

SASKATOON SKIES

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What Happened in History

- 1 U.S. Pioneer 11 sailed past Saturn in 1979.
- 2 The asteroid Juno, the third minor planet to be discovered, was seen by Karl Harding in 1894.
- 3 U.S. Viking 2 landed on Mars in 1976.
- 5 In 1977, the interplanetary probe Voyager I left the U.S. for Jupiter and Saturn, encountering Jupiter March 5, 1979, and Saturn November 13, 1980. It now is leaving the Solar System.
- 8 U.S. Surveyor 5 left for Moon in 1967, landed near lunar equator September 10. Mechanical claw dug soil for radiological tests.
- 9 Interplanetary probe Viking 2 left the U.S. for Mars, 1975, landing on Mars September 3, 1976. It worked 3.5 years.
- 9 USSR Venera 11 launched to Venus in 1978, soft landing there December 25, 1978, sent data by radio for 95 minutes.
- 9 The Jupiter moon Amalthea discovered by E.E. Barnard in 1892.
- 9 In 1975, the U.S. sent Viking 2 to Mars, carrying life detectors and cameras. It landed on the Red Planet September 3, 1976. Designed to work 90 days, Viking 2 lasted 3.5 years.
- 11 An interplanetary probe called International Cometary Explorer or ICE flew past Comet Giacobini-Zimmer in 1985. The probe originally was launched in 1978 and known as ISEE-3. It was renamed and diverted by lunar gravity for the first comet fly-by in history. ICE flew on to come within 17 million miles of Comet Halley in March 1986.
- 12 USSR Luna 2 in 1959 was fired toward the Moon. It became the first spacecraft from Earth to hit the Moon, landing near Mare Serenitatis September 13.
- 12 Charles Conrad Jr. and Richard F. Gordon Jr. in Gemini-Titan 11 in 1966, docked for two tethered revolutions of the Earth and set Gemini capsule altitude record of 739.2 miles.
- 12 In 1970, the USSR sent Luna 16 to the Moon where it soft-landed September 20, 1970, scooping up rocks and returning to Earth September 24, 1970.
- 13 USSR Luna 2 became the first craft to impact the Moon, in 1969.
- 14 In 1968, Zond 5 left the USSR on a flight out and around the Moon and back to Earth.
- 14 The 13th Jupiter moon Leda was discovered in 1974 by C. Kowal. At 9 miles diameter, it may be a captured asteroid.
- 14 USSR Venera 12 launched to Venus in 1978, soft landing there December 21, 1978, sent data by radio for 110 minutes.
- 19 The Saturn moon Hyperion discovered by William Bond in 1848.
- 19 Israel, in 1988, successfully launched its first

space satellite. The tiny Horizon I had only a beeping radio beacon.

20 In 1977, the interplanetary probe Voyager 2 left the U.S. for Jupiter, Saturn, Uranus and Neptune encountering Jupiter July 9, 1979, and Saturn August 26, 1981 and Uranus January 1986. It will fly within 3,000 miles of Neptune August 24, 1989, on its way out of the Solar System.

23 Neptune, the eighth major planet from the Sun, was discovered in 1846 by J.G. Galle at Berlin Observatory.

28 In 1971, the USSR sent Luna 19 to the Moon, which it orbited, taking measurements, making photos. It then soft-landed September 21 in the Sea of Fertility. It brought rock samples to Earth February 25, 1972.

29 In 1988, U.S. space shuttle Discovery flew successfully, ending a 975-day no-flight recovery period following the explosion of Challenger during lift-off in 1986 from Cape Canaveral, Florida, which killed seven astronauts.

30 Yuri Romanenko, 1987, in USSR's Mir space station, surpassed the previous 237-day man-in-space endurance record.

A Tale of Two Star Parties

This summer, the months of deprivation we'd all endured this spring finally motivated me to undertake the long drive to North Dakota to participate in two weekend Star Parties there. The first of these provided a very enjoyable weekend. The Northern (sic*) Sky Astronomical Society held its first "Northern (double sic**) Prairie Star Fest" on the spacious farm of member John Leppert. The grounds of his Deneb Observatory provided a great site, miles removed from even the tiny hamlet of Sarles, and the seeing - possibly helped by earlier drenching downpours - was a spectacular demonstration of just what we lose through light pollution.

On the night of July 21st, M31 and the double cluster in Perseus were easy naked eye objects and the "spout" of the Sagittarius teapot was an awesome sight. As with any good star party, the quiet sighs of appreciation and the occasional exclamation at a meteor sighting were a sure sign that all twenty of us were really enjoying ourselves. The sky clouded after midnight, but they opened up so strikingly a few hours later that I interrupted an urgent trip from my tent to go back for my binoculars and to spend a further half hour previewing the fall and winter skies.

On Saturday July 22nd the talks were even later than they usually are at such events due to a late return from a group excursion to the International Peace Gardens and the joys of a truly gourmet BBQ dinner. There were two computer imaging presentations, Club President Ron Fevig's "CCD Astronomy of Asteroids" and Chris (Milly) Milford's "Searching for Supernovae". Both benefitted from remarkable images and some highly creative attempts to explain computer measurement and image manipulation techniques, but suffered (as has every other such presentation seen) from the relatively small size of computer monitors, almost inevitable software glitches and the sheer complexity of such topics and procedures. Two slide presentations followed. I spoke on "Canadian Clubs and Star Parties" and John Leppert talked, all-too-briefly, on "Eclipses and Southern Sky". Our host's excellent slides, of the Alto Plano Plateau of Bolivia, of the eclipse, and of the Southern skies demonstrated that the images he's had published in SKY AND TELESCOPE were no

anomaly, and his account of the trip was fascinating, but it was already past eleven and the skies beckoned. There were a couple of hours of good observing before the skies once again clouded up. This meant that there was no need to take advantage of the Society's wise provision of leaving Sunday night available as a possible third night of observing and camping, but many of the two dozen attendees stayed to take part in Sunday's excursion to the sand dunes of Manitoba's Spruce Woods Provincial Park.

A wonderful chance to observe was turned into a great weekend by the warm hospitality of Jill and John Leppert. This was not just a matter of their terrific Saturday night BBQ, but also of an always open home, bathrooms and a shower, and more than that, a tremendous friendliness, openness and trust, even with such total strangers as myself shown by all the Society members.

The first run of this Star Party was small, as beginnings usually are, but some of the other participants came from as far away as northern Wisconsin, and word should spread that the skies good and the venue is even better. I suggest our Centre do what it can to facilitate this process and that members consider going next summer. Just think of the "southern skies" the three degree latitude adjustment to Sarles, North Dakota would open up for your observing.

My accounts of experience at the Leppert farm was such that Kathleen and six year old Ariel decided to join me in driving to the following weekend for "The Dakota Astronomical Society" apparently "Annual Meeting" under the open skies of Theodore Roosevelt National Park, North Unit. Our experience with this event, which has apparently been happening for about a decade, was rather less pleasant. Their estimate (and ours) of how long the trip would take turned out to be more than optimistic, and we ended up arriving at the observing and meeting site Oxbow Lookout at the very end of the eighteen mile road through this nature and Bison reserve just as their business meeting was starting.

Though we were exhausted from the torrid eight hour drive, we were briefly greeted and left to find our own way back through the Buffalo milling on the road to the ten mile distant campsite. Things went from bad to worse. As we were ending a hurriedly improvised picnic dinner we found out were informed that a tornado warning had just come into effect, and I had to make another trip through the Bison - and discretely off the road and around a rather assertive bull who must have outweighed my car to retrieve my CG-11 from the Lookout, which the Society, too, abandoned shortly after. The Tornado actually ended up touching down in southern Saskatchewan instead, but, as we hovered between the brick washrooms and our tents, we were treated to the spectacle of star-studded skies to the south and heavy dark gray cloud pulsing with lightning to the north.

Next morning one of the D.A.S. officers courteously asked us if we wanted to stay for the Sunday night. However, would have been virtually alone, and the poor weather outlook and lack of such amenities as showers made us decide not too. Instead, we spent several pleasant hours walking and driving through this magnificent Park, during which Ariel and Kathleen had the good fortune to meet a rattlesnake who gave them adequate warning, but was no more willing to make way than that buffalo had been for me. Then we embarked on the long, but happily much cooler way home.

Clouds do have their good points. As I finish writing

University Observatory Hours for Public Viewing

The University of Saskatchewan observatory will be open to the public on Saturday evenings from 9:30-10:30 p.m. for the month of September.

Visitors will be able to view the planets Saturn and Jupiter, the Globular Star Cluster in Hercules and other celestial objects.

Observatory assistants will be present to answer questions about astronomy and to assist the public in viewing through the telescope. The observatory is located on campus, one block north of the corner of Wiggins Ave & College Drive in Saskatoon.

For more information, call Stan Shaddick, Astronomy Instructor, at 966-6434.

14th or 15th Star Party, this one in Alberta. Going to such events is a wonderful way to view the skies, to make new friends, to look at and through telescopes and to learn how others use them. It is inevitable that some will be "washouts", but even when the skies won't cooperate, the people involved can make them a memorable occasion. ** "sic" indicates that this is indeed what their publicity claims - at a measly 49 degrees of latitude!

Observing at "Al's in-laws farm"

After five months of clouded-out "Observer's Groups" this Spring and a few other events subject to heavy light pollution at Diefenbaker Park and at the Rystrom Observatory, we have finally managed to engage in some real, collective observing. This is largely thanks to the efforts of Al Hartridge and the generosity of this mysterious benefactor, whose son, an occasional meteor watcher, dropped by during the wee hours of the second night.

Despite a few minor glitches because our way-signs arrived after the people who needed them to find the way ON BOTH NIGHTS, the August 18th and 19th star parties were a great success. Over a dozen people took part, and we were so entranced by what we saw that we stayed for hours, and some of us even came back for a second night. This is quite a good turnout for sessions in the middle of August at a new site.

Rick Huziak and David Cornish's suggestion that we use both nights turned out to be a wise one: the seeing was addictive! On Friday August 18th even Sagittarius which was barely above the southern horizon, was so clear that Kirt Headley managed to identify virtually all of its Messier objects through his binoculars, while David Cornish actually managed to find the elusive galaxies Stephan's Quintet in the West (quite a feat for an 11" Schmidt Cassegrain). Brian Friesen brought Eytock and the club's rich field telescope was also deployed. Rick and Amy Huziak had to leave early (Rick exploited Amy as an excuse to catch some sleep), but Kirt Ernie and several others joined us in the course of a memorable night of skygazing.

Next day, David, Kirt and I returned for a second night of great skies and sleep deprivation, and Scott Alexander drove all the way from Rosetown to demonstrate his great skill and the superb optics of his 14" dobsonian as he moved smoothly from one deep sky object after another. Shafriz Iqbal and his father also joined us, and - just as David was complaining about the

turnout - Bob and Wayne drove up to inform us that they had been observing for hours less than a mile away, having taken "the level turnoff" about .5 km in from the highway because I had been late with the signs! (This road also leads to a usable site, but is in worse condition and closer to the highway.)

This site, at a 20 to 30 minute from Saskatoon seems to provide an optimal compromise between convenient access and skies dark enough for our monthly observing sessions (though probably not for an observatory), and I suggest that we use it until cold weather makes the Rystrom Observatory's warmup-room necessary. "Star Nights" or Parties will be held on the Fridays listed below, with the next day (Saturday) being an alternate date in case of poor weather, and a further possible night of observing for interested persons (and fanatics).

My CG-11 and other telescopes should usually be available on at least one of the two nights (subject to my wife's concert commitments). Of course, all members and other interested parties are encouraged to bring their own telescopes, and please remember to bring binoculars, if you have them. You should also be sure to bring some warm clothing, and especially footwear as nights become colder and bug-spray becomes less necessary.

Thermoses of coffee will also be welcome. Finally, please exercise the utmost care to minimize any disturbance to this generous farmer and his property by driving in and out as quietly and carefully as possible and taking all trash away with you.

Please contact me at 374-4262 if conditions appear doubtful. Your call to let me know you will be there with your scope (or can pick up the club scope) would also be appreciated. If you are going out early you could also help by picking up and posting the signs, either from me at 405 Albert Ave. or at Rystrom. Starting times will generally be about half an hour before dark for those of us who have to set up scopes, later for those who are quick at it and can "do it in the dark". You are also quite welcome to come much later (some of us stayed till 4 AM) as long as you turn down your lights and drive and drive very carefully to avoid sky-drunk (and sleep deprived) sky-gazers and their equipment! Do come and try this great new viewing opportunity. Even if your party of shift should end so late that you miss us, there is no problem with setting up on your own, and the nearby den of foxes (no, those little howls and yips are not wolves, and certainly not dangerous!) will be glad to keep you company and also to keep the skunks away.

To get to the new temporary location drive east on Hwy # 5 towards Humbolt. Drive 16 kilometers past the Sundown drive-in to Pit Road. Turn right (south) on Pit Road. Drive 1.0 kilometer to a dirt road on the left side. Turn left and drive 0.9 kilometers into the field site.

Proposed Star Nights

Sept. 15th & Sept 16th.....Regular OG session and binocular group observing session

Sept. 22 & Sept. 23.....Last public star part out at Diefenbaker Park

Oct. 20th Oct. 21st

Nov. 17th Nov. 18th

Dec. 15th Dec. 16th

About "How To....." by Richard Huziak

I decided to write a monthly "How To....." column in response to many new members' pleas for basic beginners educational material about all aspects of amateur astronomy. Although this material can be found in most beginning books on astronomy, I hope that my writing about it will add a personal dimension, utilizing my first-hand experience. Contributions of ideas for new "How To....." articles are welcome, and contributing authors are welcome as well. "How To....." will deal with diverse aspects of astronomy, from observing to telescope building, to collimating, to armchair projects. Nothing is too taboo for "How To.....".

HOW TO.....Observe Variable Stars.....by Richard Huziak

Observing variable stars has been a source of pleasure for me for more than 20 years. I observe all types of variables - Mira stars (LPVs), eclipsers (EA, EB, EW), R CrB's, U Gem's (dwarf novae), novae, Cepheids, and a host of others. For now it really doesn't matter what these types are, but what they all have in common is that they vary their magnitudes by one to 10 or so magnitudes in periods that range from hours to years. Watching and recording these changes can be enjoyable, and also can provide the amateur with an opportunity to do some real science to aid professional astronomers.

Here's what you need to observe variables: eyes, binoculars or a small telescope, a note pad and pencil, a red flashlight, a comparison chart (explained below), a basic star atlas, an accurate watch and graph paper (later).

That's as simple as it is to get started. There are variables for everyone independent of what equipment you might have. There are a few dozen naked eye variables (Betelgeuse, beta Lyrae, delta Cephei, Algol, for example), hundreds of binocular variables (R CrB, RZ Cas, X Cygni, chi Cygni, etc.), and thousands of telescopic ones. Observing variables can be done on ANY clear night, regardless of the phase of the moon, local light pollution, being in the city, and other common limitations (excuses).

A word about designations. Most variables that were not discovered in ancient times (i.e. have "proper names"), are designated as follows:.. the first variable discovered is called "R" with it's constellation name afterward (i.e. R CrB - R Corona Borealis). The second variable is called "S", the third, "T" and onward until you hit "Z". I guess the first namers of variables didn't think they'd find too many, because they soon ran out of designations. Once someone discovered a variable past "Z", they had to name it something, so they called it "RR". Then "RS", "RT" ... until they reached "ZZ". Well, someone had the gall to discover yet more, so after "ZZ" they started at "AA" and went "AA", "AB"... until "QZ". But instead of beginning with an unwieldy "RRR" or something, they just start calling them "V334" (variable #334), "V335"... forever. Some constellations have a tonne of variables. Cygnus has over 1500 (Nova Cyg 1975 is V1500 Cyg) and Sagittarius have over 2500. For some strange reason,

Important Info

The Rystrom Observatory

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 do not answer go anyway. Drive through the yard slowly, and dim our lights as a courtesy to others who may be observing.

the letter "J" is not used in variable designations. But this is getting off the "How To....." topic.

Well, now that you know everything there is to know about variable names, how do you observe them? First you have to decide what stars you want to observe. I will help you the first time. I have chosen my, Sandy Ferguson's and Mike Wesolowski's favorite: RZ Cas. RZ is an Algol-type eclipsing variable, that eclipses every 1.195252 days (1 day, 4 hours, 41 minutes and 10 or so seconds). The entire light curve (magnitude 6.4 to 7.8) can be seen in binoculars. The eclipse also happens over a short period. Observing it for 2 to 3 hours is long enough to get a good light curve. Besides that, it is easy to find.

To begin, make sure your watch is reasonably accurate, say to within 1/2 minute of true time. Use WWV or the telephone time signal to set it. This is important if you want your results to be used scientifically. (Please do this, as amateur timings of events are valuable). Grab your binoculars, get outside and locate variable, in this

case RZ Cas, by starhopping using an appropriate atlas. I've provided the star-hop fields for RZ. Once you have located the variable, you should switch to the "comparison chart" to begin your observations.

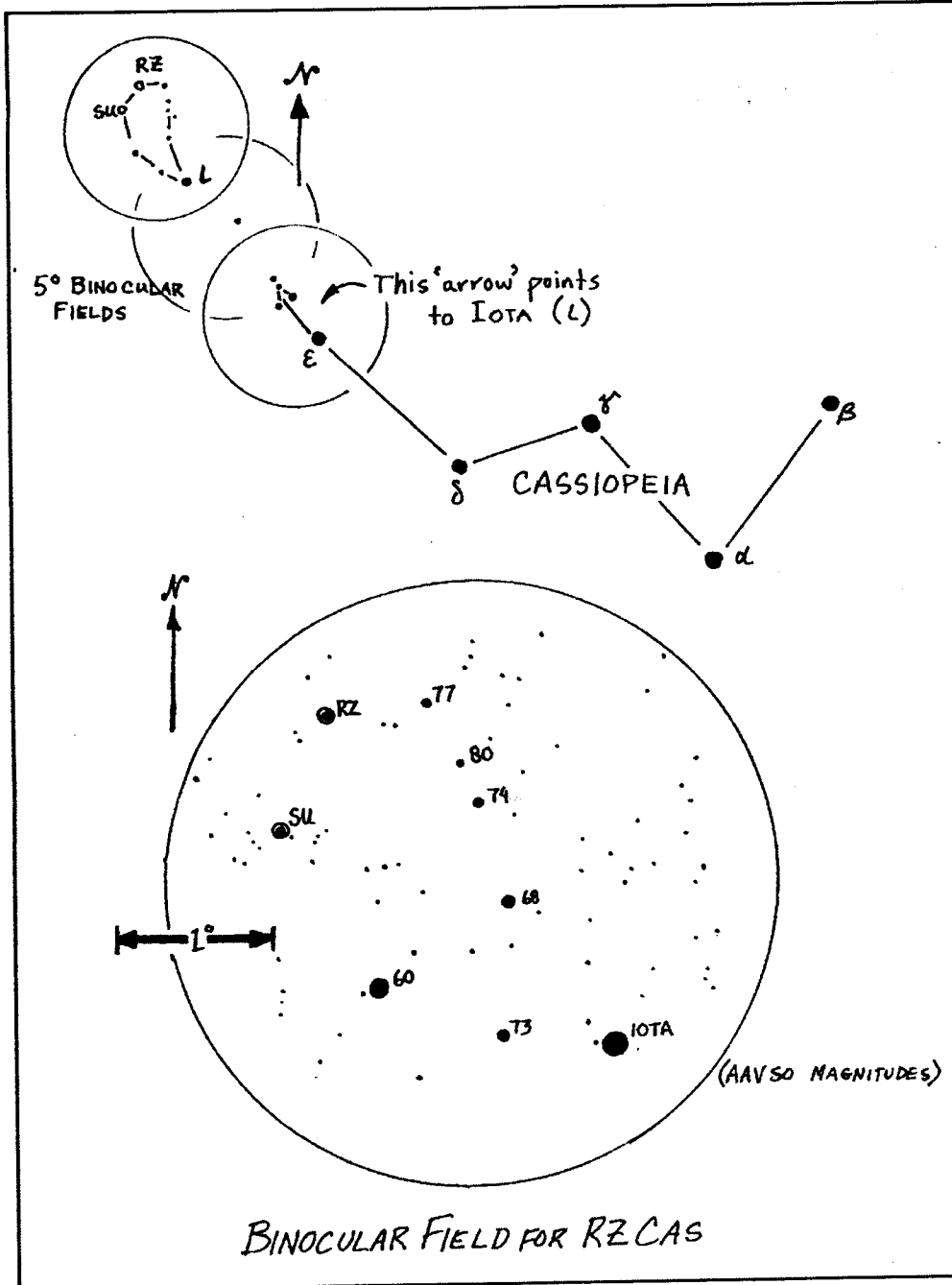
A "comparison chart" is just that. It is used to compare stars of known brightness to the variable, which is of unknown brightness until you figure out what its magnitude is. Standard comparison charts are normally published by the American Association of Variable Star Observers (AAVSO). These charts should always be used, as they provide standardization of comparison stars, thus observations made all over the world can be coordinated. (Other organizations such as the New Zealand Var. Star Association, the Nippon Variable Star Association and others also publish standard charts).

To use the comparison chart, what you try to do is find a star slightly brighter than the target variable, and a star slightly dimmer than the variable, then interpolate the

variables brightness using the chosen comparison stars. Magnitudes are visually estimated to 0.1 accuracy. Use your red flashlight to read the chart to find suitable stars. Suppose two comparison stars are found, of brightness 6.0 and 6.9 magnitude, and the variable is 1/3 dimmer than the first one, and 2/3 brighter than the second one, then the brightness is magnitude 6.3. That's as simple as it is. Record the time of the estimate to the nearest minute along with the estimate of the variable's brightness. Also record which comparison stars were used. Note how magnitudes are written on comparison charts. By convention, the decimal point is omitted from the star's magnitude, so that in crowded fields, the decimal is not mistaken for a star. So "68" means "6.8", "90" means "9.0", "102" means "10.2", etc.

For RZ Cas, make an estimate. If the estimate is somewhere around 6.4, then RZ is probably not in eclipse. If you want to challenge yourself, you can find your own eclipse of RZ by observing it for at least 5 consecutive days at the same local time. Because its period is almost exactly 1-1/5 days, it will be seen to be in eclipse on one of those days! Those less adventuresome can use the ephemeris I've provided to plan for the next eclipse. To see all of the observable eclipse, begin observing about 1.5 hours before the ephemeris predicts the mid-eclipse. Make a visual estimate every 15 minutes or so, recording the magnitude, time and comparison stars in tabular form. Keep observing for as long as possible - for at least the next 2 to 3 hours to get the entire eclipse recorded. Do not record your results directly on graph paper as you go, because the shape of the curve will most likely influence what you believe your next estimate 'should' be! If you're interested, the Cepheid variable SU Cas appears on the same chart. Make an estimate of this, too. However, since the period is just under two days long, getting a reasonable light curve is more difficult to do, as you'd have to do estimates every few hours.

Once you're done, plot the RZ results on graph paper. The Y-axis is always "magnitude" (with the brightest magnitude -smallest number - at the top). The X-axis is always time. For RZ, chose 0.1 magnitude intervals per graph square, and 15 minute intervals per graph square. Plot your results. What did you get? If you recorded the estimates reasonable accurately, you should have gotten an inverted bell-curve, from which the time of mid-eclipse can be determined by estimating the exact center between the descending and ascending branches.



Advertising Info

Commercial advertisers are encouraged to advertise in the Saskatoon Skies. Your ad will give you access to all Canadian members of the Royal Astronomical Society.

Commercial advertising is accepted in the Saskatoon Skies with three sizes of ads available. Artwork must be camera ready and supplied by the advertiser.

- One quarter page.....\$25.00
- One half page.....\$39.00
- One full page.....\$50.00

For further information please contact me or mail your questions to the address below.

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So far you've done all right, but sometimes there are problems. The first is one of experience. The more estimates you make, the better you get. This is not really a big surprise. Another problem is that there are not always suitable comparison stars. Large gaps in magnitudes, no stars brighter or dimmer than the variable, all present challenges to making estimates. Also, red stars are more difficult to estimate, because the physiology of the eye wants to make them appear brighter than they really are. They should be estimated quickly, or determined by other methods that I will not discuss here. But the general rule still applies...the more you estimate, the better you get.

Reporting Your Observations to AAVSO

If you are interested in variable stars, you may want to report your observations to AAVSO, as do thousands of other amateurs around the world. The observations go into a monstrous database and are used by research groups all around the world. It's kind of cool to know your observations are sometimes used to point the Hubble and other satellites at their variable targets! Joining AAVSO is expensive, about \$50 US per year, but you do not have to join to send in your observations. You simply do not get their periodicals if you don't join. Also, I am investigating the Centre joining AAVSO. Then we could contribute everyone's observations monthly as a group. (This is allowable according to AAVSO).

At any rate. If you don't report them to AAVSO, then report them to me or this newsletter. I am very interested in certain observations, as I have more than 20 years of observations of RZ Cas, for example, and can use more to do a research project on 'changing periods' of eclipsing stars.

How often to observe what type:

This is a short list of the most common variable types and a guideline on how often to observe them. If you observe them too close together, you will not see significant changes. If too far apart, then you don't see the fine features in the light curves. You have to learn

Membership Info

Membership in the Royal Astronomical Society of Canada and the Saskatoon Centre is open to anyone and has many benefits.

Below are the prices for memberships. Should you require additional information please contact Rick Huziak at 665-3392.

Regular membership (21 & up).....\$40.00
Youth Membership (21 & under).....\$22.50
Club Newsletter (12 issues).....\$10.00
Observer's Handbook.....\$18.95

Note: Lifetime memberships are available on request for \$900.00

the star's behavior, then use your judgment.

Mira-type (long period variables) - every 5 days to 1 week

R CrB stars ("reverse novae") - every night

U Geminorum stars (dwarf novae) - every night

Eclipsers (beta Lyra types) - every night

Eclipsers (Algol types) - every 10 to 30 minutes (during eclipses)

Cepheids (delta Cephei) - every few hours to 1 night

Semi-regulars (R Lyr) - every few days to 1 week

Novae (Nova Cas 1995) - every night or more often during the 'exploding' phase

Ephemeris for Algol-type Eclipsing Variable RZ Cassiopeia

This ephemeris is good until the end of 1995 and list all eclipses visible in Saskatchewan during that time. The list is given as day then time (CST). Times are given to the nearest 1/2 hour as not to bias the observers as to time of the minimum.

Sept. 11 20:30; 13 01:00; 14 05:30; 17 20:00; 19 00:30; 20 05:00; 25 00:00; 26 04:30; 30 23:30; Oct. 2 04:00; 6 22:30; 8 03:30; 12 22:00; 14 03:00; 18 21:30; 20 02:30; 24 21:00; 26 01:30; 27 06:30; 30 20:30; Nov. 1 01:00; 2 06:00; 11 19:30; 13 00:00; 14 04:30; 17 19:00; 18 23:30; 20 04:00; 23 18:00; 24 23:00; 26 03:30; 27 18:00; 30 22:30; Dec. 2 03:00; 3 07:30; 6 21:30; 8 02:30; 12 21:00; 14 02:00; 15 06:30; 18 20:30; 20 01:30; 21 06:00; 24 21:00; 26 00:30; 27 05:30

A Perseid Starnight Despite the Full Moon by Rick Huziak

Well, despite a moon just a day past full, I was invited to host a public Perseid watch at Beaver Creek Conservation Area on Saturday, August 12. My hosts there were Keri and Andrew, who operate the park. I brought out my telescope so that the crowd would have something to see, since the meteors were going to be washed out by the moon for the most part. I also brought a slide show, just in case the moon was covered by clouds!

As always, the weather office predicted "clouding over with thunderstorms", and as always, it cleared nicely from the west, with no storm clouds in sight. As we were setting up and waiting for it to get dark, Keri lead a night nature walk along on of the trails (and used a red lensed flashlight - I'm impressed!) and Andrew passed around Wintergreen LifeSavers, so that everyone could make sparks (meteors) in their mouths -- try it sometime.

Once everyone was back and it was dark enough, I showed the crowd Jupiter and the rising almost-full moon. Jupiter was very interesting, with 3 moons positioned vertically right beside the planet and a 4th moon very close by these. This configuration allowed for the 'moon dance' to be observed in a short time. I also got a lot of ooo's and ah's from glimpses of the moon. Later in the evening we also checked out ringless Saturn.

We all settled down and tried to see the Perselds. For the next two hours, the crowd saw maybe 10 or 15 meteors; about what is the predicted rate for a 'normal'

shower this polluted by the moon. There was no sign of enhanced activity of any type. Despite the lack of meteors, the crowd of 35 or so was not disappointed and enjoyed their mini-starnight.

Missing Equipment

Anyone who knows the whereabouts of the following 'missing' equipment, please contact Rick Huziak at 665-3392. I'm sure these items are only 'on-loan' and not true missing! If you are going to borrow stuff from the Rystrom Observatory, please remember to leave a note on the sign-in table.

Video Tape - Buying Your First Telescope
Telescope - Celestron 5 guide scope
T-Ring adapter (photographic) for the C-8
Aluminum 2-step step ladder

Notice of the General Meeting of the RASC

Monday, September 18, 1995 8:00 p.m.
Room A-226, Health Sciences Building
U of S Campus

The program will feature a review of this year's summer activities as either conducted by the Centre or attended by members of the Centre, such as the Mt. Kobau Experience, the Dakota Star Parties, Alberta Star Party plus the report from the 1995 General Assembly.

See a Fireball Lately?

Remember to call Rick Huziak to give a report. Call while the memory is still hot! Remember to record the date, time, magnitude, beginning time, ending time, duration of flight, colors and any other interesting aspects. Fireballs are currently reported at a rate of 2 or 3 a month! Any meteor brighter than Venus is classified as a fireball. Reports will be sent to MIAC, FIDAC and the IMO.
665-3392.

A New Bright Comet is Discovered

I've recently received this email from Stan Noble (somewhat edited).

From: GEORGE::"nobls@explorer.sasknet.sk.ca"
23-AUG-1995 11:40
To: GEORGE::huziak
Subj: Comet Hale-Bopp

... I was just surfing the Net when I came across some

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view info about a recently discovered comet, Comet Hale-Bopp. They figure it will reach mag. 0 to -1 in March of 1997. The comet is now in Sagittarius at about mag. 10.5, here is the location of the comet in the coming weeks.

Date	RA	Dec
Aug. 27	18h 23.5 m	-30 55
Sept. 1	18h 21.6m	-30 42
Sept. 11	18h 18.5m	-30 14

If this comet is going to be as good as they say it's going to be something to keep a close eye on. I found the info on Sky & Telescope home page on the Web. There is lots of info on different topics there. Well got to go, catch you later.

Stan Noble

P.S. In the article they said that observers in the mid-northern latitudes will have a ring side seat for this show in March of 1997. About time.

Nova Cassiopeia 1995 by Rick Huziak

There is a new nova in Cassiopeia. The following information is from AAVSO ALERT NOTICE 213 (August 28, 1995). The notice has been edited for brevity. Charts for this nova are available from Gordon Sarty, either on paper or by email ("ge.sarty@usask.ca") or at the AAVSO address included at the end.

*0059+53 NOVA CASSIOPEIAE 1995

We have been informed by the Central Bureau for Astronomical Telegrams (IAU Circular 6213) and vsnet of the photographic discovery of a nova in Cassiopeia by Minoru Yamamoto, Okazaki, Aichi, Japan, on August 24.57 UT at magnitude 9.2, using a 200-mm f/4.0 lens and POO filter and T-Max 400 film.

Positions were measured and reported by several individuals, including T. Kojima (epoch 2000, via S. Nakano, IAU 6213):

01h 05m 05.37s +54 degrees 00' 40.5"

G. Garradd (via McNaught, vsnet) and D. Nogami (vsnet) each confirmed no known or suspected variable in the Hubble Guide Star Catalog at or near the position of the nova.

G. V. Williams, Harvard-Smithsonian Center for Astrophysics, identified a possible precursor on the Digital Sky Survey (epoch 1954.752, Palomar red plate, magnitude 18-19) at end figures 05.40s, 40.6" (IAUC 6213).

Inspection by O. Ohshima, M. Shimizu, and T. Yamamoto, Bisei Astronomical Observatory, Japan, of a CCD spectrum (range 390-700 nm, resolution 1.0 nm) taken Aug 26.736 UT with the BAO 1.0-m telescope confirms the object as a nova, showing hydrogen emission lines with a developing P Cygni profile and strong zcontinuum (via B. Marsden). Confirmation was also obtained by T. Hijiya, Asiago Astrophysical Observatory, Italy, analyzing optical spectra taken Aug 26.96 UT. M. Della Valle, University of Padova, and W. Marchiotta and G. Lercher, University of Innsbruck, report that their

preliminary analysis of a spectrum taken on Aug. 27.0 UT confirm this object to be a galactic nova probably caught during its very early decline (IAUC 6214).

Congratulations to Minoru Yamamoto on his most recent discovery!

CHARTS AVAILABLE ON AAVSO FTP SITE

We have prepared electronic copies of AAVSO charts mentioned in this Alert Notice for the following star: N Cas 95. They are available from our FTP site: ftp.aavso.org (198.116.78.2), in/pub/alert213

The answering machine at AAVSO Headquarters is on nights and weekends for your convenience. Please call our charge-free number (800-642-3883) to report your observations. We also encourage observers to send observations by fax to 617-354-0665 or by e-mail through the Internet to observations@aaavso.org. Many thanks for your significant astronomical observations and efforts.

Good observing!

Janet A. Mattel
Director"

Canada's Radarsat by Rick Huziak

Canada will soon have a new spacecraft in orbit. The RADARSAT Spacecraft is to be launched aboard a McDonnell Douglas Delta II rocket from NASA's Space Launch Complex 2 at Vandenberg Air Force Base, CA, on Oct. 4 at 7:22 a.m. PDT. When this spacecraft launches, the level of activity at SED Systems in Saskatoon will increase dramatically. SED has been subcontracted by the Canadian Space Agency to be one of the two control stations for the satellite. The 8-meter satellite dish attached to SED's building will transmit commands to the satellite, monitor the satellite's health and receive data during all passes visible from Saskatoon.

The data is then directed to the other tracking station at CSA's St. Hubert, Quebec office for analysis. I've requested that the Radarsat team provide us with an ephemeris for the satellite so that we can visually watch passes. They've agreed to do so once the satellite is safely in orbit. One of the SED Radarsat technicians is Greg Kueckle, brother of member Floyd Kueckle.

Note In the last issue of Saskatoon Skies a price list for the binocular observing program was printed with a wrong price in it. The price for a RASC Member should have been \$10.00 and not \$8.00 as published.

Software Review & Other Stuff..by Garry Brett

There is alot of new software out there that can make a computer users life alot easier. I am fortunate that I have access to alot of software that I can try out at no charge. During the day I market advertising for a great paper called the Buy & Sell. During the evenings and weekends I work for a company called Sage Computers on Avenue D. Street w. It is there I get to try out different software.

When I was putting together this issue of the Saskatoon Skies I tried to do it using a new software I was not used to and after I did alot of work and was ready to save the final copy of the newsletter the program froze up and wiped out everything I had put together and I had to redo everything from scratch.

Anyway, I had the opportunity to try out some astronomy software the other day and was impressed by what I saw. Both programs I tried were on CD-Rom and once I installed them I tried the first one called "Space Explorer" that sells \$27.95 and the second program was "Journey to the Planets" that sells for \$19.95. Normally I would not mention the price but because these two great programs are so inexpensive I thought it was important.

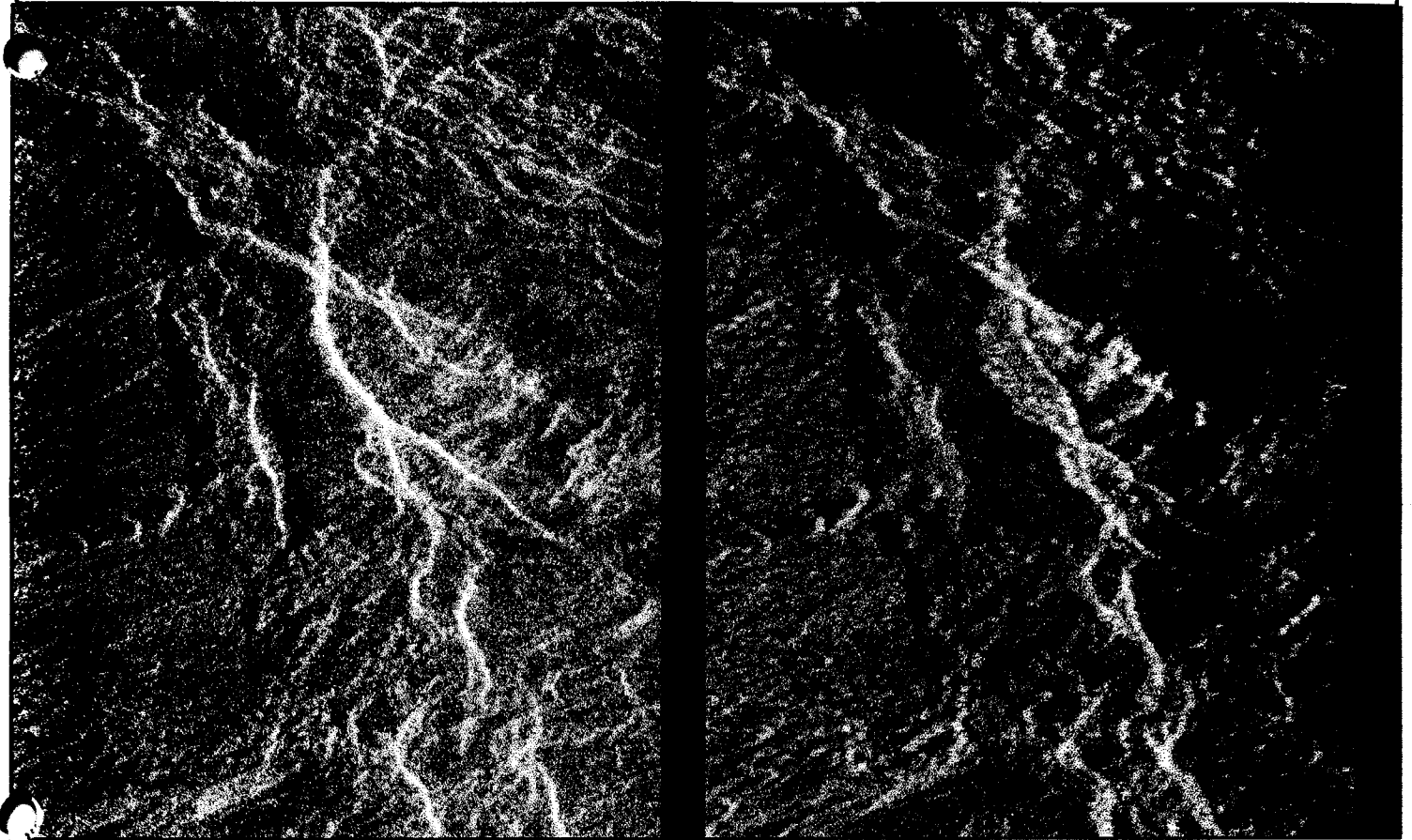
Both programs are loaded with excellent information for the beginner, but an expert would enjoys using the programs also. Both programs use pictures as icons in the menu and the user simply has to click once on the topic that interests them. Once a choice is made a word menu pops up and the user can choose from a multitude of topics, including some great movies.



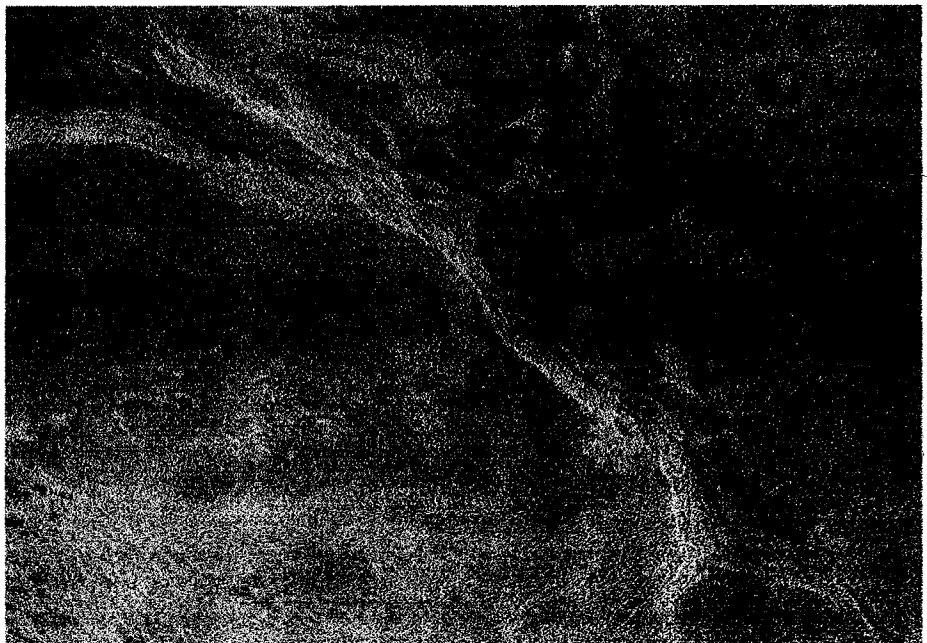
I was very impressed by the quality of the short movie clips that are on these CD-Roms. As an example when I keyed on the planet Venus I was treated to many great pictures and a nice movie. These Avi. clips made learning about the planet enjoyable. With the use of computer magic the user is treated to a low level flight over some of the features of Venus at supersonic speeds and gives the user a sense of actually being there.



Please look at the two pictures below carefully. These images are of the same identical area, only taken several months apart. You will notice that a landslide has taken place on a considerable scale!



Here are a few extra pictures of Venus that I saw on the CD-Rom. If anyone requires any pictures of the planet I have all of the Nasa radar pictures. Just give me a call on all planets.



The Swap Shop

To have your ad run here call me at (306) 384-1807 before the end of the month and I will run you ad in this section for three issues. Should your item not sell you can reword it and try again for another three issues. This section is for anything for sale, swap, give-a-way or anything else you can think of.

Wanted.....I need a Dew Shield for an 8" Celestron. Please call Darrell Chatfield at 374-9278.

ASTROPHOTO CORNER

SEPT 1995

RASC

SASKATOON CENTER

PHOTO OF THE MONTH

M31 The Andromeda Galaxy



This galaxy is probably the largest member of the local group of galaxies. It is about 2.2 million light years away. It would appear to contain over 300 billion individual stars. Its computed mass is about 400 billion times that of the Sun. It is about 110,000 to 180,000 light years in diameter. Two of Andromeda's several companion galaxies are seen in the photograph. Namely NGC 205 above and to the left of the central hub and M32 below and to the right of the nucleus.

The Andromeda galaxy is easily seen with the naked eye as a faint glow about 1 degree west of the star Nu Andromeda. This object is a fine site in binoculars and small telescopes. Don't be mesmerized by the bright nucleus. Look around and savor the beautiful dust lanes and

spiral arms. This galaxy extends over 2 1/2 to 3 degrees of your field of view !!!!!

TECHNIQUE: The above photograph was taken with an 8" Schmidt Camera f1.5. Exposure time was 8 min. on hypered Kodak Tec Pan 2415 using a Wratten 2A filter. Negative was developed with D19 for 6 mins. at 20 degrees C

ASTROPHOTO TIP: The next starry night overcome that general lassitude, pour out that beer, throw away the potato chips and turn off the TV, grab your 35 mm. camera and get out under that dark sky and aim your camera with sturdy tripod at Polaris and leave the shutter open for at least 60 mins. With a little luck you will have a great shot of star trails circling the celestial pole. This may launch a career in astrophotography!!!!

Clear Skies and Good Guiding----- Al Hartridge

PS. If any one out there has any interesting photos let me know and I will try to get them published in the news letter. Please include any pertinent data as to how photo was taken ,exposure time, etc.