SASKATOON SKIES

December, 1994 **Volume 25 Issue 12**

Saskatoon Skies is a publication of The Saskatoon Centre of the Royal Astronomical Society of Canada

Sorry. The Photo Copier wasn't working right!

inside...

LOTS OF GOOD STUFF!!

Minutes of the November Executive Meeting
7:00 PM, Nov. 21,1994 Room B-10, Health
Sciences Building, U of S Campus

Present: Ed Kennedy, Richard Huziak, Scott Alexander, Sandy Ferguson, Al Hartridge, Garry Brett, Merlyn Melby, Mike Williams

1) Meeting called to order 7:00 PM. Rick Huziak
2) Observer's Group report. A large crowd attended, 20 to 25 people were out... Rick Huziak
3) Call for a committee to plan and locate a new observing site for the spring of 1995. Motion by Rick Huziak for establishing a committee to plan and locate a new observing site...Second by Garry Brett.
Carried by show of hands. Volunteers for this committee, Al Hartridge, Garry Brett, Merlyn Melby, David Cornish and Rick Huziak.
4) A motorized telescope mount has been requested from CSA. No word yet.
5) Discussions on the news letter, format of the news letter, advertisements and promotions. Garry Brett.
6) We received a letter and photographs from Robert Brummond, the gentleman who delivered the dome we bought from the United States. Rick Huziak
7) The RASC Saskatoon Centre received a donation of Planetary Reports and Astronomy Magazines from Terry Prentice. Rick Huziak
8) The light pollution committee has been inactive for sometime. Motion to disband the committee, Rick Huziak. Second, Al Hartridge. Carried by show of hands.
9) Suggestion of a donation be the Saskatoon Centre to the Gordon Patterson Memorial fund. Rick Huziak and Mike Williams to decide on the amount. Ed Kennedy
10) Meeting adjourned 7.38 PM.

Minutes of the November General Meeting
8:00 PM, Nov. 21, 1994 Room A-226,
Health Sciences Building, U of S Campus

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1) Meeting called to order 8:07 PM. Members and guests welcomed. Rick Huziak
2) Promotional items for sale. There is a list posted with prices. Rick Huziak
3) Dues are past due - please pay up, or join if you are on the temporary list. Rick Huziak
4) Motion to adopt the October minutes as published in the newsletter. Scott Alexander
5) Observer's Group report. We had 20 to 25 people out. The skies were reasonable. Rick Huziak
6) Int'l Meteor Organization is calling for observations of Thursday's Leonid Meteor shower. There are indications that a meteor burst occurred. Next major shower is the Geminids - Dec. 14 peak (near full moon).. Rick Huziak
7. There is a binocular comet P/Borrelly. Details are in Sky and Telescope, Dec/94. Rick Huziak
8) Wolf 359 is requesting astrophotographs for inclusion in a new publication. Rick Huziak
9) Announcement of the formation of the new Observatory Committee and the dissolution of the light pollution committee. Rick Huziak
10) Note of the obituary for Gordon Paterson. The RASC Saskatoon Centre will make a donation to the Disabilities Council. Rick Huziak.
11) We need a speaker for December as the speaker we had lined up is not available.
12) Tonight's program: New Ideas in Relativity - Dr. Eric Woolgar, U of S Math Dept. Determining the Magnitude Scale - Dr. E. Kennedy
13) Meeting adjourned 9:42 PM. Motion by Erik Kesser. Second Al Hartridge.

Due are Way Past Due

Please renew your membership as soon as you can. If you have not renewed by December, your name will be dropped off the newsletter list. Send due to "Saskatoon Centre, RASC, PO Box 317, RPO University, Saskatoon, SK, S7N 4J8 or pay Mike Williams at the general meeting.

Regular Membership.....$40.00
Youth Membership.....$22.50
Life Membership.....$900.00
If you do not intend to rejoin the Centre, please let Rick Huziak or David Cornish know.

Customs, Duty and the Amateur Astronomer

by Rick Huziak

Many people call to ask me if it is worth buying equipment and publications out of the United States because they are concerned with duty and exchange rates. This article should help with some answers to the most asked questions. In my previous job, I handled all customs work for our company's foreign exports and imports. From this experience I gained great insight in how the customs/duty game is played and what the best methods are for getting your new acquisition here at the lowest cost. When making a purchase from a foreign (typically US) source, you have to worry mainly about five factors: the exchange rate, duty rate, brokerage fees, GST and shipping costs. Add all these up, and you have the final cost of your purchase.

The Exchange Rate:

There is really not much to say about this. In recent years, the Canadian dollar (Can$) has been worth far less than the US dollar (USD). Currently, the rate of exchange is about $1.35 Can$ to $1.00 USD. Therefore, what appears to be a reasonable cost in US prices is often not so attractive when you discover what the Canadian equivalent cost is. A $2000 USD telescope begins to cost you $2700 Can$. An that's just the start!

The Duty Rate:

Here is the part that most people do not understand. Items that flow across all international borders are subject to duties and tariffs imposed by the importer's country which are designed to punish foreign manufacturers for competing with domestic manufacturers of similar goods. Where competition is high, duties and restrictions are high. Where items are unique and not in competition, duties are low. In order to reduce tariff wars, the United States and Canada agreed to the US-Canada Free Trade Act (FTA). This act is designed to reduce duties on most (not all) items to 0% over a 10-year schedule, thus allowing for an eventual "free trade" of goods. The part that many do not understand is that the Free Trade Act applies ONLY to goods that have been produced in Canada or the United States. (A minimum of 51% materials or value added). Goods produced off shore (i.e. Japan, Korea, etc.) DO NOT apply in the FTA, and full duties still have to be paid on these items, even if they are procured from a vendor in the United States. With the extension of this act to the North American Free Trade Act (NAFTA), Mexico has now been included in the duty free equation. Note that there are several different rates of duty as well; a "standard tariff", a "preferred" tariff, a US tariff, a Mexican tariff. It's all very complicated. However, what we have to worry about in a purchase from the US is the standard and preferred tariffs. The standard tariff is the rate you will pay for the good. It is the highest rate.

If you can prove the good was made in the US, then you will pay the preferred, lower, tariff rate. If you can prove the good was made in Canada originally, you do not pay any duty.

Once you have made a purchase of goods from the US vendor, and the goods arrive at the border, Canadian customs agents take over and begin the process of valuing the goods for duty. In order to do this, they need a Bill of Sale which is typically just the Invoice. If this is the only document that arrives with the shipment, the agent will take the stated value of the goods and apply the maximum allowable duty rate. If you want to get the preferred duty rate, another document must accompany the shipment. This is called the "Certificate of Origin". The Certificate is an affidavit that states who made the goods in what county and that the goods comply under the FTA for a rate reduction. The manufacturer or vendor must fill this out. Although it is an easy form to fill out, requiring about 2 minutes of effort, problems occur here. US manufacturers and vendors seem to believe that there is no such thing as a foreign country and they seem not to have the slightest clue about rules of export. Although it should be second nature to anyone exporting goods to fill out the Certificate, many US firms don't even know what the form is. Despite this, when placing the order, you should insist that the company provide a Certificate of Origin with the customs documents. If they do, it will save you money. On low cost items, the saving may not be significant, but on high value items the savings may amount to tens or hundreds of dollars! Once the customs agent sees the Certificate, they will apply the lower, preferred rate. Furthermore, the Certificate provides a Tariff Item number which uniquely identifies the goods, ensuring that the goods are not misclassified by the customs agent. For example, a properly classified telescope mirror blank, made of glass is duty-free. A customs officer who cannot recognize the telescope mirror for what it is, without a Certificate, may think it is just a lump of regular glass, and may use the rate for raw glass, which may be 8%. So, with all that said, here's the numbers your vendor will have to know for the Certificate and their applicable rates. Although they should already know these, you still may have to whisper in their ear. You do not need a Certificate of Origin for low value (<$20) goods or printed matter.

Item	Tariff No.	Max Rate	Pref Rate
Binoculars/Monoculars	9005.10	Free	Free
Reflecting Telescopes of 3.5 to 51 cm	9005.80	Free	Free
Refracting Telescopes of 6 to 20.5 cm	9005.80	Free	Free
Telescopes of other sizes	9005.80	7.3%	4.5%
Parts/accessories (including mountings)	9005.90	Free	Free

Remember, these rates only apply to items of US or Canadian origin. You will still pay duty for binoculars or telescopes made in Japan or Germany! However, note that unmounted mirrors, eyepieces, Telrads, drives, etc., indeed most telescopic items, are duty free. If you are not getting your goods in duty free, you should be!! Also note that the above classifications do not include goods for radio astronomy.

Other items, such as books, charts and printed matter are duty free as well, but should be clearly marked "PRINTED MATTER ONLY". When importing electronic systems such as CCD cameras or computerized drives, ensure they are classified as "Astronomical parts and accessories" and not "electronic parts" or "cameras" which may carry a higher duty rate.

Brokerage Fees:

All brokers charge fees. There is no free lunch. The post office never used to, but now they do. You will get caught with some sort of fee. The trick is not to get caught with a large fee. Most brokers charge a percentage fee based on the value of the goods, beginning at some minimum. Typically the fees are between $5 and $50, depending on the complexity of the entry. For small items, try to get them mailed to you by US Post. The current rate for brokerage fees is $5 per entry. This is your best bet. If the package comes by courier, truck or air, these brokers will typically charge $15.00 to $35.00 per entry. "Nice" brokers often waive the brokerage fee if the goods are of very low value, or especially if the goods are non-dutiable, as in the case of printed or educational materials. (They do not have to do an entry for these). However, there is one company to avoid, and unfortunately it is the courier of choice in the US. This is UPS. UPS moves an extraordinary amount of goods daily and thus can provide shippers with very low shipping rates. However, to "streamline" customs entries, UPS charges a FLAT RATE of $35 per customs entry, regardless of what the goods are. This means that you can buy a duty-free book for $9.95 and end up with a $35.00 brokerage charge, even though UPS did not have to actually do a customs entry!! This does not always happen, just most of the time. (The Saskatoon Centre has been burned on this twice now). If you can tell your vendor NOT to ship UPS on low value shipments, you can save a lot of grief. Other couriers may do this, too. US vendors often don't consider this problem, as 99%+ of their sales are within the US.

GST:

First we had FST, then GST, and now HST (Hubble Space Telescope). None of these worked without pain in the beginning. Anyhow, virtually all goods entering Canada have GST applied (with some exceptions). The 7% GST is applied to the Invoice value in Can$ (before duty) of the goods. You can't avoid this one. Your $1000 USD telescope mirror may cost you $1445 Can$ by the time exchange and GST are applied, even if it is duty free. Then there's brokerage and shipping. Also, remember that this is a Goods AND Services Tax. Thus, you will also be charged GST on the value of the customs entry fee (not on the duty). Thus a $35.00 brokerage fee will have a GST charge added on here, too! Put that in your pipe and smoke it!

Shipping costs is often another killer. Again, you can't avoid it, so try to choose the best method. Often, your vendor already knows the best way to get the goods to you. Take heed of the warning about UPS, though. The cheapest is still by mail, but there are restrictions on size and weight. Ground couriers are good, fast and fairly inexpensive, but you may get caught with unwanted customs charges. Air couriers are very fast, but expensive. For very large items, the best way is by truck. Trucks are reliable, and not as rough as you might expect. They usually charge a minimum carriage fee of anywhere from $35 to $125 per hundred pounds and fees increase with excess weigh and size. Customs is extra. Be sure to know how much the shipping is going to cost you before it arrives, especially for larger, heavy shipments, or you may be very surprised!

Remember. Don't blame the US for any of this. All these taxes and tariffs have been put there by your own Canadian government! They are trying to tell you to "Buy Canada". Sometimes you can't. And remember, illegal entry of goods can carry severe penalties. These can amount to seizure of the goods, a fine of twice the total value of the goods and up to 2 years in jail. Think of that the next time you think of picking up your shipment in Minot and smuggling it back to Canada. All of a sudden, those prices you see in Canadian telescope stores don't seem so bad, do they? If you have any questions regarding the fees you will pay, do not hesitate to call a local broker, the Government of Canada or the people who are selling you the goods. After all, if they want your business, they'll just have to answer your questions.

COMPUTER CORNER

by Garry Brett

Welcome to Computer Corner. I thought that I would continue with a little more on the BBS that are out there. If you have not given it a try I encourage you to do so. They are alot of fun and with all of the programs out there you are sure to find the one that you have always wanted. If any of you need a communications package I have a couple that you can copy. The one I use is called Telix and yes I downloaded it from a BBS.

A good communications program is the key to enjoying the BBS's and using such networks as Compuserve and Internet. With networks like these the world is at you fingertips. If you decide you want to get into a conversation with someone living in Germany a good network and the right communications software will put you there. One word of caution (I found this out the hard way) is that you can become so involved with the BBS that you do not realize just how long you have been on the line. This is okay if it is local but in my case it was long distance and the phone bill can become a real eye opener, especially if you make several calls a week.

This issue I wanted to explain the basic sign on procedure and the different types of Protocol to use (Protocol is the different communication languages that modems are able to use). Lets use the best bulletin board in town called the International (1, 2, 3). With just about any bulletin board you have to first register yourself. This usually means giving your name, address, phone and age, and thinking up a password. The password is your access code to that particular BBS. The purpose of the other information is for the benefit of the BBS. Once the computer has taken this info it will usually ask you to disconnect and then call your computer back right away. This is a check to make sure that the info you gave is correct. After that all you have to do is dial up the BBS of your choice, give your password, and then enjoy yourself. By having this on file they have immediate access to what you have uploaded and downloaded, and can give you an up to date tally of your upload/download ratio.

The purpose of this ratio is to make sure that you do not download five or tens times more than you upload. Most BBS's operate on an allowable download ratio of 3 bytes download for every 1 byte upload. If your ratio gets out of whack where you have downloaded say four times what you have uploaded the BBS usually will not allow you to download anymore until you upload some files to bring your ratio back in line. All BBS's have a on line time limit that at first is rather small but these same BBS's also give you a time credit of 125% for every upload. An example is you just upload a 1 minute file so the BBS will ad 1 minute and 15 seconds back onto your time.

The first time that you use a communication program can be very confusing but after a few goofs you start to pick up on the proper protocols to use and the best times to call the BBS. There are many ways to transfer information and these are called protocols. I won't even try to explain them in detail as my knowledge of them is very limited. To sum them up they are basically different transfer speeds that you can use to either receive or transfer files. Believe me, you will figure out very quickly which is the one to use.

If you are looking for some great programs to soup up your computer, or just some new astronomy programs, or even if you just want to play a game of chess with some one in Germany using a BBS is the way to do it. Give it a try and if you need some communication software give me a call at 384-1807 and I'll copy some for you.....**Enjoy.**

HINTS & TIPS — by Garry Brett

The biggest mistake that people new to astronomy make is that they do not dress for the viewing conditions. We are blessed (??????) with arctic temperatures that can hit -40 at times and for the die hard observers dressing properly will make the viewing session more enjoyable. Wear multiple layers of loose fitting tops instead of one heavy one. The extra layers will trap air and act as an insulator.

Invest in good heavy boots designed for cold weather. Do the same for your hands and your head. Keep your neck and head covered as this is where you loose body heat rapidly. If you really want to keep the chill off buy a few of those handwarmers and put one in your belt so that it is on your lower back. You will be amazed at how warm it makes you feel. Remember it is always better to overdress and have to remove a top or two than to underdress and get cold quickly.

Public Viewing at the U of S Observatory

The U of S Observatory will be open to the public on Saturday evenings from 7:70 - 9:30 p.m. from October through February. Observatory assistants will be present to answer questions about astronomy and to assist in viewing through the 6-inch telescope. For further information,call Stan Shadick at 966-6434.

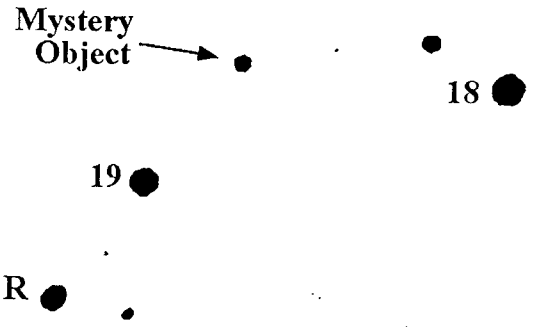
A Mystery No More **Rick Huziak**

On May 23, 1977, while making an observation of the variable star R Leonis, I noticed a mysterious star in the field that shouldn't have been there. Bad weather over the next several nights prevented me from confirming whether the star was a nova or asteroid, so the star remained a mystery for more than 16 years. Full details of this object were reported in "Saskatoon Skies" several years ago.

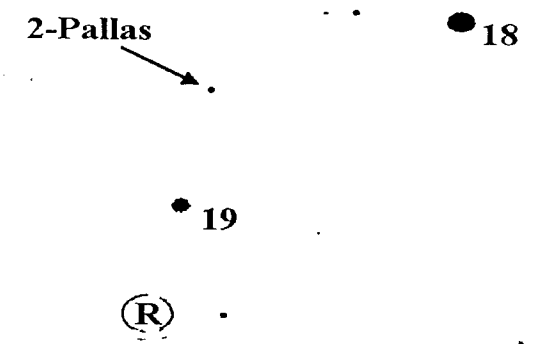
Now, through the power of microcomputers and planetarium programs, my "Mystery Object" has now been identified. On March 21, 1994, Jim Young and I fired up his CD-ROM copy of "Guide Star" and the search began. First we processed the sky back to 1950 coordinates, as I had an exact position listed in 1950.0. They we typed in the original date of the observation, found the R Leonis field, and then displayed all asteroids for that date and time.

Within seconds, my "Mystery Object" was a mystery no more! At exactly the right location what should appear, but the asteroid 2-Pallas. The program listed the asteroid as magnitude 8.9. I had quickly estimated the brightness at approximately 9.5. This was certainly the right object without a doubt. I had long suspected that this object was one of the brighter asteroid, and now here was proof. I felt a good that the object had finally been identified, but I also felt sad that this did not remain a true mystery such as a missed nova that someone might rediscover in the future.

From My Original Observation



From "Guide Star"



BET..YA..DIDN'T..KNOW **by Garry Brett**

Most Distant Galaxy Found.... A cluster of stars 15 billion light years away is the most distant galaxy known. The distant galaxy, known as 4C41.17 was found by astronomers when they encountered the galaxies naturally occurring radio signals. These signals are a billion more times powerful than the emissions from our own sun.

Galaxy 4C41.17 is one of the most powerful radio galaxies ever spotted. It is thought to be in its very early stage of development.

The galaxies distance from the Earth was calculated by the light it sends out. Galaxy 4C41.17 transmits light characteristic of hydrogen and carbon. The wavelength of the light is stretched by movement away from Earth. Such a movement causes the colour of light to shift towards the red spectrum.

By measuring this red-shift scientists were able to calculate the distance to the galaxy. Galaxy 4C41.17 had a red shift of 3.8 which converts to a distance of 15 billion light years! If these calculations are correct we are looking back almost to the beginning of time.

Ancient Quasar...Improved deep-space searching, sensing and seeing techniques have resulted in scientists finding one of the farthest objects ever seen in the universe. This object, called a Quasar is some 13.8 billion light years, or about 81 billion-trillion miles away from Earth.

Even at the enormous speed at which light travels through space, 186,000 miles per second, or 5.9 trillion miles per year, energy from the Quasar took 13.8 billion years to travel to the Earth!

One problem is that while analysis of the lightwaves reveals the distance to the Quasar, calculating the actual distance is based on assumptions as to how old the universe is. If you base your calculations on the accepted age of 15 billion years old than the Quasar is 13.8 billion light years away. However some scientists use figures of anywhere from 10-20 billion years old for the universe so the actual distance may never be accurately determined. For now the general astronomy community accepts 15 billion as a fairly accurate age so this Quasar is one of the oldest objects ever discovered.

At any rate, the Quasar was found in the direction of the imaginary constellation Sculptor, by astronomers at the Kitt Peak National Observatory, Tucson, Arizona, and the Institute of Astronomy in Cambridge England.

SELECTING BINOCULARS FOR ASTRONOMY

Sandy Ferguson

With the Centre starting our binocular observing program in January, this might be a good time to offer some tips when selecting binoculars for night time use.

Next to your naked eye, binoculars are the best instrument with which to learn the night sky. The view of the heavens through binoculars is right-side-up and in front of you (as opposed to telescopes which give an inverted, and often back-to-front image) and the field of view is wide enough to make searching for objects a breeze. The craters on the moon, planets and their satellites, variable and double stars and dozens of deep sky objects are visible through binoculars, including a good many Messier objects. You will find views of the Milky Way to be spectacular. Bright comets can be easily picked up with a pair of binoculars and often look much better than in a scope, as the wide field enables you to view the whole comet, including the tail, whereas with a telescope and its more narrow field you may only be able to view part of the comet at a time.

In choosing binoculars for astronomy, however, some binoculars are slightly better for nightime work. As celestial objects are usually faint, you will want optical equipment capable of grasping as much light from the object as possible. Therefore, the greater the aperture, or diameter, of the objective (front) lens of the binocular, the greater amount of light passes through the lens. The aperture of the objective lens together with the power of the binocular determines how much light actually reaches your eye.

The average diameter of the pupil of the human eye after 20 minutes to one-half hour under dark conditions is approximately 7.0 mm. Therefore, you would want the beam of light entering your open pupil from the binocular to be approximately 7.0 mm in diameter, so that the eye receives the maximum benefit from the light entering the eye. This is known as the exit pupil.

The formula for determining just how much light will reach your eye with a given binocular is very easily calculated. You will notice when shopping for binoculars that they all have two figures imprinted onto the instrument, such as 10 x 80 or 7 x 50. The first figure indicates the magnifying power of the binocular and the second the aperture of the objective lens in millimeters. To determine the exit pupil you simply divide the aperture by the power. For instance, we will compare the exit pupils of two popular binoculars to see which would be better for nightime viewing.

The most popular binocular for sports or bird watching is probably the 7 x 35. Divide 35 by 7 and you have an exit pupil of 5.0 mm, slightly less than the 7.0 mm diameter of your pupil in darkness. The 7 x 50's give an exit pupil of 7.1 mm, which is slightly better for sky gazing as the exit pupil more closely matches the diameter of your dark-adapted pupil.

Binoculars with higher powers and larger apertures (such as 10 x 80's) will make the image of the sky object brighter and larger, but they tend to be heavier and holding them to you eye for any length of time can be tiring. It can also be difficult to hold them steady enough to observe the object. These problems, however, can be overcome by using a solid tripod.

All things considered, therefore, an ordinary pair of 7 x 35's or 7 x 50's (slightly better choice) make an excellent optical instrument with which to study the sky. Treat them with kindness (store them in their case, keep your fingers off the lenses and never leave them in your car on a hot summer day!) and they will give yoeman's service. Years from now, long after you may have acquired any number of telescopes, you will find that you always have a use for your binoculars when observing at night.

NOVICES' CORNER

Sandy Ferguson

CONSTELLATION OF THE MONTH - AURIGA

The long winter nights are upon us once again and although it's tempting to sit indoors and practise armchair astronomy I'd like to encourage some of the diehard novices to bundle up and spend some time getting to know one of the winter's brightest constellations -- Auriga (the Charioteer). Auriga is one of six bright constellations that form the grouping known as the Winter Six (the others, in order of their rising, being Taurus, Orion, Gemini, Canis Minor and Canis Major -- more about them next month) and it is well up on the eastern horizon in mid-December.

If you are unfamiliar with this grouping of constellations, you can once again use the Big Dipper to locate Auriga (Figure I). Using the two stars that form the top of the bowl of the Dipper, extend an imaginery line through them, eastward, to the bright star Capella, the brightest star in the constellation. Auriga's pentagon shape is easy to identify. Auriga is best known for three big open star clusters M36, M37 and M38, which are hazy patches in binoculars and fine clusters in telescopes, but there are a good number of other objects for viewing in the area, both naked eye and with optical equipment.

Naked Eye

The most obvious observation you can make is to familiarize yourself with the shape of the constellation. Observe its orientation as it rises in the east, moves across the sky then sets in the west. If you are not aware of these

changes in orientation in constellations, it can make it difficult to identify it at different times of year. Pale yellow Capella is the first "winter" star you see rising in the autumn and was known as the "goat" star. It has a triangle of fainter stars to its immediate right which are known as the "Kids". The apex of this little triangle of stars is the eclipsing binary Epsilon Aurigae a 3rd magnitude star that is eclipsed every 27 years by a mysterious dark body. It's not much to observe these days, but you can keep it in mind at the next eclipse due to begin in 2009!

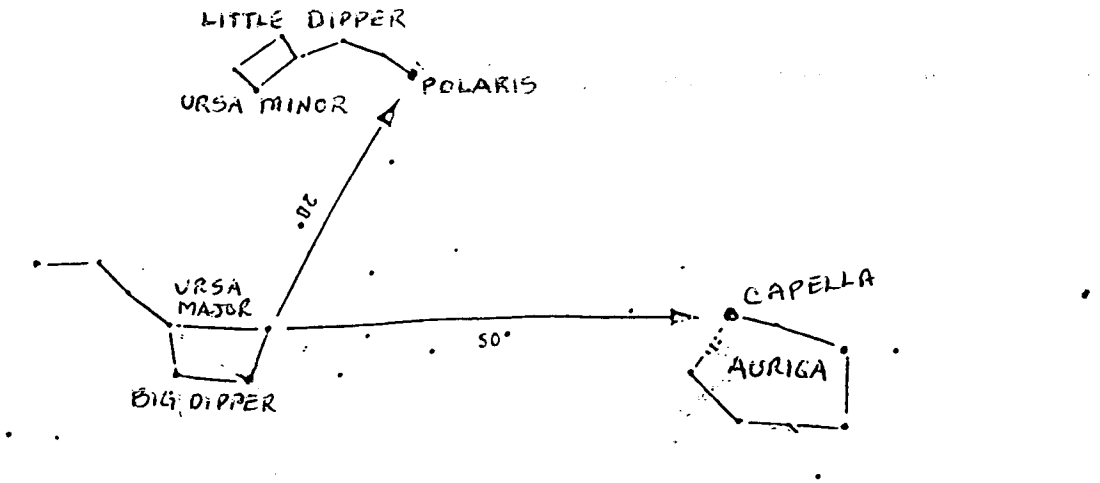
Binoculars

The three best binocular sights in this constellation are the Messier objects, M36, M37 and M38, all open clusters. They appear as fairly bright fuzzy patches at magnitudes 6.0, 5.6 and 6.4 respectively.

Small Telescope

In a small telescope the three open clusters you observed in binoculars become very bright and rich. An additional telescopic object you might want to check out is NGC 1907, located about 1/2 degree south of M38. This is a smaller, fainter cluster at about magnitude ll.

FIGURE 1



LEARN HOW TO FIND THE PLANET SATURN !
LEARN THE CONSTELLATIONS.
LEARN HOW TO LOCATE GALAXIES,
STAR CLUSTERS, PLANETS AND NEBULA.

Binocular Astronomy Observing Program **
Registration Form

Name: .....
Address: .....
Phone:(H) .....**(W)** .....

( ) RASC Member ($8.00) ( ) Non-Member ($15.00)

Send to: RASC Saskatoon Centre
Box 317, RPO University
Saskatoon, Sask. S7N 4J8

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SWAP...BUY...SELL...WANTED...GIVE-A-WAY

One manual 35mm SLR with 50 and 105 mm lenses. Also one black and white enlarger for those who want to take and develop your own photos and then enlarge them. Make an offer. May swap for.....Call Garry at (306) 384-1807.

For Sale...One Meade 90mm f/11 Refractor. Comes with a 9mm and a 25mm eyepieces, right angle star diagonal, tripod with equitorial mount. This scope is like new. Price is $600.00 Call 1-882-3811 and ask for Henry Friesen.

Wanted....One or two pieces of Sonotube with a 12" diameter. Need them to be about 16" each..... Call Garry at 384-1807.

Sky and Telescope Subscriptions Correction

Last month I stated that the subscription rate to S&T was $36.38 Can$. The real rate is $29.96 USD for one year. If you are subscribing for the first time, send your name and address, with a US money order or your Visa or MC number, to Mike Williams. He will order the magazine for you. (Make money orders payable to "Sky Publishing Corporation". Those who are renewing should fill out their renewal card when it is received and remit to Mike Williams with payment or credit card number as above. - **Rick Huziak**

Last Minute Christmas Stocking Stuffers?

How about sending your loved ones some RASC promotional items?

1995 RASC Calendar.....$6.50
Beginning Observer's Guide.....$9.50
Saskatoon Skies Newsletter Subscription.....$12.00/year ppd.
My Messier Album.....$2.00

Prices include GST. Please include $2.00 for postage if you wish them mailed out. Otherwise, I'll deliver them personally anywhere in Saskatoon.

Notice of the Next General Meeting of the Saskatoon Centre

Monday, Dec. 19, 1994, 8:00 p.m.
Room A-226, Health Sciences
Building, U of S Campus
(across Wiggins from the observatory)
The meeting is open to the general public. Speakers will be Sandy Ferguson (Beginning Astronomy), Koji Maeda (Meteor Photography with Image Intensifiers), Stan Shadick ("Why Won't Blue Straggler's Grow Up?"). Koji may be moved to the January meeting depending on time constraints. Stan's "Blue Straggler's" are mysterious stars that remain on the Main Sequence long after they should have evolved off to the giant branch.

Observer's Group Meetings and the Rystrom Observatory

Put these dates on your calendar and attend the next Observer's Group Meetings at the Rystrom Observatory. Jan. 7, Jan. 28, Feb. 25, Mar 4, Apr. 1 (no kidding), Apr. 29, May 27, Jun. 24.

Members are welcome to use the observatory at any time, but please phone ahead. Call Nelson or Gloria Rystrom at 955-2370 before 9:00 p.m. if you intend on going out. This lets them know that someone will be roaming around their yard. If they don't answer the phone, go out anyway. Drive through the yard slowly, and dim your lights as a courtesy to other members that may be using the observatory. By the way, the dog's name is Sadie. Sadie loves chasing rocks and snowballs.

Fireball Reports Wanted

I'm still active in fireball reporting for MIAC. I'm interested in any fireball brighter than -4 magnitude (brighter than Venus), including fireballs related to meteor showers. The most important data to collect is the position angles and elevations (in degrees) of the start and end points, the number of seconds duration, brightness, and a good general description of the event. I need the fireballs reported IMMEDIATELY. Please phone me as soon as possible after you've seen one. Recently, there were fireballs on Nov. 24, and possibly Nov. 22 or 23. Details on reporting can be found most recently in Gord Sarty's and my article in the Journal of the RASC, Oct. 1994. Get me at 665-3392 any time up until 1:00 a.m. - **Rick Huziak**