



# Winnicentrics

The Journal of the Winnipeg Centre of the Royal Astronomical Society of Canada

## When is a Star Not a Star?

by Ken Metcalfe, novice astronomer-in-training

Well actually most times. When you are looking at a star chances are you're looking at stars; a multiple star system.

Warming to coffee, during a very picturesque fall morning I might add, RASC members were chatting about the public viewing from the previous night at SpruceWoods. I mentioned I had been showing the apparent double star Alcor and Mizar followed by the binary Mizar A and B. Along the way I had said that it was a good example of the stars we see as the majority are multiple star systems. A couple of eyebrows rose and our wonderful president suggested I write an article for our Winnicentrics journal.

Brian D. Mason<sup>i</sup> estimates there is an 85% chance that the star you pick out in the night's sky is not a solitary star but part of a multiple star system. He has compiled an interesting table<sup>ii</sup> of 40 double and multiple stars observable from either the northern or southern hemispheres.

According to J.C. Evans<sup>iii</sup>, approximately 50% of the stars are binary star systems. This is based on stars in our neighbourhood and extending these estimates beyond is an arguable point. However the neighbourhood is a large field considering that trigonometric parallax nets fairly reliable results with a radius of 300 light-years, containing about 500,000 stars.

On pondering the formation of galaxies and star systems, it is not hard to imagine the cosmic material from the Big Bang coalescing into a myriad of collective masses<sup>iv</sup>. And astronomers have found just that: binary systems, double binary systems (2 pairs of two) and so on<sup>v</sup>.

Identification of multiple star systems are usually categorized as:

- + Visual Star Systems - where two or more stars can be seen orbiting each other
- + Spectroscopic Star Systems - binary systems that appear as a single star in telescopic views, but reveal binary nature through Doppler shifts in spectrum
- + Eclipsing Binaries Star Systems - binary systems in which one star passes in front of another.

Visual observing can track the motions of stars that are close together. This can work well for stars close to us and especially binary systems. If you make successive drawings you can observe the motion of the binary system. Astro-photography provides fascinating results when you combine multiple images. The following URL is just such a combined set of exposures for Mizar A and B <http://ftp.nofs.navy.mil/projects/npoi/science/mizarmov.gif>.

Multiple star systems, especially binaries also influence the data we read on star charts and tables. With refinements from spacecraft measurement such as the HIPPARCOS, many multiple star systems are now published with individual magnitudes or both.

*Continued on page 12*

---

### IN THIS ISSUE . . .

Multiple Stars.....	page 1	Jan & Feb Skies.....	page 6	
Meetings.....	page 2	Members Observing.....	page 8	Deadline for the next issue is
Observing.....	page 3	Library.....	page 9	February 22, 2004
Lunar Eclipse.....	page 4	Telescopes.....	page 10	
Book Review.....	page 5	Observatory.....	page 11	

# MEETINGS

Room 118, St. John's College

January 9 Friday

**Beginners Session with Ron Berard 7:00**

**Regular Meeting 7:30**

This month our guest speaker is Robert Dyck of the Mars Society. Since January is "Mars Month" for their society he will be here to tell us about what is happening on the Red Planet. The European Space Agency's mission, Mars Express, will arrive at Mars on December 19 and release its lander Beagle 2. NASA's two Mars Exploration Rovers will land in January; the first will land January 3, the second will land January 24.

Plus the regular features: "What's New" by Jennifer West, "Explore the Universe" Observing Certificate by Lindsay Price, Terra Jentsch will tell us about the Andromeda Galaxy Picture of the Month, and Gail's "Constellation of the Month" looks at Gemini the Twins.

---

February 13 Friday

**Beginners Session with Lindsay Price 7:00**

**Regular Meeting 7:30**

Ron Berard will be our featured speaker this evening to show us his great astrophotography and share his tips and techniques.

Plus the regular features: "What's New" by Jennifer West, "Explore the Universe" Observing Certificate by Lindsay Price, the Picture of the Month and Gail's "Constellation of the Month" looks at Cancer the Crab.

---

*Coming up . . .*

*Mark your calendars. Saturday April 24<sup>th</sup> is International Astronomy Day*

## OBSERVING and OTHER FUN STUFF

**February 14      Saturday**  
**Glenlea Observatory**  
**8:00 p.m. to ???**



The nights are getting dark early now so this is a great time to work on your certificates! These observing nights are always lots of fun, whether you're a beginner or someone who has been enjoying this hobby for years. This is a great opportunity to come out and learn from the more seasoned observers. Coffee, tea and hot chocolate are available when it gets too cold to stay out very long.

*Your hosts this month: Lindsay and Gail*

---

As it's getting dark early and the mosquitoes are gone members will be more interested in going out to Glenlea. If you are interested in using the Warm Room please contact Robin Woods for a key (\$10.00 deposit required). If you would like training on the LX200 Robin will be running training sessions, but not on Members Observing Nights. You can contact him at 586-4173 or robin.woods@uwinnipeg.ca or talk to Robin at a meeting.

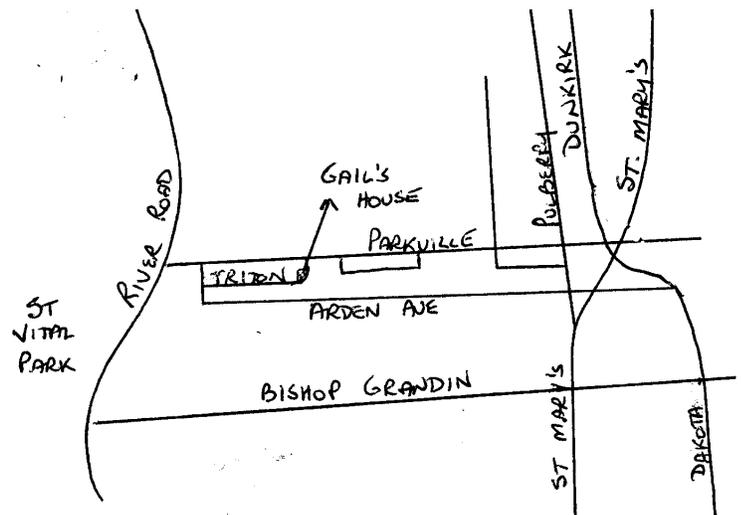
---

## ***PARTY, PARTY, PARTY !!!***

**January 10      Saturday**  
 Time: 7:00p.m. till we collapse  
 Place: Gail's house, 81 Triton Bay

'Tis the season for our annual post-Christmas holiday potluck supper! Everybody bring your wife/husband/girlfriend/boyfriend/significant/insignificant other and get ready for a great start to your new year with the RASC. Call Gail (253-8297) and let her know what you'll be bringing. We'll have a slide show as well so bring your great pictures to share with the rest of us!

Need directions to Triton? Fly past Neptune, turn right at Naiad, past Nereid, and it's the first moon on your left. Don't want to travel to outer space? See the map at right.



The November 8 Lunar Eclipse at the Forks  
*by Gail Wise*

The moon sure picked a cold evening to do its thing this time. We took our telescopes down inside the Oodena behind the Johnston Terminal to be out of the wind and as we set up we realized that our calculations were slightly off because the moon was already starting to go into eclipse. We didn't have much of the public come out but that was okay because it allowed each one more time at the eyepiece. Mike spent quite a while with an older couple explaining what was happening, while all the kids seems to prefer looking through Lindsay's scope.

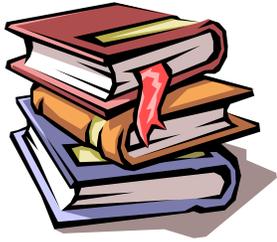
As the moon eclipsed and started to turn red it was an interesting sight for a lot of people. Kris was toasty warm in his balaclava, while a bunch of us were so bundled against the cold that nobody knew who anyone else was. As the eclipse neared totality we could see a huge cloudbank quickly coming our way. Five, four, three, two, *oh rats!* A couple of brave hardy souls stayed outside to see if it would clear (it didn't) while the rest of us went in for hot coffee and cookies and to plan our imaginary trip to Churchill for the transit of Venus next June.

It was good to some of the newer members come out for this event, even if it wasn't the most successful one we've done. Oh well, we've got another one next October 27. Let's hope it's clear, and warmer!

A big Thank You to all who helped with this and all the other events this past year, Mars Mania, Astronomy Day, etc. This club is run by volunteers and we couldn't do it without you.



**Gord Tulloch's ATM Journal**  
*will return next issue*



## **From the Library**

And Then There Was Light

by Rudolf Thiel

Published by The New American Library

Translated from German by Richard and Clara Winston

*Reviewed by Lindsay Price*

One of a number of Astronomy History books held in our library, this one, I soon discovered had a difference. Actually more than one. Unless one read the original German, it is impossible to know if Herr Thiel is a really good author, or the translators are literary artists. Either way, this book is written with a novelist's use of the Queen's English. It is a beautiful read.

It covers the same time period as other history books in our library, with the very early uses of astronomy, allowing humans to define direction, to define time, and to try to define our place in creation and religions. Thiel goes further afield than most of the other authors. Although, he too, tells us of Ptolemy and Anaximander, it is not until page 50 that we get there. Before that he gives us fascinating looks at astronomy of the Chinese, Babylonians, and Egyptians, from whom the Greeks and middle age thinkers drew their ideas. His description of the joint beginning and later separation of astronomy and astrology is illuminating. So is his description of the often fiery interaction of science and the early church. So much of this has been neglected by so many other writers, or relegated to marginal trivia, but with Thiel we see the basis of a millennia and a half of scientific stagnation from the Roman Empire to the Renaissance.

Then we get into the period of advance and achievement. Of course he tells us of Copernicus and Galileo, and the greats that are known to all of us, but he includes extra details and personages that seem to be missing from so much other literature. How many of us know why the Greenwich Observatory was built? It is no co-incidence that the starting point for world time is ... Greenwich. In our talks we have heard of the Flamsteed catalogue and Fraunhoff lines in the spectrum. This is the first book I have read that tells us who these scientists were, and why their names are etched in the astronomy vocabulary to this very day. It is full of detail on the greatest names in scientific history, those who were wildly popular and those who made their accomplishments in obscurity. The names of who were, and are, respected as geniuses, but you would not want to work for them. It is all fascinating stuff!

It is in places, a little dated (distances are given in miles, Saturn has nine moons, and he predicts that in 1958 an artificial satellite will orbit the earth). It was originally written in '56. In other places he makes understandable ideas of gravity, bent space, spectroscopy, and nuclear physics that seem to be as fresh as 'News on Space Channel'.

The book covers a huge base of history, science, and biography, and much of it on material that is seldom covered. There is so much information that was new to me, and all of it written with the sense of phrasing and pacing of a brilliant storyteller.

Like all of the books I review in Winnicentrics, "And There Was Light", is available in our library. If you want to read it, just ask Fred.

# January and February Skies

*by Jay Anderson*

The first two months of the year are the sky's fall season - three months behind the temperature, but marking the end of the summer Milky Way and the approach of the winter constellations. Of course this description fits only in the evening hours, for early morning observers will see little of Cygnus and Lyra and instead will be treated to Orion and Leo.

As the New Year begins, Deneb and Vega can still be found on the western horizon, sinking slowly to the horizon, while the Pleiades star cluster catches the eye mid-way up in the south. Left and below the Pleiades, unmistakable Orion, the brightest constellation, gives an indelible character to the sky while Sirius rises in the east with its timeless companion Procyon a little above. For the next few months, the evening sky will belong to Aldebaran, Betelgeuse and Sirius, though Saturn in the east and Mars in the west will claim some of the glory.

On January 1, Saturn is one day past opposition and its closest approach to the Earth. The rings are wide open and will open even more in the next three months, and the view is breathtaking. The first glimpse of the ring structure is a never-forgotten experience. Not only is Saturn at its closest of the year, this opposition is one of the best in centuries, just like Mars five months past, and should be sought out at the club's star parties.

High above, just below the W in Cassiopeia, lies the faint glow of the Andromeda Galaxy (M31). This galaxy is a kind of personal best for every observer, being one of the most distant objects, at just under 3 million light years, that can be seen with the naked eye. Binoculars will tease a faint remnant of it from city skies, but an unaided eyeball view is easy from Glenlea or other dark sites. Binoculars will reveal a half-moon sized glow and a telescope, especially a big telescope such as the club's 14 inch Dobsonian, will reveal delicate dust lanes and glowing star clouds in the arms.

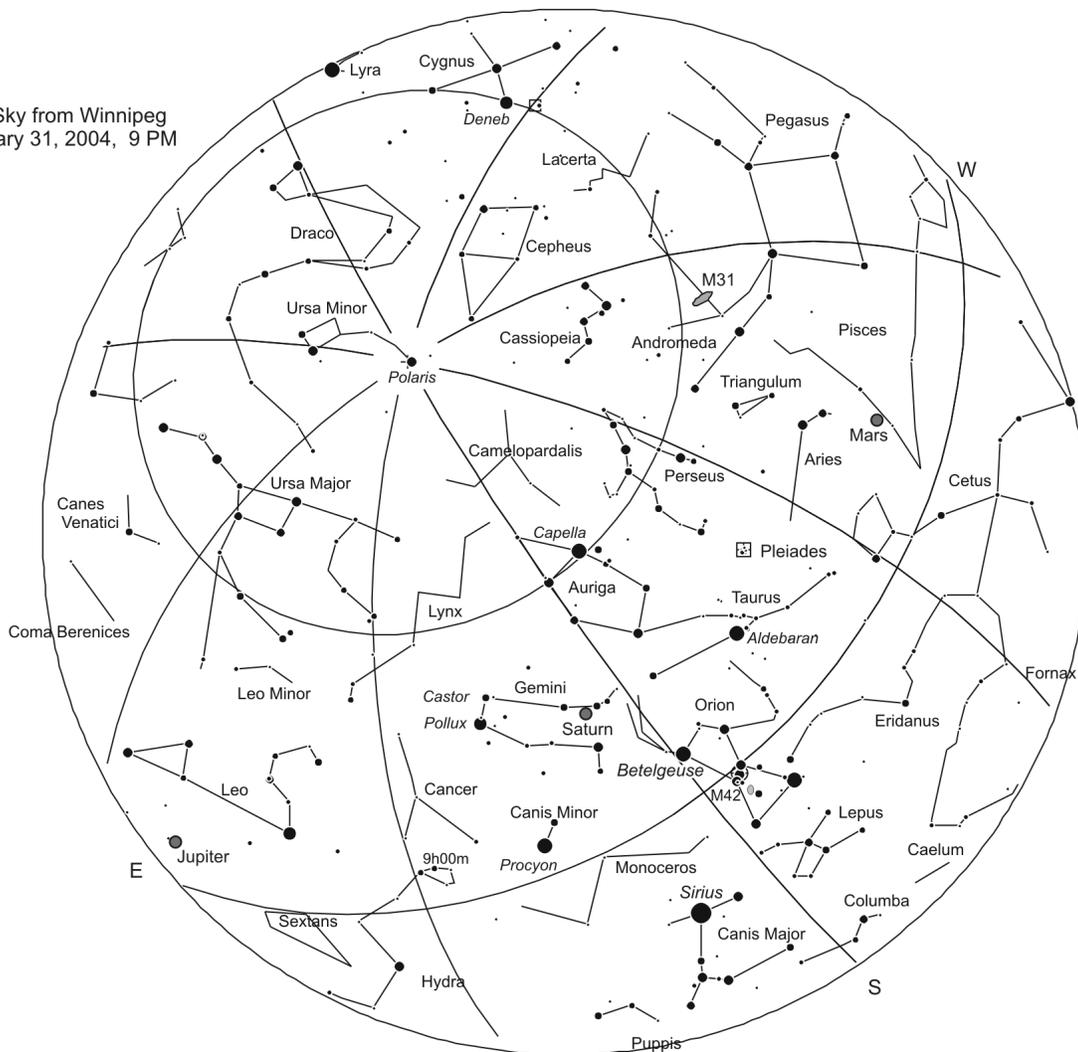
As January progresses, Orion climbs higher and higher each evening, bringing both a visual treat as a constellation and the magnificent Orion Nebula for binoculars and telescopes. Every amateur turns to this constellation again and again to search out M42, sometimes just by eye to confirm that it is still there, but usually with a telescope to see its spreading wings of nebulosity and the delicate tracery of its gas clouds. There is an infinite entertainment here, but it should be left for dark skies so that the initial view is especially imposing.

By January's end, the backward question mark of Leo has joined Orion on the east side of the sky and the last of Deneb and Vega can be spotted in the west before they disappear behind the sun. Leo is a true mid-winter constellation, for here we look out

away from our own galaxy into the depths of the universe and find a host of galaxies to hunt and capture. The triangle-shaped group of stars that follows the head of Leo is the home of a hundred galaxies that require only the most cursory of searches to find. Binoculars won't do here for the galaxies are small and faint – generally about 10th magnitude, but the 14 inch Dob will ferret them out without trouble. There is a sense of the infinite to place two or three galaxies in one eyepiece and imagine the immense gravitational forces that keep them locked together and the billions of suns that contribute to their soft glow.

There is a planetary treat developing through the months of January and February as brilliant Venus, visible early in the evening, climbs steadily higher in the sunset sky while Saturn and Jupiter put in an appearance on the opposite horizon. By the end of February, a belt of bright planets girds the sky - Venus, Mars, Saturn and Jupiter from west to east - and it will be a magical time for star parties and casual observing. The Moon, passing each one in succession from night to night, is sure to provide some opportunities for photography and contemplation for the spring months.

The Sky from Winnipeg  
January 31, 2004, 9 PM



The following members are working toward their:



**Messier Certificates:**

Eugene d'Auteuil	41
Robin Woods	87
Lindsay Price	21
Kilmeny Jones	12
Carey Deschamps	64

**Explore the Universe:**

Terra Jentsch	9
Stan Runge	6
Lindsay Price	72
Timothy Kennedy	8
Kilmeny Jones	40
Don Radford	39
Sandy Shewchuk	14
Judy Starr	22
Ray Starr	21

**Herschel 400's**

Stan Runge	93
Sean Ceaser	133
Mike Stephens	74

**Finest NGC's:**

Sean Ceaser	67
Robin Woods	7
Mike Stephens	58



Congratulations to **Mike Stephens** on receiving his Explore the Universe Certificate!



*The following members have completed their:*

**Messier Certificates**

Kevin Black  
 Alan Sherlock  
 Mike Stephens  
 Rick Turenne  
 Gail Wise  
 Ray Andrejowich  
 Stan Runge  
 Bernie Plett  
 Sean Ceaser

**Finest NGC's**

Kevin Black  
 Stan Runge  
 Gail Wise

**Explore the Universe**

Gail Wise  
 Janet Pollock  
 Janice Low  
 Mike Stephens

**If you need help or  
 inspiration talk to  
 any of us**



**The Winnipeg Centre**  
**Executive Council**

President

Gail Wise 253-8297

wgail@mts.net

Past-President

Scott Young

sdyoung@mb.sympatico.ca

1<sup>st</sup> Vice-President

Robin Woods 586-4173

robin.woods@uwinnipeg.ca

2<sup>nd</sup> Vice-President

Lindsay Price 831-0150

flprice@mts.net

Secretary

Jay Anderson 474-1485

jander@cc.umanitoba.ca

Treasurer

Stan Runge 261-9984

stanrunge@hotmail.com

**Councilors**

Jennifer West 284-6548

westjl@cc.umanitoba

Lloyel Hull 256-6510

lloyelhull@shaw.ca

Ron Berard 668-6551

rcberard@mts.net

Sean Ceaser 797-4509

drceaser@netscape.net

Kevin Black 224-0182

cblack@shaw.ca

**Appointed Positions**

**Librarian**

Fred Wood 774-3238

fred\_wood@shaw.ca

**Observatory Director**

Ray Andrejowich 667-6896

randrejo@hotmail.com

**Observatory Bookings**

Kevin Black 224-0182

cblack@shaw.ca

**Webmasters**

Kevin Georgison

keving@gray.mb.ca

Ron Berard

rcberard@mts.net

Gord Tulloch

gtulloch@shaw.ca

**Winnicentrics Editor**

Gail Wise 253-8297

wgail@mts.net

**Did you notice the new seal  
on the front page?**

The Membership and Promotion Committee introduced an updated Society logo which goes into effect January 2004. The traditional image of Urania, the muse of astronomy, now incorporates a crown, the Big Dipper and a maple leaf to neatly represent each word in Royal Astronomical Society of Canada.



---

**The Library is now in its new home.**

We finally did it! On November 28, Gail, Lindsay and myself moved the library from Lindsay's office at the planetarium to the large storage room at Southlands Community Church. This makes it easier to access the books when there is a request. However, the church has indicated a concern with security and so to ease the officers, I have restricted physical access to Mark and myself.

If you want to check out a book, go to the members section of the centre website and look at the list of books the library has. When you find a book you wish to check out, click on my name and send an email with your request. I must ask that when you send the email, that you use the subject of "library books" or "book request". We will then bring the books with us to the next meeting. The deadline for requesting books will be the Sunday morning before the meeting.

**-- Fred Wood**

---

If you have recently (or not so recently) changed your email address please let me know so my records can be up to date.  
Thanks, gAIL

## **DON'T HAVE ONE? BORROW ONE!**

The Winnipeg RASC owns a number of telescopes which are available for loan.

They consist of:

- ▶ a 75mm f16 polarex(unitron) refractor with an alt/az tripod
- ▶ a 4.5"f8 newtonian on a dobsonian mount
- ▶ a 6" f8 criterion on an equatorial mount
- ▶ a 8"f6 newtonian on a dobsonian mount
- ▶ a Celestron C8 8"f10 schmidt cassegrain with equatorial wedge/tripod.

All of these telescopes come with eyepieces and finder scopes. They are available on a first come-first served basis, and can be booked for 1 month at a time.

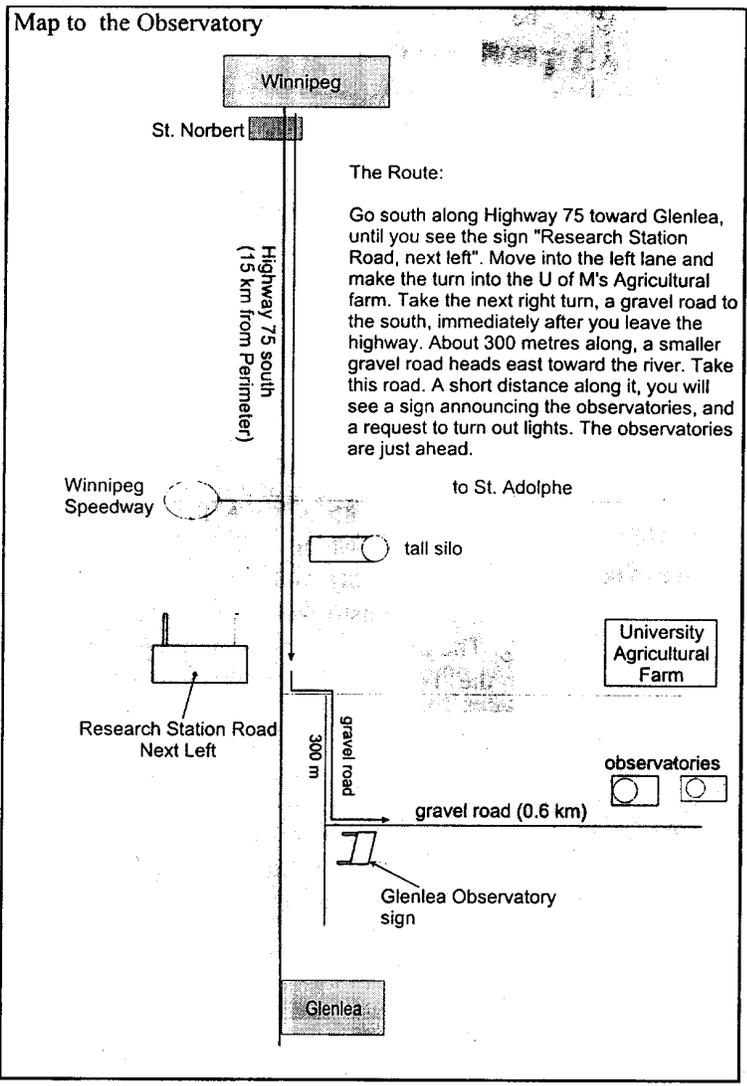
The Celestron requires a 1 year WPG RASC membership to book. The telescopes can be had by calling Ray Andrejowich at 667-6896, and can be picked up at his house or at the astronomy club meetings. Picking up and dropping off at the astronomy club meetings is the preferred method of acquiring, but alternative arrangements can be made with Ray.

### **We have the following new members**

Trevar Bryant, Douglas  
Andrew Sexsmith, Stonewall  
Vincent Briscuso, Winnipeg

**Welcome to our club!**

*Winnicentrics* is published six times each year by the Winnipeg Centre, RASC. *Winnicentrics* is produced by and for the members of the Winnipeg Centre, and any opinions expressed are those of the author. If you have comments, questions or concerns about *Winnicentrics*, you can contact any of the councilors or write to RASC, Winnipeg Centre, Box 2694 Winnipeg MB R3C 4B3



## Finding the Observatory

The Winnipeg Centre maintains a working observatory and warm room at the University of Manitoba's Research Farm. The observatory contains a 12" LX200 telescope and a 14.5" Dobsonian. Members of the Centre may sign out the use of either of these telescopes provided they have been members for one year and have first taken a short instruction course on its use.

The warm room provides a convenient place for members to take refuge from winter temperatures and summer mosquitoes, or to wait out a passing cloud. The building also provides desk space and lighting for planning a night's observing session. A cement pad in front of the warm room and observatory provides a convenient spot to place members' telescopes while conducting personal observing programs.

Etiquette requires that you approach the observing site with your headlights off. On newer cars, stop the engine at the Glenlea Observatory sign, engage the parking brake

by one notch, and then restart. Your headlights should remain off, but you can still use your parking lights to drive. Proceed slowly, and be careful about parked cars along the road, or people walking. If you cannot turn off your headlights, make a cardboard or garbage bag mask to dim the lights. You might wish to turn around at the end of the road so that you are facing the direction back toward the highway at the end of the evening.

## Multiple Stars *continued from page 1*

For example let's look at ALCOR and MIZAR (A and B). These star systems are found in the middle of the handle of URSA Major, my constellation pal The Big Dipper. As an apparent double, ALCOR and MIZAR appear to the naked eye almost as one. Generally I find this collective published with a +2.0 magnitude. Mizar (A and B) are published as +2.2. ALCOR is listed individually as +3.99 while Mizar B lists as +3.94.

Mizar A and B were the first binary stars identified in the 1600's by *Benedetto Castelli*<sup>vi</sup>. These companions are separated by 15 arcseconds, which can be resolved with most telescopes. By contrast, Alcor is separated by 11 arcminutes, which on a dark night should be apparent to most naked eye observers.

Lo and behold the story of Mizar is not complete. Through spectral analysis, Mizar A is itself revealed to be a binary star system. They are listed as 0 arcsecond<sup>vii</sup> separation (that'll be tough on almost any scope!) and are spectroscopic binaries with double lined spectra.

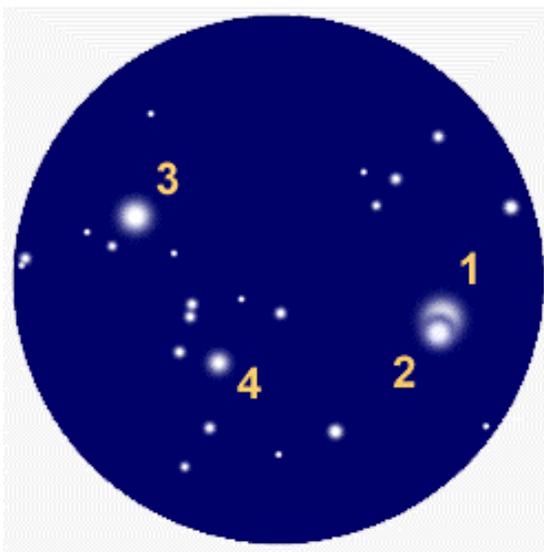
So the next time you look up at that nice sparkling star and you think you see double, you could be stone cold sober!

### **MIZAR (1,2)**

"wrapping" (loincloth)

#### **Other Names**

- Mizat; Mirza.
- Zeta Ursae Majoris
- HR 5054
- HD 116656



*Four richly storied stars in this 15' field were within reach of the simple telescopes of Galileo Galilei and his friend Benedetto Castelli. These are Mizar A (Zeta\_1 UMa, 2.27 mag), the famous 20.5-day spectroscopic binary discovered in 1889 and imaged with the NPO1 in Arizona a century later, Mizar B (Zeta\_2 UMa, 3.95 mag), its visual companion 15 arcseconds away, also a spectroscopic pair of stars which orbit each other twice a year, Alcor (80 g UMa), a single but variable star (one of the Hipparcos discoveries, 4.04 – 4.07 mag), and finally Sidus Ludoviciana (HD 116798, 7.59 mag), a star once considered a new planet<sup>viii</sup>.*

(1) Mizar A (2) Mizar B (3) Alcor (4) Sidus Ludoviciana

<sup>i</sup> OBSERVER'S HANDBOOK 2003 - RASC, page 256

<sup>ii</sup> OBSERVER'S HANDBOOK 2003 - RASC, page 258

<sup>iii</sup> Physics & Astronomy Department, George Mason University -

[http://www.physics.gmu.edu/classinfo/astr103/CourseNotes/Text/Lec04/Lec04\\_pt3\\_txt\\_starProperties.htm#14.2](http://www.physics.gmu.edu/classinfo/astr103/CourseNotes/Text/Lec04/Lec04_pt3_txt_starProperties.htm#14.2).

<sup>iv</sup> Formation of Binary Star Systems - <http://csep10.phys.utk.edu/astr161/lect/solarsys/binary.html>

<sup>v</sup> Multiple Star Systems -

[http://www.physics.gmu.edu/classinfo/astr103/CourseNotes/Ppt/Lec04\\_pt3\\_starProperties/sld027.htm](http://www.physics.gmu.edu/classinfo/astr103/CourseNotes/Ppt/Lec04_pt3_starProperties/sld027.htm) (slides 27-30)

<sup>vi</sup> A New View Of Mizar by Leos Ondra = <http://leo.astronomy.cz/mizar/article.htm>

<sup>vii</sup> <http://www.alcyone.de/SIT/mainstars/SIT000811.htm>

<sup>viii</sup> A New View Of Mizar by Leos Ondra = <http://leo.astronomy.cz/mizar/article.htm>