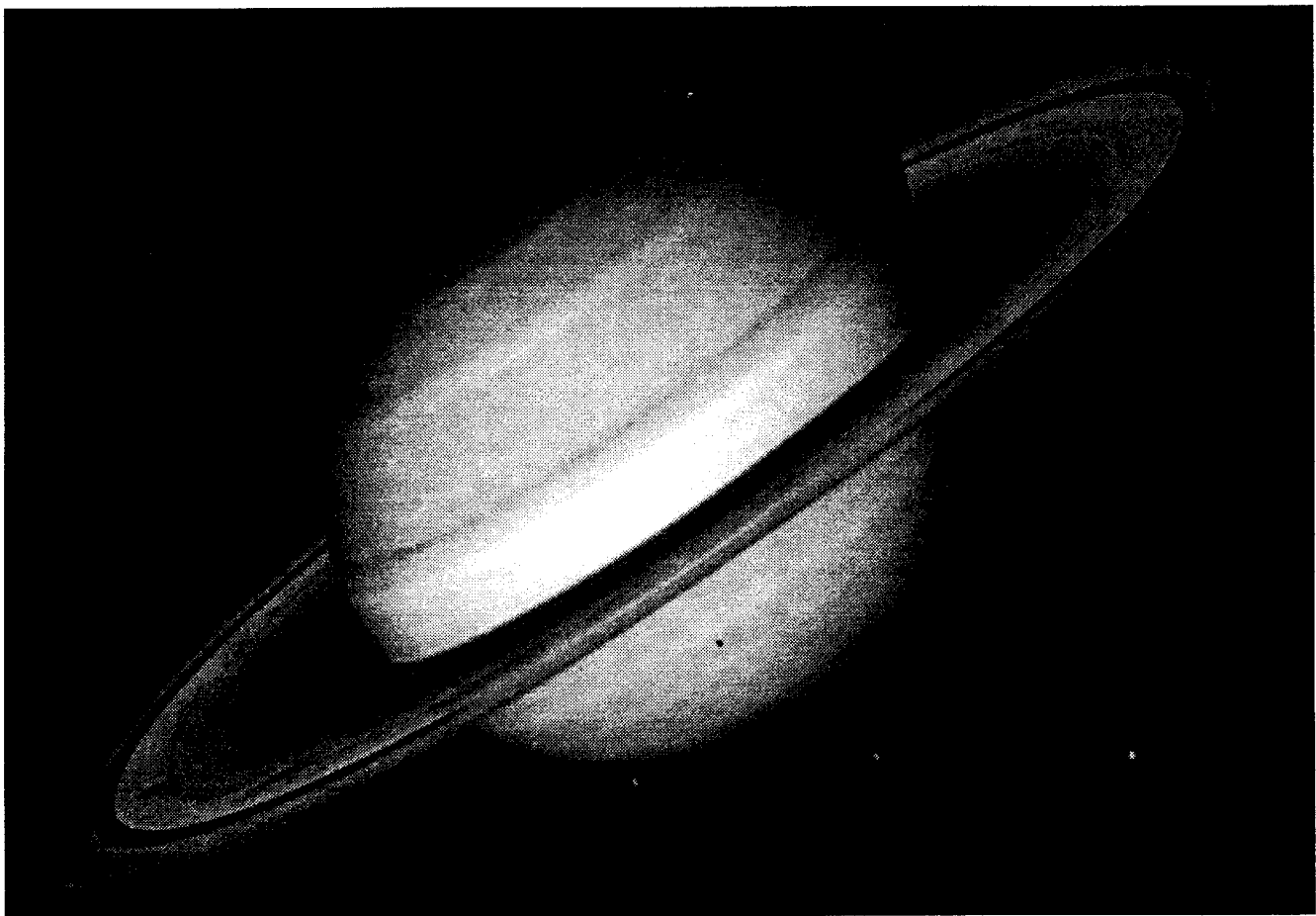


SASKATOON SKIES

Volume 24, Number 9

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Minutes of the September Executive Meeting

September 19, 1994

Room B10, Health Sciences Building, U of S

Attendees: Ed Kennedy, Al Hartridge, Gordon Sarty, Jim Young, Bill Hydromako, Garry Brett, Rick Huziak, Mike Williams

1. Bill H. and Sandy F. not able to attend.
2. National council minutes - done on e-mail, arrive much sooner.
3. Solar filtered glasses and info. on eclipse distributed to executive members.
4. Temporary members list - a good number of temporary members on the list - 18 people as of tonight and at least 10 guaranteed members.
5. 1995 new calendars have arrived - can buy on consignment basis, or on cash purchase basis but unsold calendars can not be returned for credit. Will order 25 calendars for \$4.50 plus GST = \$4.82. Will sell for \$6.50.
6. Dome: people in Minnesota will bring dome up. They are asking only for gas money.
7. If you want any receipts for this year, get cheques to Mike W. before Sept. 30/94.
8. Gord Patterson's old dome moved out to Rystrom's - will have a work bee to level it.
9. Gord Sarty has a collapsible 17 inch tube for sale.
10. New elections in one month:
 - A number of positions will change.
 - Gord Sarty will drop off the executive, he will be too busy with his thesis.
11. Gord Sarty suggests a bi-monthly newsletter as this would relieve some of the strain on the editor and reduce costs to the Centre. Rick mentions that there may be some advertising which could pull in some revenue.
12. Liability for members of RASC executive - Jim Young will check on this.
13. Adjourn motion - Jim Young; Seconded Mike Williams.

NOTICE OF THE NEXT GENERAL MEETING OF THE SASKATOON CENTRE

Monday, October 17, 1994, 8:00 p.m.

Room A-226, Health Sciences Building, U of S

(across Wiggins from the observatory)

The meeting is open to the General Public, and prospective members are welcome to attend. The annual elections will be held (see page 4 for details) along with a yet-to-be-determined but bound-to-be-interesting presentation.

Executive Members: Please remember that the executive meeting will be held at 7:00 p.m. in room B10.

Cover Photo - Saturn

This month's front cover shows Saturn as seen by Voyager 2 on July 21, 1981 when the spacecraft was 33.9 million km from the planet. Saturn is currently well-placed in Saskatoon's skies for evening viewing. A new 4 arc-second spot at System I longitude 206 degrees has been recently found. See if you can find it in your telescope.

Saskatoon Skies Information

Commercial vendors wishing to advertise in the "Saskatoon Skies" may do so at the following rates: \$50.00 per page, \$25.00 per half page and \$12.50 for business card ads. Individual RASC members and other parties (at our discretion) may advertise items and events for free.

Submissions may be in typewritten form or on a floppy diskette (3.5 or 5 inch size and formatted for MSDOS) preferably as ASCII files. Electronic submissions are preferred as it saves some typing. Mail your submissions to:

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

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

Minutes of the September General Meeting
September 19, 1994
Room A-226, Health Sciences Building, U of S

1. Meeting called to order 8:00 p.m.
2. New membership year begins next October.
3. Rick will be the president for the coming year.
4. Calendars and Beginner's Guides available for sale.
5. Presentations to follow:
 - Ed Kennedy - *The Archiving and Dissemination of Astronomical Information*
 - Al Hartridge - *The '94 Mount Kobau Experience*
 - Gord Sarty - *Comet Shoemaker-Levy 9's Impact on Jupiter*
 - Rick Huziak - *Serious Noctilucent Cloud and Meteor Observing*
6. Temporary members: on mailing list for 3 months free. Rick will take any paid memberships this p.m. since Mike cannot attend the meeting.
7. Observer's Calendars from the Vancouver Centre: can buy on consignment or buy a given number for \$4.82 each. Jim Young moves, seconded by Gord Sarty, carried that we buy 25 from the Vancouver Centre.
8. Dome: from States, 14 foot diameter, people from Minnesota will bring it up - we will pay for gas.
9. Get requests for receipts for this year to Mike Williams before September 30.
10. RASC in classrooms - schools requesting presentations.
11. Videotape on buying your first telescope is missing from our library.
12. Aluminum tube for 17 inch telescope available for sale, see Gord Sarty.
13. Newsletter: publish less often to reduce expenses? bimonthly?
14. Fall meteorite hunt - see Kim - will mention in newsletter.

Fall Meteorite Hunting

If you are interested in joining a meteorite hunt one Saturday afternoon this fall before the snow flies please call Kim Mysnk at 374-2485. Kim is using data collected from the MORP camera network to guide the search. A search was conducted near Kenaston last May but no meteorites were found. This time the search will probably be in the Allan area and, who knows, this time we might get lucky!

Dues Dues Dues

Yes, it's time to pay your dues for the 1994 - 1995 year. Please send dues directly into the Centre mailbox, or pay Mike Williams at the next General Meeting.

Regular membership	\$40.00
Youth membership (21 or younger)	\$22.50

Also, if you have (or want) a key to the Rystrom observatory there is a voluntary \$5 surcharge.

Membership in the Saskatoon Centre of the RASC gets you the use of the Centre Observatory, Centre library, the 1995 *Observer's Handbook*, monthly issues of *Saskatoon Skies*, membership in the National RASC, 6 issues of the *Journal of the RASC*, participation in Centre events, the right to hang out with lots of cool people, and much, much more. New members are welcome.

OCTOBER ELECTIONS

The October General Meeting sees the elections of the executive officers for the 1994-1995 year. This year many elected positions are up for grabs. The executive members are responsible for running the business of the Centre and for charting the Centre's future and direction. The executive deals with both Centre affairs and those of the National Office. The executive meets every third Monday at 7:00 p.m. in Health Sciences, Room B-10.

Officers are elected via a democratic process of nomination and ratification by voting of the members present at the General Meeting. If more than one person is nominated for a position, the winner is decided by a majority vote. Any member in good standing, even brand new members, can be nominated and can vote. (You can also nominate yourself, if you wish). If you cannot attend the meeting and would like to nominate someone or be nominated yourself, you can do so by proxy. Either send a written proxy, (in any legible form) to the Centre mailbox, or telephone a current member of the executive and verbally express your wishes. That member will relay your request at the General Meeting. Note that there can be any number of councillors on the executive and in the past we have had as many as four. Also, nothing stops someone from holding more than one position on the executive, if the positions are not conflicting. Executive positions available are:

Honorary President not vacant (appointed position)(currently Ed Kennedy)

Past President - not vacant (assumed position)(will be Don Friesen)

President - not vacant (two year term)(currently Richard Huziak)

Vice-President - not vacant (two year term)(currently Scott Alexander)

Secretary - up for grabs (currently Bill Hydromako)

Treasurer - up for grabs (currently Mike Williams)

Centre Representative - not vacant (appointed position)(currently Jim Young)

Activities Coordinator - up for grabs (currently Sandy Ferguson)

Newsletter Editor - up for grabs (currently Gord Sarty)

Librarian - up for grabs (currently David Cornish)

Membership/Promotion - up for grabs (currently Garry Brett)

Councillor - up for grabs (currently Allan Hartridge)

A list of job definitions of the positions is shown below:

Honorary President - Provides tie to external organization, such as Physics Department.

Past President - Advisor to new president, provides continuity to new presidency.

President - Chairman of Executive Council and General Meetings, general representative of RASC to the public.

Vice-President - Stand-in for president, aid to President, traditionally does programming for meetings.

Secretary - Records meeting minutes, provides Annual Report to National Bulletin, provides minutes for publication in Newsletter.

Treasurer - Handles finances of Centre, prepares annual financial statements, accepts new memberships, reports financial matters to National Office as required, maintains membership list.

Centre Representative - Represents Saskatoon Centre at National Council meetings and General Assembly.

Activities Coordinator - Arranges and coordinates activities for RASC members, may act as Observer's Group Chairman, coordinates Annual Public Starnights, Astronomy Day Display, special events except for General Meetings.

Newsletter Editor - Edits Saskatoon Skies Newsletter, solicits articles, arranges for copying, collates newsletter and stuffs envelopes, arranges mailing, handles advertisers.

Librarian - Maintains library book, journal and newsletter inventory, maintains inventory list of books, files incoming correspondence and other Centres' newsletters.

Membership/Promotion - Lobbies members to renew their memberships, polls expired members to determine why they have not rejoined, promotes Centre to media, advertises Centre, distributes pamphlets wherever possible.

Councillor - May be entry level position in executive, aids others as required.

Please participate in your Centre by voting or becoming an executive member.

Richard Huziak

Public Lecture on Relativity

Mendel Sachs will be visiting the U of S physics department October 12-16. As well as a departmental seminar, he is giving a public lecture on relativity that will be held Friday October 14, 7:30 p.m. at Walter Murray Collegiate Auditorium.

Hubble Observations Shed New Light on Jupiter Collision

This article is an edited version of an article, by Donald Savage, Jim Elliott, Ray Villard of NASA, that was received by e-mail from JPL.

The early results discussed below were presented at a press conference on September 29 at NASA Headquarters, Washington D.C., by astronomers John Clarke, University of Michigan, Ann Arbor; Heidi Hammel, Massachusetts Institute of Technology, Cambridge; and Harold Weaver and Melissa McGrath, Space Telescope Science Institute, Baltimore.

THE LAST DAYS OF THE COMET

Before the comet impact, there was a great deal of speculation and prediction about whether the 21 nuclei would survive before reaching Jupiter, or were so fragile that gravitational forces would pull them apart into thousands of smaller fragments. The Hubble Space Telescope (HST) helped solve this question by watching the nuclei until about 10 hours before impact. HST's high resolution images show that the nuclei, the largest of which were probably a few kilometers across, did not break up catastrophically before plunging into Jupiter's atmosphere. This reinforces the notion that the atmospheric explosions were produced by solid, massive impacting bodies.

HST's resolution also showed that the nuclei were releasing dust all along the path toward Jupiter, as would be expected from a comet. This was evident in the persistence of spherical clouds of dust surrounding each nucleus throughout most of the comet's journey. About a week before impact, these dust clouds were stretched out along the path of the comet's motion by Jupiter's increasingly strong gravity.

WAS P/SHOEMAKER-LEVY 9 A COMET OR AN ASTEROID?

At present, observations seem to slightly favor a cometary origin, though an asteroidal origin cannot yet be ruled out. The answer isn't easy because comets and asteroids have so much in common: they are small bodies; they are primordial, having formed 4.6 billion years ago along with the planets and their satellites; either type of object can be expected to be found in Jupiter's vicinity. The key difference is that comets are largely icy while the asteroids are virtually devoid of ice because they formed too close to the Sun.

WHAT IS THAT DARK STUFF MADE OF?

The HST Faint Object Spectrograph (FOS) detected many gaseous absorptions associated with the impact sites and followed their evolution over the next month. Most surprising were the strong signatures from sulfur-bearing compounds like diatomic sulfur (S₂), carbon disulfide (CS₂), and hydrogen sulfide (H₂S). Ammonia (NH₃) absorption also was detected. The S₂ absorptions seemed to fade on timescales of a few days, while the NH₃ absorptions at first got stronger with time, and finally started fading after about one month. During observations near the limb of Jupiter, the FOS detected emissions from silicon, magnesium and iron that could only have originated from the impacting bodies, since Jupiter itself normally does not have detectable amounts of these elements.

SWEPT ACROSS JUPITER

Observations made with HST's Wide Field Planetary Camera-2, a week and a month after impact, have been used to make global maps of Jupiter for tracking changes in the dark debris caught up in the high-speed winds at Jupiter's cloudtops. This debris is a natural tracer of wind patterns and allows astronomers a better understanding of the physics of the Jovian atmosphere. The high speed easterly and westerly jets have turned the dark "blobs" originally at the impact sites into striking "curly-cue" features. Although individual impact sites were still visible a month later despite the shearing, the fading of Jupiter's scars has been substantial and it now appears that Jupiter will not suffer any permanent changes from the explosions.

Hubble's ultraviolet observations show the motion of very fine impact debris particles now suspended high in Jupiter's atmosphere. The debris eventually will diffuse down to lower altitudes. This provides the first information ever obtained about Jupiter's high altitude wind patterns. Hubble gives astronomers a "three dimensional" perspective showing the wind patterns at high altitudes and how they differ from those at the visible cloudtop level. At lower altitudes, the impact debris follows east-west winds driven by sunlight and Jupiter's own internal heat. By contrast, winds in the high Jovian stratosphere move primarily from the poles toward the equator because they are driven mainly by auroral heating from high energy particles.

PIERCING JUPITER'S MAGNETIC FIELD

About four days before impact, at a distance of 2.3 million miles from Jupiter, nucleus "G" of comet P/Shoemaker-Levy 9 apparently penetrated Jupiter's powerful magnetic field, the magnetosphere. (Jupiter's magnetosphere is so vast, if visible from Earth, it would be about the size of the full Moon.)

Hubble's Faint Object Spectrograph (FOS) recorded dramatic changes at the magnetosphere crossing that provided a rare opportunity to gather more clues on the comet's true composition. During a two minute period on July 14, HST detected strong emissions from ionized magnesium (Mg II), an important component of both comet dust and asteroids. However, if the nuclei were ice-laden - as expected of a comet

nucleus - astronomers expected to detect the hydroxyl radical (OH). Hubble did not see OH, casting some doubt on the cometary nature of comet P/Shoemaker-Levy 9. Eighteen minutes after comet P/Shoemaker-Levy 9 displayed the flare-up in Mg II emissions, there was also a dramatic change in the light reflected from the dust particles in the comet.

NEW AURORAL ACTIVITY

HST detected unusual auroral activity in Jupiter's northern hemisphere just after the impact of the comet's "K" fragment. This impact completely disrupted the radiation belts which have been stable over the last 20 years of radio observations.

Aurorae, glowing gases that create the northern and southern lights, are common on Jupiter because energetic charged particles needed to excite the gases are always trapped in Jupiter's magnetosphere. However, this new feature seen by Hubble was unusual because it was temporarily as bright or brighter than the normal aurora, short-lived, and outside the area where Jovian aurorae are normally found. Astronomers believe the K impact created an electromagnetic disturbance that traveled along magnetic field lines into the radiation belts.

This scattered charged particles, which normally exist in the radiation belts, into Jupiter's upper atmosphere.

X-ray images taken with the ROSAT satellite further bolster the link to the K impact. They reveal unexpectedly bright X-ray emissions that were brightest near the time of the K impact, and then faded.

The Space Telescope Science Institute is operated by the Association of Universities for Research in Astronomy, Inc. (AURA) for NASA, under contract with the Goddard Space Flight Center, Greenbelt, Md. The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency (ESA).

NOTICE OF THE NEXT OBSERVER'S GROUP MEETING AT THE RYSTROM OBSERVATORY

Come one, come all to the OG Meeting at the RYO. The next meeting is November 5, 1994, at 7:30 p.m. and is for members and friends. Bring your scope if you have one. If you don't have a scope, we have a few we can provide for you. This OG meeting will introduce new members to the facilities and will give other observers time to work on their Messier Catalogs, with pointers from experienced observers if required. We guarantee that it will be dark at night.

The dates of the OG meetings for the membership year are:

1994: Dec 3, Dec 31 (maybe)

1995: Jan 28, Feb 25, Mar 4, Apr 1, Apr 29, May 27, Jun 24.

These dates are subject to change, but write them down on your calendar. We may also set more dates for special events and may also add in rain dates. Watch the newsletter for changes.

To find the observatory, drive south on hiway #11 to the Grasswood Esso station and drive-in, turn left past the KOA campground and head down the road approximately 1.5 miles to the last mailbox on the right before the railway tracks. The mailbox is the Rystrom's. Go down the driveway past two homes and around the large equipment building to the right. Be sure to dim your lights.

In addition to the Observers' Group meeting, members are welcome to visit the Rystrom site at any time provided you phone ahead. The number to call is 955-2370, ask for Nelson or Gloria. If you do not have a key, find a member who does and talk them into a trip to the dome. After you have been checked out on the equipment there you are entitled to a key of your own.

RASC Publications for Sale

The new 1995 *RASC Calendars* are here. They are \$6.50 each and contain beautiful celestial photographs taken by RASC members across Canada. An excellent Christmas gift idea.

The *Beginning Observer's Guides*, 1994 edition are being sold for \$9.50 each. These excellent guides are for the rank beginner or for those who instruct rank beginners. They are packed with loads of information on how to get started and what to see. They are excellent for beginning adults, school-age kids, Cubs, Guides, Brownies, and make excellent presents for up and coming amateurs. Written by a Canadian amateur, Leo Enright, for the Canadian audience. An excellent buy.

For deep sky hunters, Rick Huziak has prepared a booklet of observing forms called *My Messier Album*. It is useful for collecting your observations of Messier objects together and is being sold for \$2.00.

All prices include GST. You can pick any of these up at the next General Meeting or, if you'd like any of these mailed out to you, please add \$2.00 for postage, or I'll deliver them for free anywhere in town, if you give me a call: Rick Huziak, 665-3392. All proceeds go to the Saskatoon Centre.

Novices' Corner - Pegasus and Andromeda

Welcome back! I trust everyone had a great summer and managed to get some observing in, since the weather was pretty good for the most part. I also hope it gave newcomers to astronomy a chance to get to know the Summer Triangle, which was set out in our June issue as a possible "summer project" in the Novices' Corner.

Now that fall is here and we can go out earlier in the evening to do our observing, it is a good time to get to know Pegasus and Andromeda, two fairly bright fall constellations easily seen from the city, provided you can get away from any direct lights. There are a number of really good objects to track down in both constellations and I hope this article will help guide you to some of them, either with the naked eye, binoculars or small telescopes. As these novices' articles are geared toward those who are new to astronomy and are interested in getting familiar with the sky, I usually highlight features and objects that are bright enough to be easily found or recognized by newcomers with or without optical equipment. Therefore, I keep away from describing objects fainter than, say, 10th mag on any accompanying sky charts, although if there is a particularly interesting item below that mag that appears within a constellation, I might include it as a challenge object for small telescope.

OK - let's get going! Pegasus and Andromeda are easily found these evenings, as they are almost on the meridian around 9:00 p.m. during October, and earlier as fall progresses. The meridian is the imaginary north-south line that runs from Polaris in the north to the point on the horizon due south. When a constellation or an object is "on the meridian", that means it has reached its highest point in the sky. From that point on it starts to set westward, getting lower as it goes; and it can become more difficult to observe due to atmospheric problems and trees, lights, etc. close to the horizon. Therefore, when an object is on the meridian it is generally the best point in the sky at which to observe it.

FIGURE 1 shows how you can locate these constellations using that all-purpose asterism, the Big Dipper! Use the "pointers" of the Dipper to locate Polaris, then extend this pointer line in a straight line almost double the distance to locate Scheat, the upper right corner star of the Square of Pegasus. This will enable you to recognize the Square, which represents the body of Pegasus, the winged horse of Greek mythology. (Actually Pegasus "flies" upside-down, with the star Enif representing its head, but don't let that throw you!) Once you have found the Square, you will have no trouble locating Andromeda. The upper left-hand star in the Square is Alpheratz, which is just over the border of Pegasus in Andromeda. These asterisms are a little unique in that they are "attached". Andromeda spreads out from Alpheratz eastward, toward Perseus, in a trumpet shape. Both constellations will be around for viewing until January, but, as mentioned earlier, they get progressively lower in the sky and more difficult to observe.

NAKED EYE: As always, observe the orientation of the two constellations as they rise and set. At this time of year they have risen and are high in the sky by the time you get out to view them. But late on a summer evening you will see the star Scheat and the "front legs" of Pegasus clear the northeastern horizon first, quickly followed by the head, Great Square and Andromeda, the trumpet shape rising horizontally. As the evening progresses and they become higher in the sky, they attain their traditional appearance, with Pegasus flying upside-down. Then even later as they set in the northwest, Pegasus is the first to disappear with the trumpet shape of Andromeda the last to go, setting vertically.

The asterism of the Great Square is easily identified without optical equipment, the four bright stars being Alpheratz in the northeast (Andromeda), Scheat in the northwest, Markab in the southwest and Algenib in the southeast. Stretching eastward from the Square you will recognize the trumpet shape of Andromeda. This consists of two rows of four fairly bright stars, meeting at Alpheratz, being the fourth star of each row. I have always thought of this pattern of stars as the hind legs of Pegasus, although they are really part of Andromeda.

FIGURE 2 shows where some interesting objects are located. The treat in this part of the sky is one of the most, if not THE MOST spectacular, deep sky object in the northern hemisphere - the Andromeda Galaxy, also known as M31 and NGC 224. Granted, you need to be well away from lights and have your eyes dark adapted, but you can see this wonderful object without optical aid, without too much searching. One night many summers ago at Stellafane (under super skies), a friend and I were laying out by our tent. My friend had grown up in Toronto and had never really looked at the sky much and I was pointing out this and that. All of a sudden there was this whoop of joy as his eyes fell upon this fuzzy object that was obviously different than the stars and planets being observed. He had tripped over M31 just by scanning the sky with his eyes. I hadn't bothered pointing it out as a naked eye object, because I really didn't think he would pick up on it, not having been an experienced night time observer!

You might try and see how many stars you can count within the Square. If you can count more than twenty-five, you are considered to have very good vision. (Not me! I can't get more than 15 or so!) Again, it helps to have really dark skies, of course.

BINOCULARS: Turn your binoculars on M31 again. Now you will see a huge, elongated fuzzy patch that will take up a good bit of your field of view. If your binoculars are high power and you have a stable mount on which to set them, you might be able to pick up M32 and M110, the two companion galaxies of M31. They are 8th magnitude and, although they are considerably smaller than M31 (it's 4 deg. across!), they are close to the main galaxy and under really dark skies, you should be able to see them. All three galaxies are part of our "local group", to which our own Milky Way galaxy also belongs. It is mind-boggling to consider that the light you see from M31 on any night left that galaxy 2.2 million years ago. Awesome!

Heading back to Pegasus, try and locate M15, a beautiful globular cluster not far from the star Enif. It shows up as a small fuzzy spot in binoculars. You need a scope to resolve any of the stars, but it is an achievement to have located it.

SMALL TELESCOPE: Check out M31 again. This time you will be blown away! Make sure you use a wide angle eyepiece, as this thing is so large you won't get it all into the field of view. You will easily see the bright nucleus of the galaxy, together with its dust lanes. Its companion galaxies mentioned above will be very easy to see, M32 being considerably closer to M31 than M110. If you feel artistic, make a sketch. You will be amazed at all the detail you pick up on!

Now, go back to M15. In a high power eyepiece it loses a lot of its fuzzy appearance. It now becomes a compact little ball of stars, easily resolved. It is not as large as M13 in Hercules, the best globular cluster we can see from Saskatoon, but it has its own charm!

I have only featured a couple of objects available in the two constellations. There are many other objects in Pegasus and Andromeda that may interest a more advanced observer, such as variable stars, double stars, and many other fainter deep sky objects. All of these can be found in any of the observing manuals and reference books available. I hope, however, that the objects mentioned will pique the interest of newcomers to the sky, who will not find the search for them overwhelming.

For the new members who have joined us in the last few months, and who are not familiar with this series of beginner-oriented articles, please feel free to contact me and let me know if there is some area of interest you may have in astronomy (and observing) that you would like me to write about. It is hard to touch on every aspect of observing and it would be of tremendous help to me if I had an idea of what interests you. My home number is 931-3184 and I look forward to receiving any suggestions you may have.

Sandy Ferguson

The Wanuskewin Experience

The Centre held its last summer public starnights on September 9 and 10 at the Wanuskewin Heritage Park north of the city. Friday night was a no-go, although a number of members turned up with their scopes, together with a number of members of the public, who were hoping to catch a glimpse of something celestial. Vega was about the only thing that crept out from behind cloud (and only briefly). So, after about an hour of socializing out in the parking lot, Rick Huziak's Variable Cloud Group broke up and headed home.

Saturday night was far more successful! Al Hartridge reported that there were about 10 scopes set up in the amphitheatre, behind the main building, and about 60 visitors came out to observe the usual late summer/early autumn deep sky objects, together with Saturn. It was a successful evening and the event broke up around 1:00 a.m. (when, I suspect, the crew adjourned to Robin's Donuts for their usual post-starnight sugar fix!).

Thanks to all those members who came out to help with the starnight, whether with their scopes or with their enthusiasm! Next public starnight next year!

Sandy Ferguson

Renew Sky and Telescope Through the Centre

Members are reminded that they should subscribe or renew *Sky and Telescope* magazine through the Centre to qualify for a discount. Just return your subscription card with your payment to Mike Williams and he will forward it to S&T to get your discount. Remember also that you qualify for a 10% discount on all other Sky Publishing Corporation books and materials. Just note that you qualify for the discount because you are a member of the Saskatoon Centre when you make your order. Details appeared the April issue of *Saskatoon Skies*.

University Observatory Hours

The U of S Observatory will be open to the public on Saturday evenings from 7:30 to 9:30 p.m. during October and November. Visitors will be able to view Saturn, the Ring Nebula, the Andromeda Galaxy 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. and College Drive. For more information, call Stan Shadick at 966-6434.

FIGURE 1

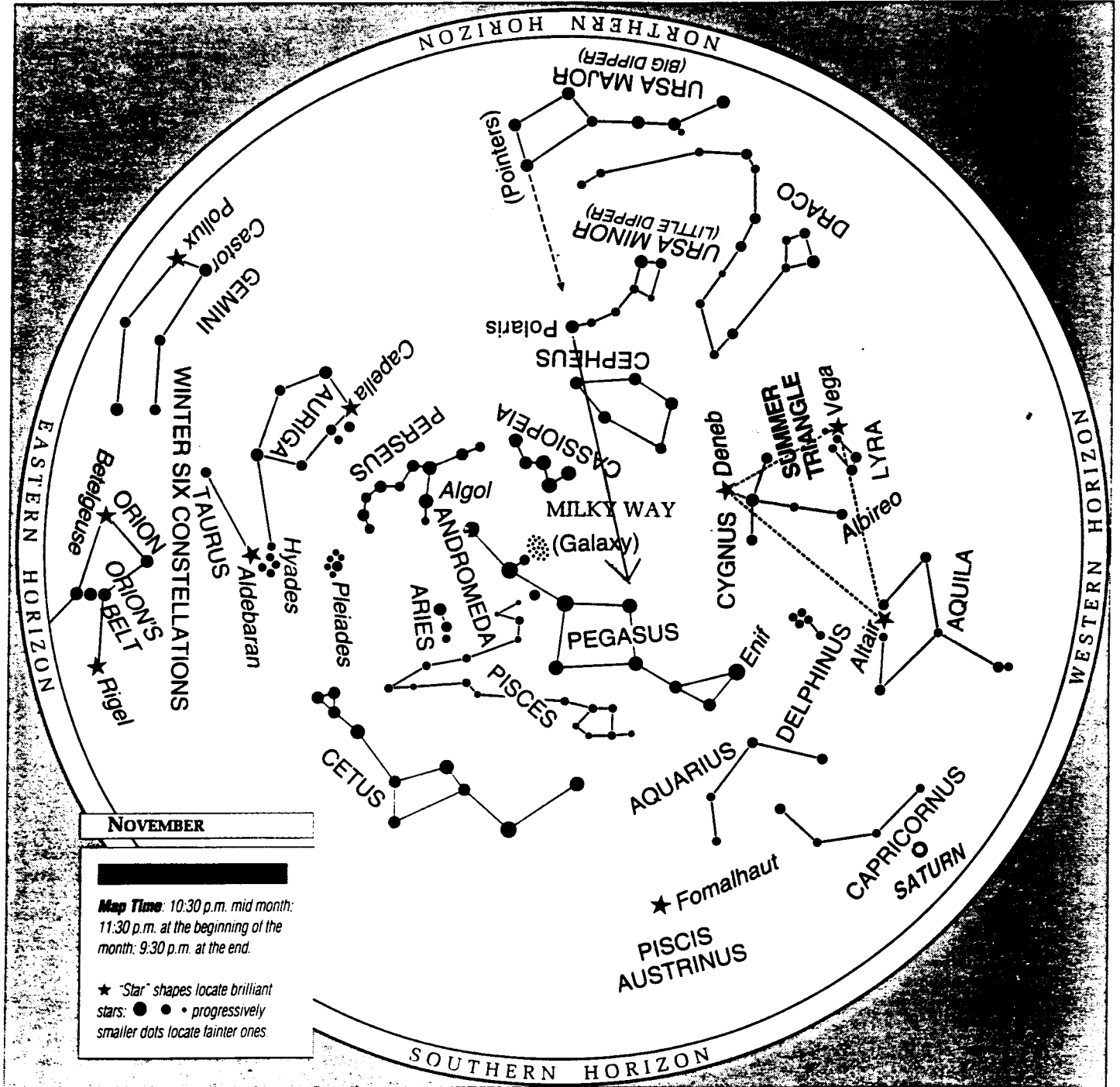
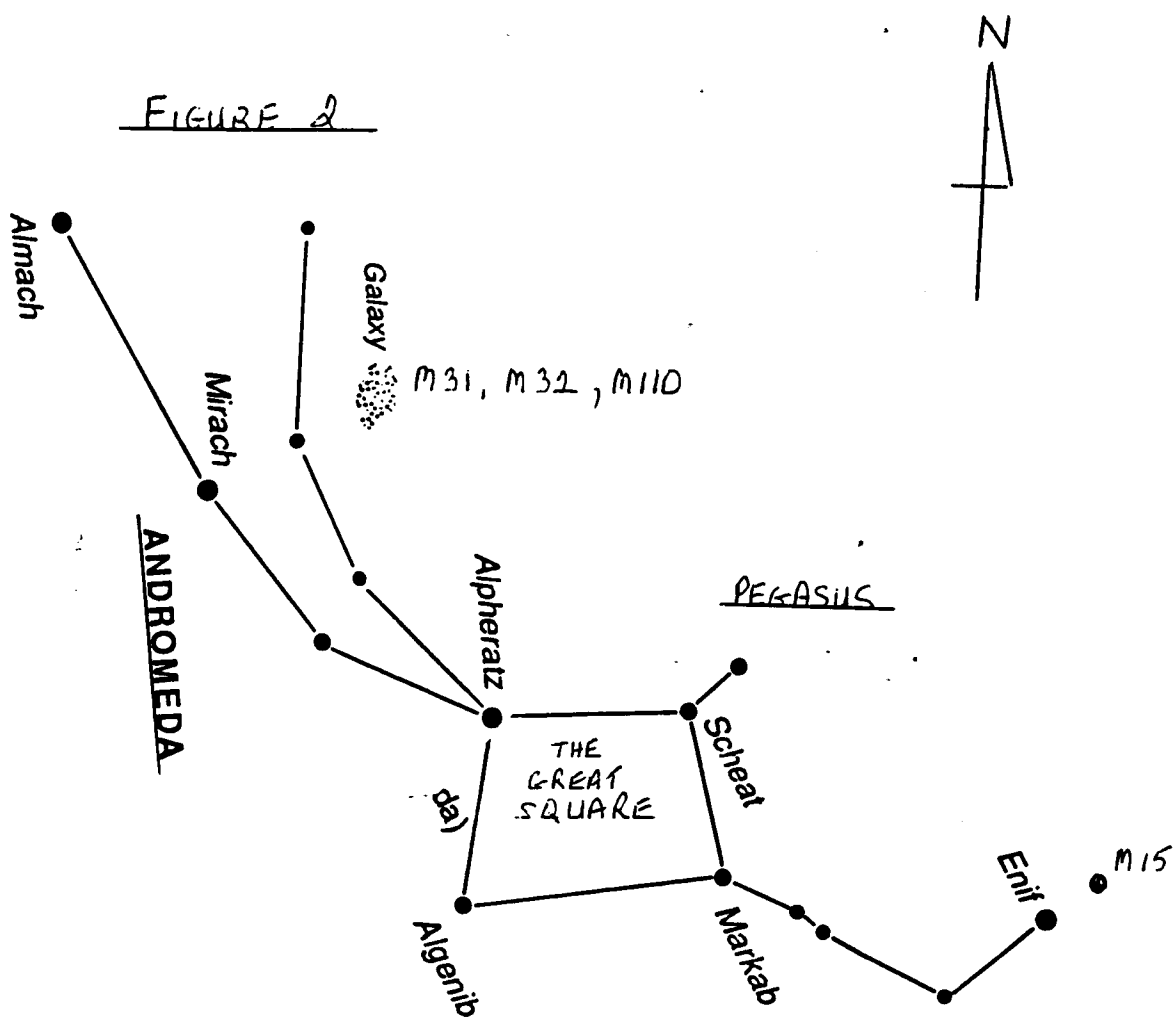


FIGURE 2



A man watches the astronomer line up her telescope with a distant star. Just as she has it in focus, a falling star zooms by. The man nods at the astronomer and says, "Good shot!".