- [harpers-whole.jpg](harpers-whole.jpg)  <br>   Cover of Harper's Weekly depicts children watching the transit by staring at the sun and by viewing the sun through smoked glass--both very dangerous practices.<br><br>**Links added to or corrected on the "Travel" page:**<br>- [http://www.embah.com/desert_safaris_the_transit_of_venus_in_sinai.htm](http://www.embah.com/desert_safaris_the_transit_of_venus_in_sinai.htm)  <br>   Travel to Sinai to view the 2004 transit of Venus.<br>- [http://www.eclipsetours.com/transit1.html](http://www.eclipsetours.com/transit1.html)  <br>   Travel to the island of Mauritius to view the 2004 transit of Venus.<br><br>**Correction on "Safety" page:**<br>Link and thumbnail to the Venuscope now should take you to the multi-language home page at [http://www.venus2004.net/](http://www.venus2004.net/). SODAP-SOBOMEX- Department Sky & Space added transit schedules for Canada and USA. |
While Stardust tastes the ice, Spirit roves, and Cassini approaches a slice of Saturn rings, SOHO takes the pulse of the sun. See what the SOHO team is thinking and how they respond to satellite challenges. 04-01-22

Correction to "Education" page:
http://www.spaceweather.com

Correction to "Miscellaneous" page:
statue_print.jpg
Corrected link now takes you to the print entitled Transit of Venus of museum workmen moving a statue of Venus.

Correction to "Education" page:
http://www.sil.si.edu/Exhibitions/upcoming.htm

Link added to "Issues" page:
jars-scopes.doc
The Transit of Venus After Baby Food Jars and Gun Scopes, an admonition for astronomy educators in general and planetarians in particular to embrace and advocate the 2004 transit of Venus as a global education opportunity; from Chuck Bueter.

Links added to "Black Drop" page:
- http://rathnasree.htmlplanet.com/blackdrop_effect.htm
  Ongoing discussion about the black drop effect; from Nehru Planetarium, New Delhi.
- http://analyzer.depaul.edu/paperplate/Transit%20of%20Venus/Internet%20caveat.htm
  Caveat about believing everything you see on the Internet (including here).
- bde-honolulu.gif
  Illustration of internal contact, 1874 December 8, Honolulu; Tupman 6-inch refractor.
- bde-artificial.gif
  "Front elevation of the Model artificially representing the circumstances of the Transit of Venus when place a the distance of 400 feet..."

Link added to "Historic" page:
http://www.mariner.org/age/cook.html
Venus Fort, Erected by the Endeavour's People to secure themselves during the Observation of the Transit of Venus, at Otaheite.

Links added to "Education" page:
- http://photojournal.jpl.nasa.gov/catalog/PIA03151
  Venus Hemispherical Globes; several mosaics in a projection portray the entire surface of Venus that folds into a 12-inch globe; from the U.S. Geological Survey.
  Stanford Solar Center offers "exciting activities, images, interactive tools, text, and other resources to let you research our special star -- the Sun."
  Book: Measuring the Universe: Our Historic Quest to Chart the Horizons of Space and Time; by Kitty Ferguson
- http://www.phys.uu.nl/~vgent/venus/venustransitbib.htm
  Extensive bibliography of original sources relating to transits of Venus, with links to many of the original publications; from R.H. van Gent. (Link also exists on "Historic" page.)

Link added to "Spacecraft" page:
http://exoplanets.org/
California & Carnegie Planet Search keeps you current on exo-planet research and almanacs.

Links added to "Misc" page:
Theatre scenes from 2003 presentation of Maureen Hunter's play in Vancouver.

Exhibit at Museum Sterrenwacht Sonnenborgh features photos and instruments from the 19th century transit expeditions from the Netherlands.

Link added to "Travel" page:
http://www.mttam.net/venus.html
Raffle for trip to view the 2004 transit of Venus; May 22 drawing.

Link added to "Safety" page:
http://www.solarscope.org/solarscopeenglish.htm
A Solarscope is commercially available from Light Tec Optical Instruments.

Additions and changes to three related files:

- **nd1800s.htm**
  Switched content of *Notre Dame and the 19th Century Transits of Venus* to this new file name. Article (initially uploaded December 21, 2003) details the efforts to witness the 1882 transit of Venus using the Napoleon III telescope; from Robert Havlik.

- **napoleon3.htm**
  Replaced former content with this article that details *University of Notre Dame and the Napoleon III Telescope*; from Robert Havlik.

- **nd.htm**
  Altered descriptions to reflect two items above.

Link added to "Music" page:
http://analyzer.depaul.edu/paperplate/transit.htm
The soundtrack to the *Transit of Venus program* is available for educators; you can also view links to the audio CD contents and an order form.

Link corrected on "Spacecraft" page:
http://www.space.com/searchforlife/seti_doyle_worlds_010809.html
SETI document describes detecting other worlds using the photometric transit or 'wink' method; by Dr. Laurance Doyle.

Links added to "Misc." page:

- **statue_print.jpg**
  Auction item: photogravure plate entitled "The Transit of Venus," circa 1888; artist unknown; printed by the Typographic Etching Company.

- **Novel**: *Transit of Venus: Travels in the Pacific*; by Julian Evans.

Link added to "Historic" page:
http://www.th.physik.uni-frankfurt.de/~jr/gif/stamps/s_hell.jpg
A good image of a stamp of Maximilian Hell, S.J.

Links added to "Education" page:

- Labels for the DVD, data CD, and audio CD for the *Transit of Venus program* are added.
  ESO education sheets for teachers.
  CD-ROM of historical documents forthcoming from ESO.
- **Book:**
  *The Transits of Venus*; by William Sheehan and John Edward Westfall.
### January 11

Links added to "Safety" page:

- [http://www.rainbowsymphony.com/soleclipse.html](http://www.rainbowsymphony.com/soleclipse.html)
  Solar shades are commercially available through Rainbow Symphony.
- [http://www.venuscope.com/](http://www.venuscope.com/)
  The Venuscope is commercially available from Sodap Sobomex.
- [http://www.transitofvenus.org/tvscreen.htm](http://www.transitofvenus.org/tvscreen.htm)
  *Must-See TV (Transit Venus) Screen* is a rear-projection device made at 2003 GLPA Conference workshop.

### January 10

Links added to "Historical" page:

- [ferguson.htm](http://www.hoolecechurch.org.uk/main.htm)
  James Ferguson authored *Astronomy Explained Upon Sir Isaac Newton's Principles and Made Easy to Those Who Have Not Studied Mathematics*. Posted are excerpted images.
- [victoria.jpg](http://www.hoolecechurch.org.uk/main.htm)
  Sketch from the May 8, 1875, issue of *The Graphic*: "The Recent Transit of Venus--Preparing for Work at an Australian Bush Station."

Addition to [napoleon3.htm](http://www.hoolecechurch.org.uk/main.htm):

Images and background of the Napoleon III telescope at University of Notre Dame.

### January 6

Addition to [napoleon3.htm](http://www.hoolecechurch.org.uk/main.htm):

End Notes for *University of Notre Dame and the 1874 and 1882 Transits of Venus*, by Robert Havlik. Included are newspaper accounts describing the 19th century transit of Venus, their significance, and the public and professional reaction to them.

### January 5

Link copied to "Historical" and "Travel" pages:

[hoole.htm](http://www.hoolecechurch.org.uk/main.htm)

Destinations in England related to the transit of Venus, with emphasis on Jeremiah Horrocks' church and Horrocks memorials.

### January 4

Link added to "Historical" page:


The *Hoole C.E. Church* website features Jeremiah Horrocks, St. Michael Church, and the events commemorating and celebrating the transit. Includes image of new stained glass window for Horrock's church.

### January 3

Link added to "Science and Math" page:


"Pi, Phi, and the Pentacle" features the five-point pattern derived from the aligning orbits of Venus and earth; from Glenn R. Smith.

### January 2

Happy Transit of Venus Year.

Link added to "Education" page:

[http://skystadetelescope.com](http://skystadetelescope.com)

*Sky & Telescope* magazine features the transit of Venus in a series of articles, beginning with the February 2004 issue.

Links added to the "Travel" page:

- [http://www.spearstravel.com/venus.htm](http://www.spearstravel.com/venus.htm)
  Travel to Greece to view the 2004 transit of Venus with Fred Espenak.
  Travel to Greece to view the 2004 transit of Venus.
- [http://www.syz.com/rasc/venus.htm](http://www.syz.com/rasc/venus.htm)
  Travel to Egypt to view the 2004 transit of Venus with the Royal Astronomical Society of Canada, Calgary Centre.
### Year 2003 (below)

#### December 27

Link added to "Education" page and added to "Science and Math" page:  
[http://home.hetnet.nl/~smvanroode/venustransit/eng/eng_parallax.html](http://home.hetnet.nl/~smvanroode/venustransit/eng/eng_parallax.html)

Compute the mean equatorial solar parallax online from your own and others' observations of the 2004 transit of Venus, employing Halley's method; from Steven M. van Roode. (Dutch version added to "Miscellaneous" page.)

Links added to "Historical" page:

- [http://home.hetnet.nl/~smvanroode/venustransit/eng/planmanhis.html](http://home.hetnet.nl/~smvanroode/venustransit/eng/planmanhis.html)  
  "Anders Planman (1724–1803) was an outstanding Swedish astronomer and professor of natural philosophy in the University of Åbo (Turku, Finland), primarily engaged with the problem of the solar parallax. He devoted numerous articles on the reduction of various eighteenth century observations of the transits of Venus, among which were his own – Planman observed both 1761 and 1769 transits from the city of Cajaneborg (Kajaani, Finland);" from Steven M. van Roode.

- [http://home.hetnet.nl/~smvanroode/venustransit/eng/ballhis.html](http://home.hetnet.nl/~smvanroode/venustransit/eng/ballhis.html)  
  Irish astronomer Sir Robwert Stawell Ball's observation of the 1882 transit of Venus at Dunsink; from Steven M. van Roode.

- [http://www.dgcch.unam.mx/coordinacion_bibliotecas/frame2/1874.htm](http://www.dgcch.unam.mx/coordinacion_bibliotecas/frame2/1874.htm)  
  Book of Marco Moreno Corral about the Mexican expedition to observe the 1874 transit of Venus at Japan; from the National Institute of Astronomy at UNAM, Mexico; (in Spanish).

Link added to "Observing" page:

[http://www.nauticoartiglio.lu.it/almanacco/trans_venus_en.htm](http://www.nauticoartiglio.lu.it/almanacco/trans_venus_en.htm)

Compute the four times when Venus contacts the edge of the sun for the 2004 transit of Venus; local circumstances are shown for any given latitude and longitude; from Franco Martinelli. (Dutch version added to "Miscellaneous" page.)

[http://home.hetnet.nl/~smvanroode/venustransit/eng/eng_parallax.html](http://home.hetnet.nl/~smvanroode/venustransit/eng/eng_parallax.html)

#### December 22

Updated "Links" page with no thumbnails. Note: The "Links" page is not regularly maintained and lacks resources found within the rest of this website. Therefore, we recommend other websites link to the home page at [www.transitofvenus.org](http://www.transitofvenus.org).

Link added to "Miscellaneous" page:  
[http://perso.wanadoo.fr/pgj/transit%20080604.htm](http://perso.wanadoo.fr/pgj/transit%20080604.htm)

PGJ - Astronomie : Passage de Venus devant le Soleil le 08 Juin 2004 (in French).

Note added to "Black Drop Effect" page:  
"Bradley Schaefer reviews the controversy ...[and] concludes that the phenomenon is not caused by diffraction, illusion or atmospheric refraction, but by terrestrial atmospheric smearing that blurs the image."

#### December 21

New "University of Notre Dame and the Transit of Venus" page added:

- [sunriseTouchdownJ.jpg](file)  
  Image of "Touchdown Jesus" Sunrise on the campus of University of Notre Dame, June 9, 2003, at 6:00 a.m. EST (near time of third contact in 2004);

- [napoleon3.htm](file)  
  When the 1884 transit of Venus approached, the University of Notre Dame was equipped with its telescope given by Napoleon III. Robert J. Havlik, Emeritus Librarian, relates the outcome of the efforts by professors and students.

Links added to "Historical" page:
Eighteenth and 19th century transits from the Canadian perspective; from Peter Broughton and the Royal Astronomical Society of Canada (RASC).

The Transit of Venus: Stargazing in 1769; from The Beaver--Canada's History Magazine, April-May 2003.

The Nehru Planetarium, New Delhi, India, has "started a discussion group to plan for exchanges of information and observations of the upcoming Transit of Venus."

Peter Broughton asks how well we will fare compared to our forebears in advocating and observing the transit of Venus.

Cruise the Mediterranean to view the transit of Venus.

New "Travel and Tours" page created:
New page (formerly a subset of the Observing page) lists opportunities to travel or join tours to witness the transit from around the world. We list these sites only as a courtesy and do not endorse any particular tour or company.

"Chasing Venus" Teacher Resources from Smithsonian Institution Libraries includes "exercises and lesson plans designed to accompany and enrich the study and discussion of the June 2004 Transit of Venus."

Eighteen activities engage grades K-12 in multiple subject areas, including science, math, geography, art measurement, creative writing, history, astronomy, English, spelling, and media.

ProjectVenus 2004 is "an observational project of amateur astronomers to determine the scale of the solar system with the aid of the Venus transit in 2004. Groups investigate the historical calculations and observations, set up new procedures, prepare the observation and carry out the evaluation."

Venustransit 2004: Calculation of the Solar Parallax from Observations by Heinz Blatter. Detailed math "gives an overview of the geometry and temporal patterns of transits, a rough estimate of the solar parallax and the corresponding error estimate. The possible and necessary corrections due to the rotation of the Earth, the eccentricities of the orbits of Venus and Earth and the inclination of the orbit of Venus are given as well."

Large Binocular Telescope (LBT) "will enable astronomers to carry out a broad range of unprecedented astronomical observations, including some of the first direct observations of giant planets around other stars."

Tom Fly addresses the challenges of predicting where the International Space Station (ISS) will be during the transit of Venus, and suggests the possibility of seeing ISS transit the sun concurrently with Venus.

There are two articles, one after the other, as noted by Peter Abrahams:

De la Rue, Warren. On a Piece of Apparatus for carrying out M. Janssen's Method of Time-
De la Rue, Warren. *On a Piece of Apparatus for carrying out M. Janssen's Method of Time-
Capello, J. *On an Apparatus Designed for the Photographic Record of the Transit of Venus*.
M.N.R.A.S. 34 (May 1874) 354-356 (translation of letter to De la Rue).

System and Galaxy*, 7-11 June 2004, University of Central Lancashire, UK.

The Astronomical League celebrates the transit of Venus as its theme for Astronomy Day on April 24, 2004. Hundreds of sites "host special events and activities to acquaint their population with local astronomical resources and facilities."

Links added to "Science and Math" page:

Links updated on the "Historical" page, with thanks to Peter Abrahams for noting the broken links and providing current URLs:

"Transits, Travels and Tribulations," a five part series (three are online) by J. Donald Fernie for *American Scientist*:
- (Not online) Part II: the British expeditions to observe the 1761 transit--that of Mason and Dixon to South Africa, and Winthrop’s Harvard expedition to Newfoundland. In addition, the misfortunes of a French expedition, that of Pingré to the island of Rodrigues in the Indian Ocean.
- [http://www.americanscientist.org/template/AssetDetail/assetid/28549](http://www.americanscientist.org/template/AssetDetail/assetid/28549)
  Transits, Travels and Tribulations, III March-April 1998
  Part III: the two other French expeditions of 1761, that of Jean Chappe d’Auteroche to Siberia, and of Guillaume-Joseph-Hyacinthe-Jean-Baptiste Le Gentil de la Galaisière to India.
- [http://www.americanscientist.org/template/AssetDetail/assetid/27742](http://www.americanscientist.org/template/AssetDetail/assetid/27742)
  Transits, Travels and Tribulations, IV September-October 1998
  Part IV: two of the other 1769 expeditions-- Jean Chappe d’Auteroche to Baja California, and William Wales to Fort Prince of Wales, a Hudson’s Bay Company fur-trading post in northern Canada.
- [http://www.americanscientist.org/template/AssetDetail/assetid/26610](http://www.americanscientist.org/template/AssetDetail/assetid/26610)
  Transits, Travels and Tribulations, V March-April 1999
  Part V: the voyage of Captain James Cook and results of the expeditions.

Dead link removed from "Historical" page,

The editors of *Astronomy* magazine (October 1999) list the 25 greatest astronomical findings of all time, including the suggestion that Venus has an atmosphere, as observed during the 1761 transit of Venus.

Several major items debut today, even though some of them are incomplete.
- **Site Map** is an expanded version of our home page, which lists website subjects with thumbnail images. The new Site Map navigation button now appears on the left column.
- **Road Trip** invites you to visit South Bend, Indiana, to view the transit of Venus above a low horizon. Local transit of Venus celebrations will include exhibits of artifacts and new commemorative artwork; planetarium programs; live viewing of the transit; and a webcast. It's a party. Details of events will be posted as they develop.
November 26

- **Collection** shows some of the artifacts and artwork (for now, with little explanation) that will be displayed as part of the transit of Venus celebrations in South Bend, IN, and neighboring communities.
- **Gallery** shows a few pictures of preparations for the 2004 transit of Venus.
- **Issues** recognizes that although the transit of Venus expeditions are celebrated accomplishments, they also had their own impact on different cultures. Consider these social issues related to the transit of Venus.

Link added to "Observing" page:

http://www.betchartexpeditions.com/europe_lake_baikal_tov.htm

Travel to Siberia and Lake Baikal to view the transit of Venus. The same company is also leading a tour in conjunction with The Planetary Society to Scotland & the Faroes.

November 23

Link added to Education page:

www.venusovergang.be and www.venusovergang2004.be

Transit of Venus websites for the Dutch speaking communities of Belgium (Flanders) and the Netherlands.

November 14

Link added to Science and Math page:

- blackdrop.htm

  The "Black Drop" Effect addresses in detail the phenomenon at internal contact which has confounded astronomers for years.

Link added to Education page:

- http://skolor.nacka.se/samskolan/eaee/summerschools/TOV0.html

  "How to measure the Earth-Sun distance by studying the transit of Venus;" from the European Association for Astronomy Education (EAAE).

  "The Royal Society of New Zealand...will send a party of nine students and three teachers to observe the 2004 transit of Venus. To win places on the expedition to Britain, teams...will be asked to produce a video and supporting material which may be viewed on the web."
- http://www.nmm.ac.uk/site/request/setTemplate:contentTypeA/conMuseumEvent/contentId/657/navId/00500200b

  National Maritime Museum seminar entitled "Venus Observed: the Transit of Venus in History" will examine the historical and scientific significance of the transit of Venus and ask how it has contributed to our understanding of science.
- http://analyzer.depaul.edu/NASABroker/GLPA/PLATO%20Grants%202002.htm

  A PLATO grant is available to members of the Great Lakes Planetarium Association, for which we encourage GLPA members apply to advocate transit of Venus educational opportunities.

Link added to "Spacecraft and Extra-Solar Planets" page:


  "Solar Transits: Tools of Discovery" article by Edna DeVore describes how transits are significant both as historical events and as cutting-edge research tools.

Link added to "Black Drop" Effect page:


Report "separates the primary contributors to [the "Black Drop" Effect], solar limb darkening and broadening due to the instrumental point spread function...for the 1999 transit of Mercury."

November 11

The new "Black Drop" Effect page shows examples of the phenomenon that ultimately became the limiting factor in timing a transit of Venus to measure the distance from earth to the sun. Also listed are technical papers that suggest the cause of the "black drop" effect.

Added to "Spacecraft and Extra-Solar Planets" page:

Astronomers from the SOHO mission suggest what we can expect from the spacecraft and how the transit of Venus will be used to calibrate satellite instruments.
Link corrected on "Historical" page:
Memoir of the life and labours of Jeremiah Horrocks, by Rev. Arundell Blount Whatton; and the entire The Transit of Venus Over the Sun by Jeremiah Horrocks; 1639 (10.6 MB).
Thank you, Peter Abrahams, for alerting us to the erroneous link.

<table>
<thead>
<tr>
<th>Date</th>
<th>Added to Page</th>
<th>Link</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 5</td>
<td>Education</td>
<td><a href="http://analyzer.depaul.edu/paperplate/transit.htm">http://analyzer.depaul.edu/paperplate/transit.htm</a></td>
<td>A collection of resources, including a DVD program and a CD of individual jpeg images related to the transit of Venus, will be shipped free to members of the Great Lakes Planetarium Association in late-November. Non-GLPA members may order the same materials for a nominal cost (about $15.00) after December 1, 2003.</td>
</tr>
<tr>
<td>November 3</td>
<td>Education</td>
<td>ottewell.jpg</td>
<td>Cover art for the 2004 Astronomical Calendar depicts James Cook observing the transit of Venus. Author/artist Guy Ottewell features the transit of Venus on pages 46-48 in his annual publication on observational astronomy.</td>
</tr>
<tr>
<td>Date</td>
<td>Action</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 14</td>
<td>Link added to Observing page: <a href="http://www.explorers.co.uk/astro/2004_Transit_of_Venus.htm">http://www.explorers.co.uk/astro/2004_Transit_of_Venus.htm</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travel to the Sinai Peninsula in Egypt to view the transit of Venus.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 15</td>
<td>Link added to Observing page: <a href="http://svs-f.gsfc.nasa.gov/~wfeimer/SEC/Gen_SEC/IP/Venustrans.tif">http://svs-f.gsfc.nasa.gov/~wfeimer/SEC/Gen_SEC/IP/Venustrans.tif</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(9 MB) Graphic clearly shows the duration of the transit's visibility across the United States; from NASA - Goddard Space Flight Center Scientific Visualization Studio.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 17</td>
<td>Link added to Education page: <a href="http://www.noao.edu/education/ighelio/solar_music.html">http://www.noao.edu/education/ighelio/solar_music.html</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson plan on Solar Music- Helioseismology encourages students to listen to the Sun's heartbeat to learn about the inside of the Sun.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Singing Sun, a recording of acoustical pressure waves in the Sun made by carefully tracking movements on the Sun's surface.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 1</td>
<td>New Transit of Venus Music page featuring John Philip Sousa is created to recognize musical contributions to the topic. Includes October 31, 2003, article in the Washington Post about Sousa's re-orchestrated Transit of Venus March.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Link added to Observing page: <a href="http://www.astronomyvacations.com/Venus.html">http://www.astronomyvacations.com/Venus.html</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travel to the Entabeni Game Preserve north of Johannesburg, South Africa, to view the transit of Venus.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Link added to &quot;Historical&quot; page: <a href="http://www.melbourneobservatory.com">http://www.melbourneobservatory.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transit of Venus site emphasizing the 18th and 19th century transits, including Joseph Banks, transit observations from Melbourne, and Jules Janssen's photographic revolver.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 27</td>
<td>The transit of Venus is a recurring topic at the 2003 Annual Conference of the Great Lakes Planetarium Association (GLPA). We anticipate and welcome more transit-related images and text from that conference from this gathering of astronomy enthusiasts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Added to Miscellaneous page:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>John Philip Sousa's Transit of Venus March band arrangement is available for $25.00 (plus UPS shipping) through The Detroit Concert Band, Inc. at (480) 948-9870. You may order a reprint of each published part on 8.5 x 11-inch pages and reproduce as many copies for your own use as necessary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 15</td>
<td>Link added to Observing page: <a href="http://www.explorers.co.uk/astro/2004_Transit_of_Venus.htm">http://www.explorers.co.uk/astro/2004_Transit_of_Venus.htm</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travel to the Sinai Peninsula in Egypt to view the transit of Venus.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Travel opportunities are now listed together on the bottom of the Observing page.

Links added to "Spacecraft and Extra-Solar Planets" page:

- [http://soho.nascom.nasa.gov/pickoftheweek/old/SunAsArt/](http://soho.nascom.nasa.gov/pickoftheweek/old/SunAsArt/)
  *The Sun as Art* captures the majesty, the mystery, and the power of the sun.
- [http://soho.nascom.nasa.gov/explore/Sun_Obs.html](http://soho.nascom.nasa.gov/explore/Sun_Obs.html)
  *How Do We Observe the Sun?* shows how data helps account for the things we do not understand.

Links added to "Historical" page:

- [Rare, unpublished report](http://www.transit-of-venus.org.uk/conference/history.html) details the results of each party in the American Transit of Venus Expeditions of 1874 and 1882; from the rare book collection of the U.S. Naval Observatory.
  Extensive history of Jeremiah Horrocks and his observation of the 1639 transit; includes excellent background information, local knowledge, images, and references.
- The design of Janssen's "photographic revolver" is illustrated and described; from NASA Astrophysics Data System (ADS).
- [http://www.arm.ac.uk/history/richobs.html](http://www.arm.ac.uk/history/richobs.html)
  Image of Richmond Observatory, "built by George III, specifically to observe the Transit of Venus in 1769;" from the Armagh Observatory.
- [http://adsbit.harvard.edu/cgi-bin/nph-article_query?bibcode=1882MNRAS..43...41J](http://adsbit.harvard.edu/cgi-bin/nph-article_query?bibcode=1882MNRAS..43...41J)
  *On the Probable Assyrian Transit of Venus* by Rev. S.J. Johnson (1882) suggests an Assyrian tablet may refer to an ancient recorded transit, as mentioned in a previous journal.
- [Glass Negative](http://www.europa.com/~telscope/solartele.txt) of the Transit of Venus, 1874; from the collection of the National Maritime Museum.

Links added to Education page:

  IAU Colloquium 196 entitled *Transits of Venus: New Views of the Solar System and Galaxy* will be held in Preston, Lancashire, UK, 7-11 June 2004.
- [Science Group of India](http://sciencegroupindia.org/) suggests it will broadcast on the Internet live images of transit of Venus on 2004 June 8.

Link added to "Science and Math" page:

- [http://www.solarpysics.kva.se/](http://www.solarpysics.kva.se/)
  Institute for Solar Physics captures the 2003 May 7 transit of Mercury.

Link added to our US Naval Observatory page:

- [Artifacts used in measuring transits](http://www.europa.com/~telscope/solartele.txt);
- [Stereoscope images related to the transit of Venus](http://www.europa.com/~telscope/solartele.txt)

Correction to "Science and Math" page:

Link to ALPO corrected to [http://www.lpl.arizona.edu/~rhill/alpo/transit.html](http://www.lpl.arizona.edu/~rhill/alpo/transit.html). Thank you, Steven M. van Roode, for noting the error.

Link added to "Historical" page:

  HM Bark Endeavour Foundation actively sails and exhibits a replica of the vessel James Cook commanded during the 1769 expedition to Tahiti.

A [collection of photographs](http://www.europa.com/~telscope/solartele.txt) from the US Naval Observatory depict life during their 19th century expeditions to time a transit of Venus.

The "What's New?" navigation button gets boosted higher on the navigation bar on the left margin.

The new website from the Sun-Earth Connection Education Forum debuts as a must-see resource.

Links added to Education page:
Mike Weinstein provides an MSPowerPoint presentation on the transit of Venus, with a particular slant for Chicago observers. Presentation includes helpful animations and cites all references for images.

The new website from the Sun-Earth Connection Education Forum.

Links added to Observing page:

  View the transit from the Channel Island of Guernsey.
- hoole.htm
  List of transit-related destinations in England for the tourist.
  The new website from the Sun-Earth Connection Education Forum.

Added:

- http://www.transitofvenus.org/phm/index.htm
  The PHM Planetarium & Air/Space Museum in northern Indiana actively supports transit of Venus programming. Currently it is producing a planetarium program and multi-user resources (eventually to reside at http://analyzer.depaul.edu/paperplate/transit.htm) that are scheduled to debut at the GLPA Annual Conference in late October 2003. We at transitofvenus.org are now piggybacking a draft of the unofficial PHM Planetarium & Air/Space Museum website here on our pages.
- Three images of maps from an 1872 Richard Proctor book are added to the proctor.htm page.

Links added to Miscellaneous page:

- science.nasa.gov/spaceweather/swpod2003/22aug03/Stalder1.avi
  Video shows the International Space Station transiting the sun; from spaceweather.com.
- http://iss-transit.sourceforge.net/
  Thomas Fly website offers a way for observers to predict when the International Space Station (ISS) will pass in front of the sun or moon from their respective observing sites. An alert service notifies users of predicted ISS transits.
- quotes.htm
  A rough draft of quotes culled from as-of-yet unattributed sources. The quotes relate to transits in general and the transit of Venus in particular.

Correction made to "Science & Math" page:

http://home.hetnet.nl/~smvanroode/venustransit/ball.pdf
Detailed math excerpted from Robert Stawell Ball's Treatise on Spherical Astronomy, 1908, addresses the conditions under which a transit takes place; variations of the sun's path as seen from different points on the earth; and both Halley's and De Lisle's methods for applying a transit of Venus to determine the Astronomical Unit. Thank you, Steven M. van Roode, for pointing out the shortcoming and for providing the resource.

Correction added to FAQ page:
The time cited for the end of the transit was incorrect. It suggested the transit ends at internal contact, when the disk of Venus is wholly within the sun and touching the edge of the sun. Instead, it takes about an additional 20 minutes for Venus to move across the limb of the sun. Even though the transit is over around 7:25 a.m. EDT, the SOHO spacecraft will be able to track the planet somewhat outside the solar disk.

Link added to Safety! page:
BinoMite Solar Binoculars from Coronado are 10x25 roof-prism binoculars with white-light solar filters.

Link added to Education page:

Links added to Safety! page:

- Instructions for pinhole projectors are at http://www.exploratorium.edu/eclipse/how.html; from the Exploratorium.

Links added to Observing page:

  General information, transit circumstances, predictions for major world cities, tours, maps of the path of the transit; from the International Occultation Timing Association (IOTA).
  Travel to the island of Mauritius to view the 2004 transit of Venus.
- http://www.astronomicaltours.net/
  Travel to Egypt or the Greek Isles to view the transit of Venus.
- http://sciencecenter.net/twilighttours/200406/index.htm
  Travel to Africa to view the transit of Venus.

Links added to Miscellaneous page:


Transit Geometry Calculations added to "Science & Math" page, courtesy of Sten Odenwald and Lou Mayo.

Corrections made on "Historical" page:

Several items from Stanford University Libraries & Academic Information Resources had not been linked correctly. Materials were originally posted below and on the "Historical" page on June 17, 2003. Thank you, David Sellers.

The Griffith Observatory kindly selected this website to receive the Griffith Observatory Star Award for the week of August 3 - 9 for excellence in promoting astronomy to the public through the World Wide Web.

Links added to "Miscellaneous" page:

- Stereoscope card published by American Views purportedly shows the cabin of the wrecked crew of the Alabama, Chatham Island expedition.
- New Zealand stamp sheet commemorating 1969 Cook Voyages Bicentenary features the transit of Venus.

Links added to "Observing" page:

- Sky & Telescope magazine announces two tours to view the 2004 transit of Venus:
  http://www.tq-international.com/Rome/RomeHome.htm Rome and the Vatican Observatory
  http://www.travelquestinternational.com/VeniceGreekIslefeedback.html Venice and the Greek Isles

Link repeated on "Historical" page:

http://www.dsellers.demon.co.uk/venus/ven_ch8.htm
Edmond Halley's admonition of 1716, in which he proposes a method to determine solar parallax and measure the distance to the sun by timing a transit of Venus from multiple sites across the globe.

Links added to "Miscellaneous" page:

  Tuvalu commemorative stamp includes depiction of Captain Cook and the 1769 transit of Venus.
- Original postcard by Cynicus entitled "The Transit Of Venus;" two policemen carry a woman.

Links added to "Historical..." page:
- **ILN-Hawaii.jpg**
  A station in Hawaii, from the Illustrated London News, 05 December 1874.
- **ILN-Rodriguez.jpg**
  Triangulation on Rodriguez Island, from the Illustrated London News, 24 October 1874.

**July 15**

Added to "Historical..." page:

**crabtree.jpg**
Image of print of Ford Madox Brown's depiction of William Crabtree witnessing the 163 transit of Venus. See the [Internet caveat](#) for assorted online descriptions of this event.

**July 14**

Added to "Historical..." page:

A celestial print from Johann Doppelmayer's *Atlas Coelestis* (1742) touted the upcoming 1761 transit and illustrated Venus' predicted path across the sun. Bruce Stephenson offers a translation of a figure caption and of text under "1761 & 1769 Transits of Venus" on the "Historical..." page.

**July 7**

Items added to "Miscellaneous" page:

- Image of Victorian [trade card](#) advertising Keystone Handy Tablets for Tourists; illustration is titled "The Transit of Venus."

Link added to "Observing" page:

Cruise to Turkey and Greece or travel to East Africa to view the 2004 transit of Venus through tours arranged by the Astronomical Society of the Pacific.

**July 6**

[Scanned images](#) excerpted from *A Popular Account of Past and Coming Transits* by Richard Proctor; 1882, are available at our new [Richard Proctor](#) page, as is a link to the whole text through Stanford University.

**July 5**

[Sunrise images](#) added to gallery; pictures were taken from [YMCA Camp Eberhart](#) in Three Rivers, MI, during AstroCamp week.

**June 20**

Links added to "Historical" page:

A four-part series of articles by Helen Sawyer Hogg chronicles Le Gentil's thwarted efforts to view both the 1761 and 1769 transits of Venus, as well as his triumphs; with English translations of excerpts of Le Gentil's memoir.

**June 17**

Links added to "Historical" page:

  Memoir of the life and labours of Jeremiah Horrocks, by Rev. Arundell Blount Whatton; and the entire *The Transit of Venus Over the Sun* by Jeremiah Horrocks; 1639 (10.6 MB).
  *A Popular Account of Past and Coming Transits*, by Richard Proctor; 1882 (30.7 MB)
  Account of observations of 1874 transit, edited by Sir George Airy; (35.5 MB).
  Accounts of expedition to Waimea, Hawaii, by R. Johnson; expedition to Kerguelen Island by Corbet and Coke; 1874; (34.6 MB).
- [http://www.nhm.org/research/publications/Baja_Cal_Travel/baja46.html](http://www.nhm.org/research/publications/Baja_Cal_Travel/baja46.html)

Transit of Venus books by Eli Maor and by David Sellers (see Education page) are reviewed in the June 2003 issue of *Planetarian*, the journal of the International Planetarium Society (Vol. 32, No. 2, pp. 37-38).

**June 16**

Link added to "Historical" page:

Eric Schreur of the Kalamazoo Valley Museum photographed a beautiful panorama of Matavai Bay, Tahiti, including Point Venus, from which Captain James Cook observed the 1769 transit of Venus.

Updated Links page lists most of the website's links, but without thumbnail images.
### June 12
A few [sunrise images](#) from northeast Indiana suggest how and where the sun will appear next year. From you we solicit images of the sun at sunrise and through 7:05 a.m. EDT for the [Gallery](#) page.

### June 8
**One year to 2004 transit of Venus!**

Link added to "Historical" page:  
http://www.phys.uu.nl/~vgent/venus/venustransitbib.htm
Extensive bibliography related to transits of Venus, with links to many of the original publications.

Link moved from "Historical" page to "Miscellaneous" page:  
http://es.rice.edu/ES/humsoc/Galileo/Things/g_sunspots.html
Animation of Galileo's sunspot observations.

### June 5
Links and text added to "Safety" page, which include pinhole projection and telescope projection techniques:

- [www.chabotspace.org/vsc/exhibits/solarb/educationresources/touchthesun/03_PINHOLECAMERA.pdf](http://www.chabotspace.org/vsc/exhibits/solarb/educationresources/touchthesun/03_PINHOLECAMERA.pdf)
- [http://www.shu.ac.uk/eclipse/observe.html](http://www.shu.ac.uk/eclipse/observe.html)

### June 4
We are creating a [Photo Gallery of sunrise images](#) near June 8th so people can plan where to view the sun with an unobstructed horizon. We invite you send pictures of sunrise with local landmarks to assist observers in planning for the 2004 transit of Venus.

### June 3
Links added to "Miscellaneous" page:  
http://www.dws.org/sousa/mid/transit.mid
Bandmaster John Philip Sousa wrote a march entitled *Transit of Venus* in 1883; (MIDI file).

### June 2
Links added to "Miscellaneous" page:  
http://ennui.shatters.net/gallery/view_album.php?set_albumName=Calculus
A gallery of unique celestial phenomena including transits, occultations, and events as seen from throughout the solar system.
Astronomy Picture of the Day shows the International Space Station transiting the moon.
http://www.intermed.it/bradbury/Allsummer.htm
Excerpt from Ray Bradbury's *All Summer in a Day*.

### June 1
Our email service is back on track. However, mail sent in the past couple of weeks may not have been delivered. If it was important, please send it again to [bueter@transitofvenus.org](mailto:bueter@transitofvenus.org). Also, always include a descriptive Subject line so that your email is not automatically forwarded to the spam pile.

### May 23
E-mail service disrupted. Apparently much of the e-mail destined to [bueter@transitofvenus.org](mailto:bueter@transitofvenus.org) in the past couple of weeks has not been delivered to us. We are working with our ISP to recover lost mail. Please pardon our lack of response to your correspondence. We will post a notice here of e-mail resumption. Thank you for your patience.

### May 13
Link added to "Historical" page:  
http://www.bo.astro.it/~biblio/sma/page/venere_05_06_1761.html
Bibliographical and archival records from the Department of Astronomy of the University of Bologna (Italy).

### May 12
Link added to "Spacecraft" page:  
http://sohowww.nascom.nasa.gov/hotshots/
SOHO spacecraft captures Mercury transit on May 7, 2003. Demand swamps their server, indicating potential interest for transit of Venus.

Link added to "Education Resources" page:  
http://www.aas.org/publications/baas/v34n2/aas200/488.htm
Paper abstract from 2002 AAS meeting deems 2004 transit "a cosmic opportunity."


### May 4
Link added to "Safety" page:
May 1
Link added to "Science & Math" page:
http://www.williams.edu/astronomy/eclipse/transitVenus.htm
Jay Pasachoff's site links to transit of Venus interests.

Link added to "Observing" page:
http://www.capecodhouseforrent.com/
Travel to Martha's Vineyard to view the 2004 transit of Venus when the sun rises. Rent a house.

April 30
Link added to "Education Resources" page:
Coming September 1, 2003: new Sun-Earth Day resources from the fun folks at the Sun-Earth Connection!

April 28
Link added to "Science & Math" page:
http://www.starlab.com/ltiss.html
The Sunspotter is commercially available from Learning Technologies Inc.

April 23
Link added to "Spacecraft..." page:
ESO press release announces discovery of glowing hot transiting exoplanet.

April 4
Three illustrations with parallax analogy added to Education Resources page.

March 31
Links added to website:
http://spot.colorado.edu/~underwod/ast/para.html Animation of parallax.
http://nssdc.gsfc.nasa.gov/planetary/planets/venuspage.html Venus missions and resources from NSSDC.
http://www.lhl.lib.mo.us/pubserv/hos/voyages/cook.html Cook's illustration of "black drop" effect.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 25</td>
<td>New book <em>How to Observe the Sun Safely</em> by Lee Macdonald of Sky &amp; Telescope magazine is linked from Safety! page.</td>
</tr>
<tr>
<td>March 22</td>
<td>One-page flyer posted on Education page is a handout briefly describing transit of Venus FAQ, global visibility, viewing safety, links, etc. Flyer will debut at NSTA Conference in Philadelphia, March 27-30, 2003.</td>
</tr>
<tr>
<td>March 1</td>
<td>Toyota TAPESTRY grant awarded to establish clearinghouse of Transit of Venus resources for educators and multiple users.</td>
</tr>
</tbody>
</table>