Saskatoon Skies

The Newsletter of the Saskatoon Centre of the Royal Astronomical Society of Canada

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March 2000

Murray Paulson of the EdmontonCentre of the RASC stands on the edge of the Barringer Meteor Crater, near Winslow, Arizona. His visit to this crater will be included in the presentation he gives at the March General Meeting.

RASC Calendar Happenings

Date (2000)	Event	Contact	Telephone
Mar. 12	**SSSP Organizing Meeting:** Sandy's 2 pm	Les Dickson	249-1091
Mar. 17	**Junior/Youth Astronomers Meeting** - 7:30 pm at Nutana Collegiate	Sandy Ferguson	931-3184
Mar. 20	**General Meeting** - Paulson & Chatfield	Les Dickson	249-1091
Mar. 25	**Sleaford Scheduled Work Day**	Bill Hydomako	384-4781
Apr. 1	**Messier Marathon** at **Sleaford Obs.**	Andrew Krochko	933-1543
Apr. 8	**Sleaford Obs'y Community Starnight**	Les Dickson	249-1091
Apr. 14	**Junior/Youth Astronomers Meeting** - 7:30 pm at Nutana Collegiate	Sandy Ferguson	931-3184
Apr. 15	**Sleaford Work Day Rain Date**	Bill Hydomako	384-4781
Apr. 17	**General Meeting** - Dale Jeffrey's *Living Skies Observatory* ***(Exec Mtg** at 6:30 p.m.)*	Les Dickson	249-1091
Apr. 22	**Zodiacal Light Season** begins	Rick Huziak	665-3392
May 6	**Astronomy Day** at Circle Centre Mall	Brian Friesen	384-2963
May 15	**General Meeting** - BYO Telescope!	Les Dickson	249-1091

Sky Buys and Mirror Sells

The Saskatoon Centre's Swap and Sale Page!

For Sale: 1 1/4" eyepieces: Edscorp 25mm Orthoscopic, 21mm - 3 element "Siebert"(Kellner?), Meade 12mm MA, Celestron 6mm Orthoscopic. $30 each. Call Ken Noesgaard at 931-4755 or e-mail <ken.noesgaard@siemens.ca>.

For Sale: Brass-finished Carrying Trunk for C-8 or C11, Kellner 9mm eyepiece $40.00, Antares 10mm Plossl eyepiece $100.00. Call Darrell Chatfield for pricing and trials. tel. 374-9278.

For Sale: 2" Lumicon Deep (LP) Sky Filter: $200.00 obo. Call Andrew Krochko at 955-1543.

Wanted: for the Sleaford Observatory's Reference Library - I need binders, bookends, page protectors and similar paraphernalia as well as your favourite observing articles to add to the Sleaford Observer's Reference Binders. I am accumulating interesting observing articles into binders for use at the site. Call Andrew Krochko at 955-1543.

For Sale: 3-year old Ultima 11 in MINT condition with dec and focuser motor, Celestron dew shield, HD tripod, HD wedge and Celestron wheeled trunk case. Excellent clean optics. No scratches or dents. Includes 7x50 Polaris finder, 1.25 visual back and diagonal. No eyepieces. Best offers around $3500.00. Shipping negotiable. Can send images if interested. Gary Bilecki, ASFM (Astronomical Society of Fort McMurray), tel: home phone (780) 790-0121, work phone (780) 743-7618, <bilecki@home.com>

Saskatoon Centre

The Royal Astronomical Society of Canada
P. O. Box 317, RPO University
Saskatoon, SK, S7N 4J8
URL: http://maya.usask.ca/~rasc/rasc.html
E-mail: keser@duke.usask.ca
Telephone: (306) 374-4262

Newsletter Editor - Richard Huziak
Copy - Brian Friesen & WBM
Collate - Friesens, Christie, Dicksons, Ferguson, Essar & Krochko

IN THIS ISSUE

Saskatoon Skies is published monthly by the Saskatoon Centre of the RASC. Distribution is approximately 165 copies per issue. ***Saskatoon Skies*** welcomes unsolicited articles, sketches, photographs, cartoons, and other astronomy or space science articles. Articles can be sent by mail in any format to the Centre's mailbox. Submissions may also be sent by e-mail - preferred as **plain unformatted ASCII text files without line breaks**. Images sent by e-mail should be attached .GIFs, .TIFs .JPGs or similar. Send e-mail submissions to the editor at <huziak@SEDSystems.ca>. Submitted materials can be returned upon request. Please send articles in "generic" formats, with standard grammatical formatting appreciated - 5 spaces at the beginning of paragraphs, two spaces after periods, one space after commas. A separate subscription to ***Saskatoon Skies*** is available for **$12.50** per year. Articles may be reprinted from ***Saskatoon Skies*** without expressed permission (unless otherwise stated), but source credit is requested. **DEADLINE for submissions is the 26th of each month**. ***Saskatoon Skies*** accepts commercial advertising. Please call the editor for rates. Members can advertise non-commercial items free of charge.

The Messier Marathon

by Rick Huziak

For those you that don't know what a Messier Marathon is, this is your change to find out! On April 1st we will be holding our first MM in years! During the last few weeks of March and the first few weeks of April, it is possible to see 109 of the 110 Messier objects in only ONE night! By beginning observing in the late dusk to pick up M77 in Cetus, then fighting off sleep depravation as morning twilight begins, to catch those last objects in Sagittarius, you can earn your Messier Certificate *very* quickly! That's what the Messier Marathon is! It's also a unique personal challenge!

Come early, and get your scope set up and aligned well before dusk, since you can be defeated before you start if you don't catch M77in Cetus and M74 in Pisces in very bright twilight! (You will only be able to see the bright nuclei). For newcomers, a suggested order for the MM is listed at the end of this article). Then proceed to much easier objects such as M45, the Auriga and Gemini star clusters, the Andromeda and Triangulum galaxies, the Orion nebulae (M42, M43, M78), the Lepus globular (M79). Your can catch M39 in Cygnus, the most Messiers in Cassiopeia against the north horizon anytime through the night. . Once this is out of the way, you have a bit of a breather, then begin on the galaxies in Leo, Coma Berenices and Canes Venatici, and UMa. As time goes on, you get busier and busier, since the Virgo cluster is rising and will need a monster effort! This is where many observers calf! Hopping through this cloud of galaxies is exhausting and time-consuming. If you've never hopped though here before, you can get very confused trying the identify dozens of look-alike galaxies! You can also be distracted and set off-course by the multitude of interesting, but non-Messier galaxies all around!

As time goes on, the rest of the spring and summer constellations begin to rise, and soon you will find yourself into Scorpio, Cygnus, Perseus and Lyra, then to end the night the globulars and open clusters of Ophiuchus, Sagittarius, Equus and Serpens rise.

Very few actually get all 109 objects (M30 in Capricornus rises after sun-up). The attrition rate is generally very high, but the fun is in trying! If you get 40 objects, be proud! With 50 you earn honourable mention. With 60 you are approaching god-like stature, and with 70 and up, you are bowed before!

In order to qualify for the Messier Certificate, remember that you must find the objects ***yourself,*** but can use star-hopping or setting circles if you prefer. You must also record the date and time of your observation, equipment used, and a basic description of what the object looks like. You do ***not*** have to sketch the objects of you don't want to. Also, it doesn't matter how big your telescope is - even good binoculars will pick up 80 or more of the Messiers in the dark Sleaford Skies.

If you are interested in trying this unusual feat, whether you are a beginner or an advanced observer, meet at the Sleaford Observatory well before dusk begins. Let Observing Coordinator Andrew Krochko know if you can so he can keep track of our expected crowd size (933-1543) We intend to have hot chocolate, coffee and munchy treats served all night. Remember to dress warmly - this is only spring, and you *will* get cold! We'd love to see new and never-before observers come out and try this. (And there is no dishonour in trying and dying! - I've done this try *and die* thing several times before!). We will also

have Messier Albums and checklists available at the site. (In case of inclement weather, you will be on your own on another night of your choice).

My suggested order is as follows (though you can vary as much as you want after the first few objects). Objects on *italics* can also be picked up in the early morning as they come around again: 45, 77, 74, 33, *39, 31, 32, 110, 52, 103*, 79, 42, 43, 78, 34, *76*, 1, 41, 50, 93, 46, 47, 48, 35, 36, 37, 38, 67, 44, 95, 96, 105, 65, 66, 63, 51, 94, 106, 3, 98, 99, 100, 84, 85, 86, 87, 88, 89, 90, 91, 49, 58, 59, 60, 61, 64, 53, 104, 68, 83, 101, 102, 109, 97, 108, 81, 82, 40, 5, 13, 92, 56, 57, 12, 10, 107, 14, 80, 9, 4, 29, 11, 26, 16, 17, 18, 8, 20, 21, 22, 23, 24, 25, 28, 19, 62, 6, 7, 27, 71, 15, 2, 72, 73, 75, 69, 70, 54, 55, 30.

Announcing the 2000 Saskatchewan Summer Star Party

The 2000 Saskatchewan Summer Star at Cypress Hills Inter-provincial Park will be taking place from August 25th -27th. This year's SSSP will feature expert and entertaining astro-imager Jack Newton as our keynote speaker. The star party is a friendly event that can provide a delightful weekend for your whole family, yet also accommodate the needs of the most demanding astronomer. The skies are among the best in Canada, as are the chances of dry, clear weather.

SSSP'00 will be held in the Cypress Hills Park Centre Block, located in the SW corner of Saskatchewan, near the Alberta and Montana borders. The beautiful, mile-high natural setting, superb skies, innovative programs, astronomical activities, and a wide range of nature and recreational alternatives have made this one of the most successful star parties in Canada. Almost 60% of participants choose to return for another year!

Hotel, cabin and condo units are available for pre-booking. Park campsites for tent and trailers will also be available. There are also two excellent B&B establishments a short drive from away from the park. Contact the SSSP registrars for details.

The late August date of this year's star party will not only provide more hours of darkness but also allow the spacious Meadows observing area to be effectively reserved for astronomical use.
The late Fr. Lucian Kemble, OFM, was one of the leading spirits of SSSP. He testified:

> *"Ah, the delights of the SSSP skies! I have rarely seen such clarity and depth in the summer skies, certainly comparing favourably with the best I'd seen. The summer Milky Way was truly spectacular and its wonders so abundant and clear - naked eye, binocular or telescopic. With no nearby light pollution... the sky was very dark."*

These wonderfully dark skies have proven to allow the naked-eye detection of magnitude 8.4 stars in Lyra by the Winnipeg RASC's eagle-eyed Judy Anderson on one of SSSP98's many clear nights. Her husband, meteorologist Jay Anderson, speculates that SSSP's great seeing and excellent record of clear nights is a result of its location on the Cypress Hills Plateau. This unique formation juts up so high above the surrounding prairies that it managed to preserve its own ecology of cool Lodgepole pine forests and

alpine meadows through the last ice age. The resulting microclimate helps to produce clear, pleasant, bug-free nights and dry weather, while the area's low population density keeps the skies black.

Cypress Hills Inter-provincial Park is also a full-family resort, with such available activities as boating, fishing, swimming, golf, mini-golf, horse-back riding and much more. There are also many hiking and riding trails that provide access to the park's abundant wildlife, orchids and interesting geology.

Observers will be welcome to set up for the duration in a spacious, light-protected area of the Meadows Campground, which is reserved for SSSP use. This area will be co-operatively supervised by participants, who can camp near their telescopes should they wish. Officially, this weekend star party begins on Friday, August 25th, and ends on the night of Sunday, August 27th. However, the skies are often so good and the location so pleasant that many come early and stay late. As a matter of fact, we'll even hold an extra weinie roast for early comers on Thursday evening!

Jack Newton's keynote presentation will feature some of his breathtaking astro images. His unique talent for blending humour and accessibility compliments his profound knowledge of astronomy and astro-imaging. Newton pushes the limits of astrophotography to become a world-recognized leader in CCD processing. His stunning images have appeared in countless publications and astronomy textbooks, yet he is able to make his ground-breaking approaches and techniques look easy...and fun! This makes Jack Newton's presentation highly appropriate as the second of our *Father Lucian Kemble Memorial Lectures*.

SSSP 2000 will also feature a variety of Friday night and Saturday afternoon astronomy in the Cypress Resort's spacious, air-conditioned convention facility. There will be introductory talks for beginners, children's activities and such mainstay events as a *Binocular Tours of the Night Sky* by Murray Paulson and a *Variable Star Clinic* by Rick Huziak. There will again be an astrophotography contest, a swap table and much more. There will also be a repeat of last year's delicious Saturday evening banquet at the resort. The Regina Centre will once again be conducting a Public Star Night at Lookout Point for non-SSSP campers. The Regina RASC will also be selling this year's edition of the popular SSSP T-shirt. (Supply is limited - pre-ordering with registration is advised!).

The Saskatoon and Regina Centres of the Royal Astronomical Society of Canada invite everyone to our fourth annual **SASKATCHEWAN SUMMER STAR PARTY 2000**. Make this your "PRAIRIE SUMMER" and join us in big-sky country for a fun-filled, family-oriented weekend of astronomy and summer activities.

For more information, and to reserve cabin, condominium or hotel accommodation, please contact:

SSSP Registrars: Les and Ellen Dickson
e-mail: <dickson@sk.sympatico.ca>
tel: (306) 249-1091

or

Organizer: Dale Jeffrey
e-mail: <dale.jeffrey@sk.sympatico.ca>
tel: (306) 223-4447

or write to: SSSP 2000
RASC Saskatoon Centre
P.O. Box 317, RPO University
Saskatoon, SK.
S7N 4J8

Planet Report: March – April 2000

by Murray Paulson - Edmonton Centre

I can feel spring coming, the dark night skies like the winter snows will soon fade. The giant planets that have kept us company for so long shall soon be lost in spring's twilight. So as spring arrives, planet season will pause for an intermission until July. Pluto comes in at the curtain call in the April and May dark of the moon.

Last month started with another good apparition of Mercury. December was a great morning apparition and February's evening apparition was surprisingly good, only 17 degrees elongation from the sun. It was very bright with cooperative skies and a great conjunction with the crescent moon thrown in for good measure. The first of March saw Mercury in inferior conjunction with the sun. as it raced by, heading between the earth and the sun for the morning sky. On March 28 it will reach greatest western elongation. The western elongations near the vernal equinox are poor ones because the ecliptic is nearly horizontal. For this reason, Mercury will only be 4.5 degrees higher in altitude than the sun and 27 degrees farther south in azimuth at sunrise on that morning! On it's way to this elongation, it will pass Venus. The two planets will be less than 3 degrees apart from March 13th to 15th. Venus, at magnitude –3.9, will show a 10.9" gibbous disk and will contrast nicely with Mercury's magnitude +1.2, 9.5" crescent. Mercury will be difficult in the twilight glare but this conjunction will be a great daytime spectacle. All you need is a polar aligned equatorial and the handbook to interpolate the two planet's positions with respect to the sun. I just love this contrast, two planets in the same low power field, vastly different in brightness and phase, about the same size but on opposite sides of the sun! This would be a good daytime Astronomy day show. On the 11th, they will be 6.5 degrees apart.

Mars has been hiding low in the western sky all winter. It briefly joined Mercury to form the grand lineup of four planets in mid February. Mars will join Jupiter and Saturn for more great visual and photo opportunities. On March 21, Mars, Jupiter and Saturn will form a straight line with an equal spacing – 7.5 degrees apart. April 5th Mars is 1 degree above Jupiter with Saturn 6 degrees east and the thin crescent moon 7 degrees below. The next night the moon will be 4 degrees south east of Saturn with an appearance much like February's conjunction of the thin crescent moon and Mercury. On the 11th the planets will form an nice symmetrical triangle. Mars will be a diminutive 4" compared to Jupiter at 34" and Saturn at 16.5". As you gaze on them, you are seeing them lined up, all on the far side of the sun. An appealing perspective, and a nice comparative visage in a scope. These conjunctions will be observable for a short time after sunset low in the western sky, so find a good location with no obstructions. Check out potential photo sites before hand to find an aesthetically pleasing backdrop.

The May dark of the moon is early in the month, so this will be the choice time to observe Pluto. Pluto is one half of a degree south east of 20 Ophiuchi, a 4.7 magnitude star and this will make the field easier to find. Pluto's orbit has quite the inclination and Pluto lies more than 11 degrees above the ecliptic, which is a good thing as we are near the bottom of the ecliptic. If it were the other way around and Pluto was below, it would lie too close to the horizon to be visible from Edmonton or Saskatoon. At magnitude 13.7, it is a challenge in an 8" but a cake walk in the larger scopes. There are a few club members that have seen it in small (4" and 5") scopes, are you foolish enough to try? If you miss it in the spring window, it can be seen in the August new moon.

Til' the May issue, clear skies and good Pluto hunting.

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The DeepSky Observer *The Big Dipper's Bowl*

by Scott Alexander

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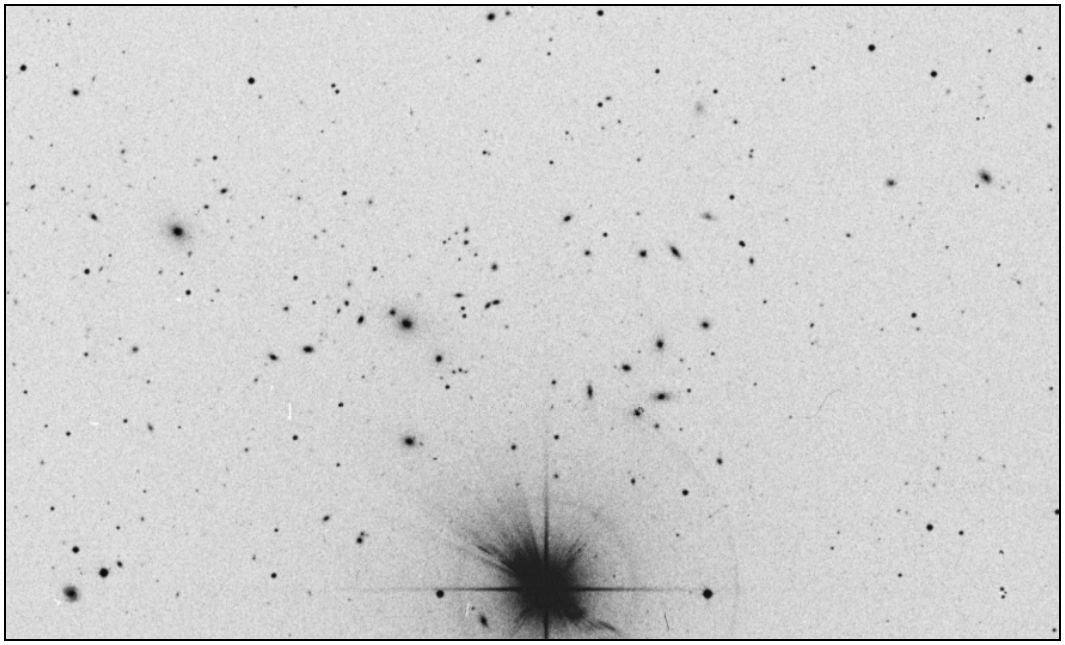
OK - how's everybody doing today? For this article (and several more) go get your life jackets and big boats because we are going on a raft trip down a very long river. And I know what you are thinking ... "*a river trip in an astronomy article*"? Well, this river is hundreds of light years long but contains a hundred or more galaxies all in the bowl of Ursa Major.

This river also contains a few islands of galaxies such as the cluster Abell 1377, which is a collection of about 50 to 60 galaxies in a small area of only 1/4 degree across. So you should have access to an 8- or 10- or 12-inch or larger scope to be able to see the brighter and fainter galaxies in the cluster, as well as the galaxies scattered around the cluster.



This amazing cluster of galaxies is swamped by the light of a nearby 6th magnitude star. Many of the galaxies described in the text are visible in this image taken from the Digital Shy Survey (DSS). Virtually all 'dots' on the image are external galaxies – there are very few Milky Way stars visible! The image is 15' high and 25' wide.

The only problem in seeing this cluster is the bright star right next to the cluster. It is magnitude 5 or 6 and if you don't get it out of the field of view of your eyepiece, it could swamp the light of the galaxies that lie right next to it or even the whole galaxy cluster. So wait for a really dark night and dark adapt your eyes really well so you can see the cluster. All around the cluster is a really nice collection of other

galaxies, mostly NGCs, but there are a few other catalogued galaxies to be found here as well, such as Abell, CGCG, MCG, and UCG. (See the bottom of article for an explanation of these names). But you will need a big scope to see these. Many of these galaxies are in the 10th to 16th magnitude range.

Now let's look at the cluster. This cluster is a small one with 50 or 60 galaxies in it, as I said earlier. But these galaxies are in the 10th to 16th magnitude range so you will need an 8- to 10-inch scope to see the brighter ones and a 10-inch or larger scope to see the fainter ones.

INFO ON GALAXIES:

1	ABELL 1377:[FTC95] 069	11h43m25.8s	+56d02m22s	25	ABELL 1377:[D80] 005	11h45m43.3s	+55d16m54s
2	ABELL 1377:[FTC95] 080	11h43m26.3s	+55d48m39s	26	NPM1G +56.0124	11h45m45.2s	+55d48m00s
3	ABELL 1377:[FTC95] 056	11h43m28.0s	+55d49m50s	27	ABELL 1377:[FTC95] 085	11h45m46.9s	+55d28m27s
4	ABELL 1377:[FTC95] 083	11h43m29.1s	+56d07m44s	28	PGC 036680	11h45m51.4s	+56d05m16s
5	ABELL 1377:[FTC95] 010	11h43m31.4s	+55d28m43s	29	ABELL 1377:[FTC95] 065	11h45m53.0s	+55d17m44s
6	ABELL 1377:[FTC95] 057	11h43m32.2s	+55d56m28s	30	ABELL 1377:[FTC95] 035	11h45m55.9s	+55d27m20s
7	ABELL 1377:[FTC95] 024	11h43m46.2s	+55d12m49s	31	ABELL 1377:[D80] 037	11h46m01.4s	+55d47m49s
8	ABELL 1377:[FTC95] 058	11h44m16.3s	+55d06m07s	32	LEDA 083490	11h46m02.3s	+55d25m18s
9	LEDA 083478	11h44m26.7s	+55d37m58s	33	ABELL 1377:[FTC95] 090	11h46m24.0s	+55d45m42s
10	NGC 384611h44m29.1s +55d39m12s			34	ABELL 1377:[D80] 034	11h46m31.1s	+55d44m08s
				35	ABELL 1377:[D80] 030	11h46m31.3s	+55d46m50s
11	LEDA 083479	11h44m29.4s	+56d06m36s	36	ABELL 1377:[D80] 029	11h46m36.9s	+55d45m51s
12	LEDA 083480	11h44m29.8s	+55d34m43s	37	MCG +09-19-178	11h46m37.9s	+55d42m24s
13	ABELL 1377:[FTC95] 072	11h44m41.7s	+56d01m20s	38	ABELL 1377:[D80] 033	11h46m38.8s	+55d43m45s
14	LEDA 083481	11h44m42.6s	+56d03m24s	39	ABELL 1377:[D80] 036	11h46m41.8s	+55d41m57s
15	LEDA 083482	11h44m55.8s	+56d02m27s	40	ABELL 1377:[D80] 028	11h46m42.2s	+55d45m45s
16	LEDA 083483	11h45m01.9s	+56d12m06s	41	ABELL 1377:[D80] 032	11h46m44.2s	+55d43m03s
17	IRAS F11423+5627	11h45m03.3s	+56d10m35s	42	ABELL 1377:[D80] 031	11h46m50.0s	+55d42m24s
18	ABELL 1377:[FTC95] 045	11h45m21.3s	+55d26m07s	43	ABELL 1377:[FTC95] 086	11h46m51.6s	+55d45m42s
19	ABELL 1377:[FTC95] 068	11h45m21.8s	+55d46m25s	44	LEDA 083499	11h46m53.4s	+55d23m20s
20	MRK 1455	11h45m25.6s	+55d31m37s	45	ABELL 1377:[D80] 027	11h46m55.1s	+55d46m34s
21	ABELL 1377:[FTC95] 030	11h45m32.7s	+56d03m53s	46	ABELL 1377:[D80] 011	11h46m55.9s	+55d32m38s
22	ABELL 1377:[D80] 006	11h45m33.3s	+55d24m03s	47	ABELL 1377:[FTC95] 082	11h46m57.8s	+56d05m37s
23	NGC 3850	11h45m35.6s	+55d53m10s	48	ABELL 1377 (Cluster)	11h46m57.9s	+55d44m20s
		G		49	ABELL 1377:[D80] 012	11h47m05.7s	+55d37m00s
24	ABELL 1377:[FTC95] 088	11h45m36.8s	+56d11m15s	50	ABELL 1377:[D80] 026	11h47m07.0s	+55d44m23s

Abell = Abell Catalogue of Galaxies (by George O. Abell), **CGCG** = Catalogue of Galaxies and Clusters of Galaxies (by Fritz Zwicky), **MCG** = Morphological Catalog of Galaxies, **UGC** = Uppsala General Catalog (of Galaxies)

In the picture that accompanies the article, there are two bright 10th or 11th magnitude galaxies (which I have seen in a 4-inch BAUSCH & LOMB 4000 telescope, to be exact, which are not likely part of the galaxy cluster, at least not to my knowledge). After checking out the two brighter galaxies, you will see the fainter galaxies that form the cluster scattered around them . There are straight lines and circles of galaxies. (In the picture can you see a *woman laying on here side* made out of galaxies! Or is it just me seeing things in this picture)? This cluster is a very interesting challenge with edge-on spirals, to face-on spirals. This cluster has almost all of the types that you could want to see in a cluster.

So go give this one a try! See you next month, and clear skies!

Easy and Effective Polar Alignment

from the Fr. Lucian Kemble archives

- This method is designed for clock-driven fork or German mounts and might not be of much use for Poncet or so-called barn-door types.
- This method is designed for telescopes fitted with fairly large and *accurate* setting circles [useless on small, badly-functional types, and I have no experience with automated or electronic circles]
- **VERY IMPORTANT:** the telescope tube must be aligned with the mount's polar axis, so that the SCOPE and AXIS point in such a way that when the scope is pointed at the North Celestial Pole or [NCP] then the Dec. circle itself will read +90. I will not go into details of adjusting the Dec. Circle - user's manuals usually explain the procedure. Off-alignment in this feature can lead to some strange field-rotation streaks, etc., on photographs. It can also lead to sometimes fairly large misreadings when it comes to searching for faint objects by coordinates alone. But the use of setting circles is another issue I won't go into here except for use in polar alignment.
- The method by no means minimizes the use of other methods, e.g. the drift method, which is used successfully by top-notch photographers such as John Mirtle of Calgary. I have just found it quicker, very accurate and, for my particular interests, applicable even in the daytime. It was worked out in 1975 by me and Dr. Peter Bergbusch of the University of Regina. Its success was tested during the eclipse of 1979 at Estevan, and successful, steady photography and movie of the event were achieved with several scopes. Dennis di Cicco gave an abbreviated description of a similar method in S&T, Dec/86, p.570, using different reference stars. I will append the reference stars' coordinates at the end of this explanation.
- All coordinates used are those for 2000.0, since we are close enough to that standard epoch [originally I had to work out the coordinates, local sidereal time, etc. by hand, later *from The Astronomical Almanac* and now from a computer programs such as ECU. Invaluable experience].

Principle Behind the Method

The principle involved relies on the positions of four fairly bright stars, one or two of which is always in one's observable sky near the Celestial Equator: two of them along or very near the hour-line joining Polaris and the true NCP; the other two on the hour-lines at right angles to this line. Since Polaris is at RA 02 31 50 the reference stars I use are then roughly on the Equator at the ~2.5, 8.5, 14.5 and 20.5 hour lines.

Keep in mind that the mount moves in Azimuth and Altitude; the scope in Right Ascension and Declination.

1. Scope on mount and leveled tripod or pier, positioned in Azimuth and Altitude such that the RA axis is roughly pointing towards Polaris.

2. Scope, with medium power eyepiece [preferable without diagonal] pointed visually to one of the four reference stars closest to meridian; locked in RA and Dec.
3. RA setting circle adjusted to correct RA of the reference star [ignore Dec for the moment].
4. Using ONLY RA and Dec circle readings, the scope is set to correct RA and Dec of Polaris. Locked on.
5. Mount or wedge only is now moved in Azimuth and Altitude until Polaris is found and centered in finder. IMPORTANT: do NOT use RA and Dec slow motion controls for this part of procedure; just move the whole assembly of wedge and tripod.
6. Scope returned freely to center the reference star again; locked on; RA setting circle again re-adjusted to correct RA of this star, again ignoring Dec reading.
7. Steps 4 and 5 repeated and, if further minor adjustments are necessary, step 6 is repeated, using a higher power eyepiece.
8. Check accuracy. By now Polaris should easily be found in the eyepiece, using RA and Dec settings alone. For greater refinement, using ONLY RA and Dec coordinates , not using slow motion controls nor finder, seek out several other bright stars, preferably to the East or West of the meridian and equator.

With practice, the whole procedure can be done in about 5 to 10 minutes. When looking for an elusive deep-sky object, use a low power eyepiece first. If the polar alignment has been properly done, the object should be in the field of the eyepiece. I have most often achieved a 15' accuracy or better anywhere in the visible sky. [By the way, fortunate in having a solid pier, Byers mount with its huge, accurate circles [with a hand-made Vernier; my Dec circle is accurate to within 15"], and a very accurate alignment, I seldom use my 12x80 finder, as I've often mentioned. Great, great fun!

With this method I have had great success with piggy-back shots, using anything from a 50mm to a 210mm lens, for as much as 10 minutes exposure. I have even had some good 5-minute, unguided shots through prime focus or with a focal reducer. There are, of course, limitations, e.g. longer exposure on very high power, where some kind of guiding is necessary.

Since, in step #1, Polaris cannot be seen [yet] just aim the mount and scope as best you can, from known daytime true North in Azimuth and Altitude. Use the CURRENT sun's accurate position in RA and Dec, [and then Venus, if visible] for steps #2, 3, 4, & 5. With care and luck you should even see Polaris and several other bright stars, refining the setting of RA each time. With daytime set-up, I have seen so many wonderful things; e.g. Venus near superior conjunction only 2.5 degrees from the Sun; Mercury and all the other bright planets; Saturn only 12 degrees away at the time Voyage II was passing by; all the bright stars of the Pleiades; all four components of the 'Double-Double', Epsilon Lyrae, faintest at 6 mag, etc.; Hyakutake and Hale-Bopp within minutes of sunrise or sunset. Great, great fun.

On a final note. I have used Vega as a test star so many times as a check after a good polar alignment in the daytime that I know its coordinates by heart. So that when, in the movie "*Contact*", I heard the heroine read off the coordinates of her target star on the radio, I knew exactly what that star was! Great, great fun...

In the 20+ years that I have used the method described above, celestial coordinates have changed considerably, especially Polaris. When I began I used the then-common 1950 coordinates and some

calculation to find current coordinates. This even involved determining the exact sidereal time, using data from the annual *Astronomical Almanac*. Great, great fun. I have a list of a number of good reference stars for the current epoch stuck to my observatory wall, from either the RASC Handbook list of bright stars, or the current Astronomical Almanac, or MegaStar, or ECU.

Here, then, are the reference stars I use - all for 2000.0

alpha UMi [Polaris]	02 31 50.5	+89 15 51	alpha Boo [Arcturus]	14 15 39.6	+19 10 57
xi 1[65] Cet	02 12 59.9	+08 50 48	theta Aql	20 11 18.2	- 00 49 17
beta Cnc	08 16 30.9	+09 11 08	delta Ori	05 32 00.3	- 00 17 57

For me this is just a tool to enable better observing and photography. I do hope some of you may find it useful and it is with that expectation and the joy of sharing the wonderful night and daytime skies with you that I present it.

You are Invited to *Supper With Murray Paulson*

an invitation from Les Dickson, President

We are looking forward to Murray Paulson's visit to the Saskatoon Centre. In celebration, we will hold a Centre supper at *The Great Buffet of China* at 6:00 p.m. on March 20th, just preceding the General meeting. (22nd St. and Ave. C) Please attend if you can (and let Les know if you can so he can make a reservation).

(Note – there will be NO Executive meeting on the 20th)

Membership Updates

by Bob Christie <christie@sk.sympatico.ca>

Welcome New and Renewed Members:

Name	Status	Address	Telephone
Ken Staranchuk	R	231 Willoughby Cres., Saskatoon, SK, S7H 4W6	(306) 249-0336

Corrections and added information:

Name	Reason	Correction or addition
Chris Martin	incorrect address	1014 Dufferin Ave.

Remember **-** let Bob Christie or Jim Young know if there are changes to your address or status!

The Messier, FNGC & H-400 Club

MESSIER CLUB

Certified at 110 Objects: Rick Huziak, Gord Sarty, Scott Alexander, Sandy Ferguson, Dale Jeffrey, Darrell Chatfield, Bob Christie.

Ken Noesgaard	**109**
Wade Selvig	**64**
Erich Keser	**51**
Stan Noble	**28**
Brent Gratias	**26**
Ellen Kaye-Cheveldayoff	**23**
Les & Ellen Dickson	**20**
Brian Friesen	**15**
Andrew Krochko	**12**
Debbie Anderson	**8**

FINEST NGC CLUB

Certified at 110 Objects: Rick Huziak

Dale Jeffrey -(*applied*)	**110**
Gordon Sarty (*applied*)	**110**
Darrell Chatfield	**106**
Scott Alexander	**89**
Sandy Ferguson	**23**
Ken Noesgaard	**8**
Ellen Kaye-Cheveldayoff	**4**

HERSCHEL 400 CLUB

Certified at 400 Objects: not yet!

Jeffrey, Dale	**386**
Rick Huziak	**347**
Darrell Chatfield	**228**
Gord Sarty	**147**
Scott Alexander	**98**
Sandy Ferguson	**18**
Ken Noesgaard	**4**

Join the Messier, Finest NGC and H-400 Club!

Observe all 110 Messier, 100 FNGC or 400 H-400 objects and earn your

CERTIFICATES!

The first 2 lists can be found in ***the Observer's Handbook***. The Herschel 400 list will be available at each general meeting for 50 cents (covers photocopying) or **can be mailed out on request to distant members.** Each month I'll be posting updates.

Get onto this List at the

Messier Marathon!

If you haven't observed much before, here's the chance to get almost everyone in the Centre onto this list! Come to the Messier Marathon and get started in your life-long career of observing faint fuzzies! Even if you can't come to the Marathon, pull out those dusty binoculars and find a few things! By God – even if you can identify the M45, the Pleiades, I'll add you to the list and credit you with one object! (Other naked eye Messiers include M42, M31, M33, M6, M7, M8, M13, M44 and probably M34, M35, M36, M37, M38 under good conditions.

Send observing numbers to
<huziak@SEDSystems.ca>

Νοτιχε οφ τηε Γενεραλ Μεετινγ οφ τηε Σασκατοο ν Χεντρε

Monday, March 20th, 2000 at 7:30 p.m.
Room 8313, New City Hospital, Queen Street

Presenting:

Murray Paulson, Edmonton Centre - "Strolling Through Arizona Skies"

and

Darrell Chatfield - "The New Binocular Observing Award"

This meeting is open to everyone - members and non-members. There is no admission charge.

The Sleaford Observatory Spring Open House and Star Night

April 8th, 2000 – One Night Only
8:00 p.m. to 11:00 p.m.

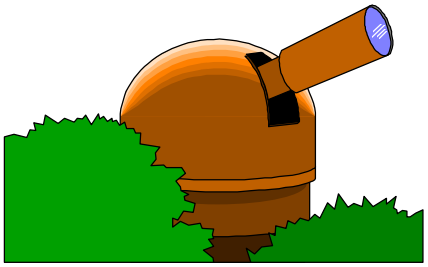
Come and help out! We'll need at least 5 scopes to handle the crowd (along with the U of S telescopes)

Please let Andrew Krochko (955-1543) know if you will be attending and can help out!

Coffee and Munchies will be available.

The Sleaford Observatory

Longitude: **105° 55' 13" +/- 13" W**
Latitude: **52° 05' 04" +/- 08" N**
by Rick Huziak



Construction - Construction continued at the Observatory on February 13th and 20th. Things may appear to going slowly, but we are at a stage where we have been removing some older wiring and are now rewiring the entire building to add in additional plugs and lights for the extension and the lights, plugs and heaters for the toilet facility. With this piddly and cumbersome stuff out of the way, we are now ready for....

A Scheduled Work Day at the Sleaford Observatory on March 25th - With the basics out of the way, we can now get a larger crew out and begin all of the small jobs that will take small crews of one or two people each a half day or day to complete. We therefore need a large group of **about 12 people out** to finish this list of jobs. ***Call Bill Hydomako at 384-4781 or Darrell Chatfield at 374-9278*** if you can help out! If weather is terrible, we will have an alternate rain date of April 15th.

- fill and sand the toilet floor
- glue lino on the toilet floor
- cut wall panels for the expansion
- cut wall panels for the toilet
- attach hardboard to toilet panels
- attach toilet heaters
- carpet & edge expansion panels
- place a sill plate on the toilet door
- aluminum side the observatory
- build a new frame and door for obs.
- pull power wires to the observatory
- sort out junk and discard from obs.
- cut observatory floor boards to fit
- move excess materials to school basement

Key Holders **- Note the New Power Panel Procedure -** Since we have added a *third* power panel and have rewired the first two power panels to handle the additional power requirements of the toilet expansion, **you now have to turn off *only* the main breaker in the *center panel* to turn all site power on or off when you come or go.** Heaters are now tied to the main breaker. If you want any heater disabled (i.e. for summer) then turn it's own breaker off.

Supplies Required at the Site - Remember when going out to Sleaford that contributing a few simple supplies to the site is beneficial to all! **Bring you own water**. Bring & leave a roll of paper towels, toilet tissue, Kleenex, garbage bags, etc. And please remember to take any garbage that may have accumulated there home with you when you leave (even if you didn't produce it). We'll do the same for you one day!

Oops - Erratum - Last month's opening sentence in this column had the incorrect site work days listed, which should have been: Jan. 22, Jan. 23, Jan. 30, Feb. 6

Minutes of the General Meeting

Monday, February 21, 1999
held in Room 8313, City Hospital, Saskatoon, 7:30 p.m.
recorded by Al Hartridge, Secretary

1. Presentation: Dr. Peter Bergbusch (University of Regina) "*A Rambling Walk Through Astronomy*" accompanied with a number of excellent slides taken by Dr. Bergbusch.
2. Minutes of the previous meeting were approved.
3. SSSP2000: The organization of this year's star party in Cypress Hills will be co-chaired by Dale Jeffrey and Les Dickson.
4. Lunar Eclipse: Andrew Krochko mentioned that there was a good turn out of RASC members at the U of S Observatory with equipment and about 500 people turned up to look at the eclipse.
5. Financial Report: Barb Young mentioned that the present balance is about $9000.00 to date.
6. Sleaford Report: Bill Hydomako mentioned that work is still going on at the new site and at present is to the point that only a few people at a time are required to help.
7. Membership Report: Bob Christie reported that at present there are 78 members and 6 temporary members.
8. Library Report: Nothing new has happened since the last meeting.
9. Observers Group: will meet on Feb 26 and March 4.
10. Next Executive Meeting : will be on March 20 at 6:30 p.m., before the General Meeting.
11. Next General Meeting: will feature Murray Paulson and Darrell Chatfield.
12. Travel Assistance Program: Rick Huziak will propose changes to National, Rick will also make a proposal for a National Herschel Certificate.
13. Astronomy Day 2000: will take place at the Circle Park Mall this year .
14. Open House at Sleaford: Stan Shadick suggests this take on April 8th. The schools at Colonsay and Allen will be contacted. Stan will meet with people from the city who wish to come and form a convoy to Sleaford. 8:00 p.m. will be the starting time.
15. April presentation: will be by Dale Jeffrey regarding his "*Living Skies Observatory*".
16. Meeting adjourned at 10:00 p.m.

U of S Observatory Hours

The U of S Observatory is open to the general public **every Saturday evening**. Admission if free. The observatory is located on campus, one block north of the Wiggins Avenue and College Drive entrance. On clear evenings visitors may look through the 6-inch refractor to view Jupiter, Saturn, the moon, star clusters and other exciting astronomical objects. For further information, phone the recorded Astronomy Information Line at 966-6429.

Hours for March 8:30 p.m. - 10:30 p.m., April 9:30 p.m. – 11:30 p.m.

Saskatoon RASC Membership?

Regular - $40.00 per year
Youth - $22.50 per year

It's not too late to join!