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Winnicentrics

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

Astronomy Day 2001

by Stan Runge

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Deadline for the next issue is August 19

On April 28th, the Winnipeg Centre joined the other 25 Centers of the RASC, as well as other Astronomical Associations World Wide, to celebrate International Astronomy Day. The event was organized by our Centre President Scott Young, who just happens to be the RASC's Astronomy Day Coordinator.

As in the past years, we set up displays at the Forks Market. As one of the hottest spots for Winnipeggers on Saturday, it allows us access to a multitude of potential members. From behind the desk, our members were able to address all the questions from the interested onlookers.

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July

Beginners Session 7:00
Regular Meeting 7:30

July 13

Featured Talk is titled "The June 21 Total Solar Eclipse" and will be presented by Jay Anderson.
Gail's constellation of the month looks at Scorpius.
Also a review of the London RASC General Assembly and the Astronomical Society of the Pacific meeting held in Minneapolis will be topics by others.

August 10

August

Time: 7:30
Location: Glenlea Observatory

The beginning of the Perseid meteor shower marks our annual barbecue at the Observatory. Previously held in June, we've moved it this year to get slightly darker skies and hopefully drier weather. Bring along some barbecue-ables (and a barbecue if you can), some drinks, and any food for sharing. Also bring along your spouse or significant other, kids, etc. for a fun family day. (Don't forget the bug spray!)

People usually arrive around 6:30 or so to start eating. The event continues as long as people want to stay. If it's clear, we'll have both the new Meade 12" and the 14.5" Dob in use.

Also, the SSSP is August 17-19 this year...many Center members are going. The 14.5" Dob is going too.

SSSP 2001

The Regina and Saskatoon Centres of the RASC wish to invite you to the **Saskatchewan Summer Star Party 2001,** to be held August 17 – 19 at the Cypress Hills Interprovincial Park, 32 km south of Maple Creek, Saskatchewan.

This year's Father Lucien Kemble Memorial Lecture will feature **Alan Dyer**, a well-known amateur astronomer and associate editor of SKYNEWS magazine. Alan's main talk on Saturday evening will be **"Hiking the Milky Way"**. He will take us on a guided photo tour of the biggest and brightest galaxy in the sky, the Milky Way. Alan will also be giving a **Telescope User's Seminar** Saturday afternoon. He will provide advice on choosing and using your first telescope. This session is aimed at beginners who have just purchased a telescope or are thinking of buying one. Segments will deal with tips on using computerized telescopes, how not to set up a telescope, tips on frustration-free telescope use at night and recommended accessories to buy.

SSSP provides a delightful weekend for families, but can also meet the needs of the most expert observer with superbly dark skies and excellent chances of dry, clear weather. We offer astronomical activities for all ages and levels in a unique mile-high nature park setting with a wide range of recreational options. Presentations are held in comfortable, air-conditioned convention facilities. Besides the talks and the night viewing and the Saturday Night Banquet, activities include: a wiener roast on Thursday night, tennis courts, golf course (miniature for sure), outdoor swimming pool, hiking trails, ball diamonds, picnic grounds and trail rides. On top of that there are programs at the interpretive centre and various water recreational activities. The park offers certified weekend courses (swimming) for children as well as other programs.

Campsites are freely available, and reasonably priced hotel, cabin and condo units are available by pre-booking with the park. (Make sure you tell them you are with the Star Party when booking accommodations!) For accommodation information, call the Resort at (306) 662-4477 or the Park at (306) 662-5484.

Brochures with registration forms will be available at the meeting, or for more information visit their website at http://prana.usask.ca/~rasc/sssp01.html

OBSERVING

The following members are working toward their Messier certificates:

Eugene d'Auteuil	27
Ray Philippe	12
Mike Karakas	108
Sean Ceaser	86
Robin Woods	49
Lindsay Price	1

Finest NGC's:

Sean Ceaser	5
Gail Wise	62

Herschel 400's:

Sean Ceaser	19
Gail Wise	118

CONGRATULATIONS TO STAN RUNGE ON RECEIVING HIS MESSIER CERTIFICATE AT THE LONDON GA!

Are you working on your Messier list?
Finest NGC's?
Herschel 400's?
Let me know how many you have and I will publish it here so we can encourage each other!

Humans in Space

by Ray Philippe

This series takes us on a journey through time to explore the human race's quest for space flight.

Part 3

Continued from last issue

At the end of our last installment, Wernher von Braun had just been hired by German military captain Walter Dornberger to work in the military's new rocket artillery unit. The year was 1932.

Though von Braun would be recognized decades later as the greatest rocket scientist of all time for all his accomplishments and breakthroughs in rocketry, at the time he was only twenty years old. As talented as he knew von Braun to be, Dornberger knew that a twenty-year-old alone could not carry out the mission of the rocket artillery unit. So, they went about assembling their core rocket team, and by 1934 they had recruited 80 people, most of them real engineers who had already done serious engineering work. The money now rolled in, but the problem of building a rocket that could "service" a target hundreds of miles away still remained. Even the most basic issues were formidable, not to mention the more advanced problems such as stability and guidance systems, and radio communication with the rocket.

By this time, of course, Robert Goddard had moved his rocket testing grounds to New Mexico where he could work in greater secrecy. He had already single-handedly solved many of the problems von Braun now faced. Still, Goddard's rockets had yet to reach altitudes any higher than a few thousand feet.

But, unlike Goddard, von Braun was not a loner. He enjoyed working with a team, and his engineering and management skills would allow the Germans to make quick progress.

Wernher von Braun

The first rocket, dubbed the A-1, was test-fired less than a year into the project, and was instantly centuries ahead of anything the VfR had done earlier. It was powered by alcohol and liquid oxygen, and delivered an awesome 660 pounds of thrust. But it never flew because its nose was too heavy. The following year, its successor, the A-2, was built. By December 1934, two A-2s were ready for demonstration to some members of the German high command. Dornberger hoped to attract more military backing for his rocket team. He was not disappointed: the A-2s roared up more than a mile high off their launchpads. After that, the military began pumping more money into the program. A more secret site was found, near the German village of Peenemünde, where large-scale missile development and testing could begin.

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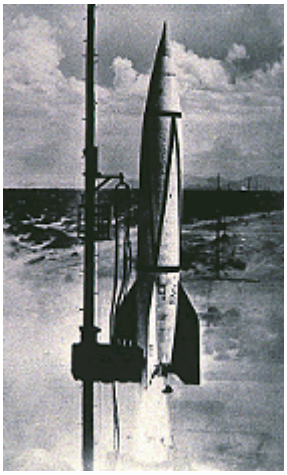
The first rocket built at Peenemünde was the A-3, and three of them were ready for launch by the fall of 1937. But there were problems with the A-3's inertial guidance system. Problems that would take two hellish years for them to solve. Meanwhile, the Third Reich began to invade Eastern Europe. In 1938, Germany annexed Austria; in 1939, Czechoslovakia. Then Hitler's gaze settled on Poland. World War II was imminent.

By now, Dornberger wanted a rocket that could deliver 2000 pounds of explosives to a target 160 miles away. It had to be transportable by train or truck, weigh less than 12 tons (including 8 tons of fuel!) and have 25 tons of thrust, nearly twenty times the thrust of the A-3.

It took six years of back-breaking research and experimentation, but in the summer of 1942, von Braun and his team were ready to test the first A-4s. The first two tests were considered failures, but by October the team was ready for a third test. The great 46-foot cigar-shaped A-4 rose off its launchpad and climbed smoothly over the Baltic Sea. Within thirty seconds it broke the sound barrier, and after one minute it was gone from sight. It covered 118 miles in five minutes, and reached an altitude of 60 miles.



A-4 rocket, later renamed the V-2

Despite the hugely successful launch, Hitler did not rush them into production. In fact, since the start of the program Hitler had remained strangely uninterested in the potential use of guided missiles as weapons of war. But Dornberger was convinced that the Third Reich needed this new weapon, especially now that the tide of the war was turning against Germany. He was granted an audience with the Führer in July of 1943. The war was going badly for Germany; the Allies had mounted their D-day invasion, and Allied troops were now sweeping east. Hitler, hunched over and looking very pale, watched impassively as Dornberger and von Braun delivered their presentation on the A-4. At one point, something suddenly clicked in Hitler's head and he focused on what the men were saying. He began asking all sorts of questions. To the dismay of the rocketeers, by the end of the meeting, Hitler believed the A-4 was the magic wand that would instantly turn the tide of the war back in Germany's favour. Dornberger and von Braun feared that Hitler was expecting too much.

Following the meeting, money, manpower and materials flowed like water. The rocketeers had no trouble getting anything they desired. The A-4 was rechristened the V-2, where the *"V"* stood for *Vergeltungswaffe* (Vengeance Weapon). It went into large-scale production, with an incredible 900 rockets per month being built by the end of the war.

The first V-2s thundered towards Western Europe in September 1944, just fourteen months after the meeting with Hitler at Wolf's Lair. When the V-2s began exploding on the streets of London and Antwerp, there was a sense of relief amongst the Allies because the missiles did not

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Humans in Space *continued from page 5*

turn out to be the apocaliptic weapons of mass destruction that the Allies had feared. Nor did they reverse the tide of the war. The V-2 rocket was more a device of horrible psychological terror than a successful strategic weapon. By the end of the war, twenty-seven-hundred V-2s had struck London and Antwerp, killing a total of twenty-seven-hundred civilians - an average of one death per rocket. Taken in the larger, strategic context of the war, they had failed. Too few had been launched far too late.

As Germany crumbled, the Allies raced to find von Braun's rocket, and the team that had designed and built it. *Continued in next issue*

Astronomy Day *continued from page 1*

I should use the term "trained" members, because many of the members have been helping at the desk for years. Most people would be surprised how the combination of beginner sessions, regular meetings, and the coffee break discussions provides members with a huge knowledge base. It also allows for the beginners to mix with experienced members to get their own answers. Plus, there is always a need for some of the newer members to participate.

Outside in the courtyard area, Jay Anderson had his scope set up, to provide free views of the sun. I say free, because you'd be amazed at the number of people who expect to have to pay. Fortunately, for a large portion of the day, the sky was clear enough to see the sun. As well, there were a number of interesting sunspots. My favorite solar observer was a young girl, Makayla Peters, whom I challenged to draw what she saw. Her results are displayed on the front cover. It just shows you that when you challenge an individual to explain or draw what they see, they really improve their observational skills quickly. Also works with Messier objects by the way.

The evening observing session was abbreviated with some clouds that had rolled in late in the afternoon. Working with a partially clear sky, a handful of telescopes were on hand to treat a nicely sized crowd. The five-day old Moon and a setting Saturn were the main features to be shown. Although I wasn't able to attend this year, the evening sessions are one of my most favorite events. There is a thrill in showing the beauty of the skies to a very young child, or a hip teenager who let you know how Cool it is. Or to show an elderly person, who has never seen through a telescope, something as spectacular as the crescent moon. It shows that the interest in the sky crosses all cultural and age boundaries.

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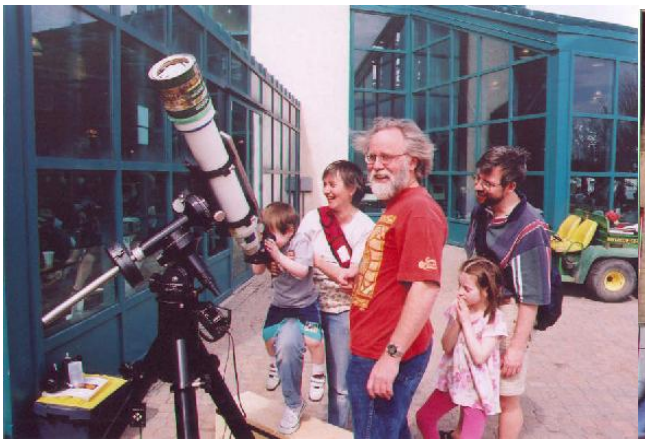
Astronomy Day *continued from page 6*

I really support the International Astronomy Day program. I think it is important for us to pass along our excitement to those who are astronomically challenged. I enjoy sharing my favorite hobby and hope that next year you will assist me.



The Mad Scientist

His Assistants

The ***best*** telescope

WHAT TO SEE IN THE SKY WITH A TELESCOPE

For the Beginner

By Patrick O'Connor

This was first written in March 2001 for students at Powerview School (near Pine Falls) who wanted to learn how to use their telescopes. It has been revised for Winnicentrics.

In the last installment we covered the bright objects, the moon and the planets. In this installment we will cover the Stars and the Faint Objects or "Deep Sky Objects"

Stellar Magnitude

First I will explain the brightness or Magnitude scale for stars. This information was found at http://www.skypub.com/tips/basics/starmags.html.

As the stellar magnitude numbers get bigger, the star or other object gets dimmer. This is partly a fluke of history. But it is also useful, because with better telescopes we keep finding dimmer stars, and we can add more numbers to the scale.

The Stellar Magnitude scale was first invented by the Greek astronomer Hipparchus around 129 B.C. He divided all the stars he could see into six groups with the magnitude 1 group being the brightest and the magnitude 6 group the faintest he could see. Today magnitude 6 is still the faintest you can see with just your eyes.

When Galileo turned a telescope to the sky he found more, fainter stars. He started adding magnitude 7 and higher numbers.

In 1856 the Oxford astronomer Norman R. Pogson proposed that the magnitude scale from 1 to 6, a difference of five magnitudes, be defined as a brightness ratio of exactly 100 to 1. One magnitude thus corresponds to a brightness difference of exactly the fifth root of 100, or very close to 2.512, or about 2.5. This is a logarithmic scale. With this scale, some stars were too bright for magnitude 1 and this required magnitudes of 0 and negative values. Vega is magnitude 0 and Sirius, the brightest star, is magnitude -1.5. Venus gets as bright as -4.4. The full Moon is about -12.5, and the Sun blazes at magnitude -26.7.

The main point is that 6 is the faintest magnitude you can see with the unaided eye. When looking for faint objects, magnitude 6, or 5, objects can be seen with the unaided eye, and in your finder scope, and thus should be easier to find. Magnitudes around 7 and 8 should be easily visible is a small telescope. Objects with magnitudes of 9 or greater are going to be harder to find.

Stars:

There are a lot of stars, but most are not very interesting. At one time, amateurs were keeping track of the brightness of variable stars. There are double stars and multiple stars. Some stars have different colors in a telescope. Single stars can be used to test the optics and alignment of your telescope and double stars to test the resolution (see pages 8 & 9 of the Synta-Scope catalog available from Ray Andrejowich). Here are some examples of double stars for the summer.

Always visible:

Mizar (Zeta Ursa Major [Big Dipper]) is in the handle of the Big Dipper, the star next to the end of the handle. With good eyesight, 2 stars can be seen here. The second star is called Alcor. In a telescope 3 stars are visible, Mizar being split into Mizar A and B. Mag. 2.4, 4.0, 4.0. In the 1960's I was told each of the 3 stars is a double star and all 6 stars are in orbit around each other. Checking the latest information on the Internet I have learnt that Alcor is no longer thought to be double, and astronomers are debating whether Alcor is in orbit around the Mizar quadruple star.

Summer:

Bootes: Two stars along the East side of Bootes are double. The second star from Arcturus, Delta Bootis is Mag. 3.5 & 7.5, Sep. 105". The first star from Arcturus, Epsilon Bootis is Mag. 2.5, 5.0 but separation only 3", a challenge for a 60 mm scope to separate.

continued on page 9

Ras Algethi (Alpha Hercules) is variable and double. It is far below the square of Hercules, and little known (I have not seen it). One Mag. varies from 3.1 to 3.9, the other is 5.4. Sep. 5", orange & blue.

Lyra: All the 5 stars in Lyra are double (or more), including Vega. Vega is Mag. 0.1 & 10.5, a big difference, Sep. 56".

Albireo (Beta Cygnus [the Swan]). At the Southwest end of the cross that makes the swan. Mag. 3 & 5, Sep. 35", color gold & blue.

Autumn:

Almaak (Gamma Andromeda). At the end of the Southeast line of Andromeda.
Mag. 2.1 & 5.4, Sep. 10", Yellow & Blue

Faint Objects called "Deep Sky Objects"

These include nebula (dust clouds), Globular Clusters (stars in a tight ball), Open Clusters (stars near each other), and Galaxies.

Larger diameter telescopes are better for seeing these objects. But the brighter ones can be seen in small telescopes. Usually the lowest power is best for viewing these objects in any telescope.

The first list of these objects is the Messier Catalogue. A French astronomer, Charles Messier made it around the late 1700's. There are about 110 Messier objects, which are identified by "M" and a number on sky charts.

I will list some of the Messier objects that are the easiest to find, even with small telescopes. Some of these are plotted on the Summer Star Chart that is included with this article.

Summer Messier Objects:

Follow the arc of the Big Dipper's handle to find the bright star Arcturus. The constellation Bootes the herdsman is a kite shaped group of stars above Arcturus. The constellation Corona Borealis (the Northern Crown) is a semi-circle of 7 stars to the East of Bootes. To the East of Corona Borealis is the constellation Hercules. The main body of Hercules is a quadrilateral of 4 stars.

Easier to find:

M13 Hercules Globular Cluster. Mag. 5.7. M13 is about 1/3 of the way down the west side of the quadrilateral that makes up Hercules. Visible in any telescope.

M57 Ring Nebula in Lyra Mag. 8.8. This is a Planetary Nebula, a ring of gas thrown off by a star. Three bright stars make the summer triangle. Vega is the brightest and the highest. It is in the constellation Lyra. Lyra also is 4 faint stars below Vega, making a parallelogram. M57 is half way between the lowest two stars.

M56 Globular Cluster. Mag. 8.3. Between Lyra and the star Albireo in Cygnus (see stars above).

M27 Dumbbell Nebula. Mag. 7.3 on the other side of Albireo in Vulpecula.

Harder to find:

These are bright for faint objects, about Mag. 6, but there are no bright stars near them, so they are harder to find. Need star charts and binoculars to find.

M3 Globular Cluster. Mag. 6.3. Listed in Canes Venatici [Hunting Dogs]. M3 is located between Bootes & the Big Dipper.

M92 another Globular Cluster in Hercules. Mag. 6.2. Above the quadrilateral that makes up Hercules.

M29 Open Cluster Mag. 6.6. "Small, poor open cluster" 2° South of the center star in the cross of Cygnus the Swan.

Some of many clusters in Scorpius and Sagittarius. These are low in the South.
M4 Globular Cluster. Mag. 5.8. M4 is near (6 min. RA West) Antares (Alpha Scorpius) Mag. 1 Red star near the red planet Mars in June & July.
M22 Mag. 5.1, M28 Mag. 6.8 Globular Clusters near top of "Teapot" or "Bow" in Sagittarius [The Archer].
M24 Mag. 4.6, M25 Mag. 4.6 Star cloud And Open Cluster 5 Deg. North of M22, M28.

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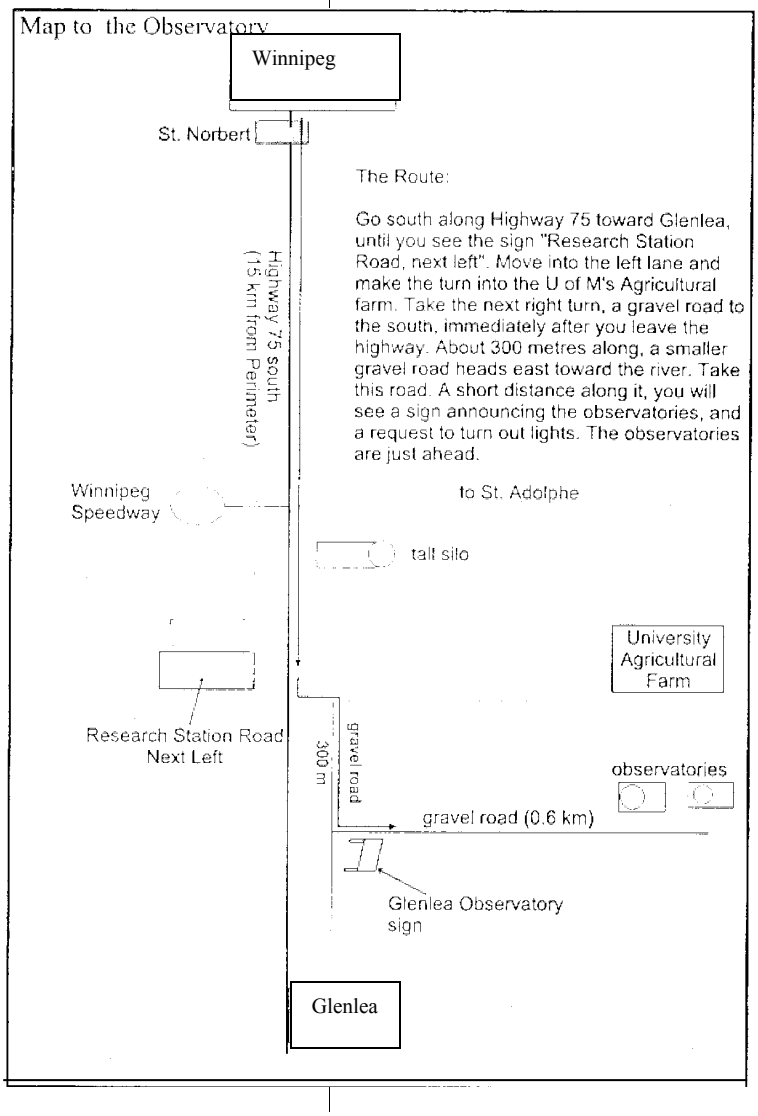
What to See *continued from page 9*

Autumn:

M31 Andromeda Galaxy. Closest Galaxy we can see in the Northern Hemisphere. Sky charts will help find this. Pegasus is a square made of 4 stars. The star in the Northeast corner of the square is also the head of Andromeda. Andromeda is two rows of stars going Northeast of this star. You take the second pair in these two rows of stars, go North by the distance between these stars and you reach M31. It can be seen with the naked eye on a very dark night.

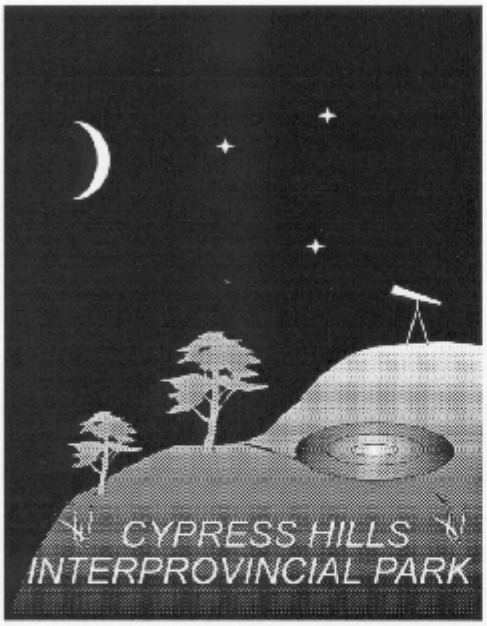


The Winnipeg Centre maintains a working observatory and warm room at the University of Manitoba's Research Farm.

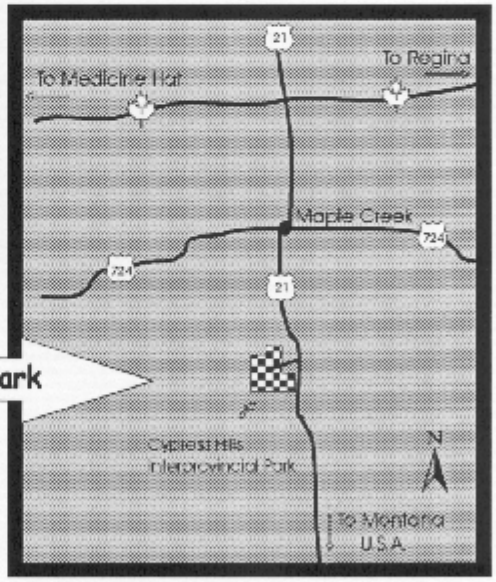
The warm room provides a convenient place for members to take refuge from winter temperatures and summer mosquitoes, or to wait out a passing cloud. The building also provides desk space and lighting for planning a night's observing session. A cement pad in front of the warm room and observatory provides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

SASKATCHEWAN SUMMER STAR PARTY AUGUST 17-19 2001



Star Party: An event held under open dark skies, where we get together to study, gaze, and marvel at the heavens. We share observations, see and use a large assortment of astronomical equipment, and experience the wonders of the celestial sphere. Daytime presentations, informative displays and activities, add to the adventure.



Place: Cypress Hills Interprovincial Park

Date: August 17 - 19, 2001

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