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The official publication
January 2003 Hamilton Centre of the Royal Astronomical Society of Canada Volume 36 Issue 1

From the Eyepiece
By: Mark Kaye

I had really, really hoped to report about all sorts of observations in this article. It is not going to be, I am afraid. Rain figures heavily in my observing logs and when it was not rain, it was snow. I came down for the Leonids and watched all night through thick haze. While I saw a few bright meteors, it was far from a visual storm. Of course never being able to see stars fainter than second magnitude might have had something to do with that. I sit at The Observatory computer right now, typing away under darkening gray skies. I actually saw stars this morning, but again, nothing fainter than second magnitude. The ISS floated over head towards the east and then the cloud and fog settled back in again. A new eyepiece sits unused in the equipment bag. Will I ever get to test it? I thought the cloud debt on a new eyepiece was only one observing session, not a whole season and a half.

The one good thing about clouds is that I get caught up on my reading and I get to work on little service details in The Observatory. I have installed a Direct Current distribution system to provide power to numerous points in the room. Drop out points have the full unregulated supply, strict 12 volts and an individually regulated variable supply. This means I can run anything DC from 1.2 to 18 volts DC at up to six amps. Great for a camera heater that just needs a tweak of heat to keep from frosting to a full blown case of Lake Ontario dew. It sure would be nice if I could get a chance to see if this stuff all works.

What does 2003 hold? We are going to start the year out well with Steve Barnes speaking and then in February, a special meeting for our National President on the 27th. Soon it will be spring, what then? If there is a project that you would like to see done this year, get out to a board meeting and suggest how it can be finished. I would like to see the Ford scope in better working order and I would like to see the Celestron on a better pedestal. What projects can you take on and finish?

On a personal observing level, I would like to complete my formal Messier certificate. I have a few objects in the spring sky that I need to wrap it up, but I never get clear skies. They were up this morning behind those 2 magnitude clouds. Maybe next time we are back for March break...

Clear skies!

Photography Using the Marsh 5" Refractor
By: Gary Colwell – Observing Director

Temperatures this December have been less than kind to all of us astronomers. After many frustrating nights of cloudy, rainy, snowy BLAH nights, a few really nice clear but cold ones arose. That is when the true, if not somewhat frostbite-willing astronomers like myself venture out into the frigid temps, metal telescopes at the ready, coffee, soup or any other warming liquid by our sides, and try to get a glimpse of the heavens in temperatures that closely rival deep space itself!

Now for those of us who have telescopes that harbour the latest in electronic wizardry, we know that temperatures like these can wreak havoc with all those microcircuits and processors and leave you frustrated wondering why you spent thousands of dollars on equipment that is afraid of the cold. That is when plan "B" kicks into action!! Why not use a telescope that has been around for over a Century…and is still "ticking?" That is where the Marsh Refractor kicks in. I have heard many people say that this telescope is old and antiquated, but being the eternal optimist that I am I had to check it out for myself.

Being a relatively new member to the club, I haven't had time to formulate any opinions about the telescope… so why not get started! Quite frankly this instrument AMAZED me! Not

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only is it a beautiful telescope to look at (haven't seen that much brass on a telescope ever!), but the optics yield a very crisp and clear image to boot!

Another thing about myself is that, although I have been actively interested and involved in Astronomy for over 35 years, this year is the first that I have begun to take astrophotography seriously. (Also helps to have a job where some extra cash is now available for equipment!!!!) Recently I purchased two pieces of equipment for photography… a Nikon Coolpix 995 digital camera and a Toucam Pro Webcam for video astronomy.

Despite the cold, I wanted to see what kind of images I could get with the Marsh refractor…. and here are two results…

The first picture (previous page) was taken of Saturn with the Coolpix 995 and is 10 pictures stacked using Registax Software…(Thanks to Bob Botts for letting me know that this Freeware exists!) I used a 26mm Meade 4000 plossl eyepiece for magnification. Subtle details on the planet and in the ring structure can be seen. Also interesting to note is the fact that it was quite windy this night, so seeing was relatively poor. A very impressive image from this old telescope!!

This picture was taken with the Toucam Pro webcam. It was taken using prime focus and is comprised of 149 video frames stacked and processed in Registax and enhanced in Photoshop. Almost feels like you are in a spacecraft on final approach to the planet. The Jovian moons are, from left to right, Ganymede, Io and Europa.

Just as a word of encouragement to newcomers to astrophotography… this is my FIRST attempt to photograph this planet!!!

To say the least, the Marsh Refractor yielded stunning images, and great photographs. If you have never used the marsh Refractor, you will be pleasantly surprised at what you see…and the best part is…. It is FREE to use for members of the Hamilton Centre! I can't think of a better deal on the PLANET!!

So on the next cold clear night, you might want to think about leaving your own telescope at home, venture down to the Observatory, and spend some time with the Marsh Refractor! You will be glad you did!!

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They Say Great Things Come in Threes
By: Mike Spicer

Great events seem to come in threes, be they disastrous or welcome. The observing on 10 December was the third and best of three days of clear skies over Hamilton. Let me tell you a little about that night.

There was a very slight breeze in the clear sky of 10 December. In the evening a slight haze made the beautiful crescent moon glow like a pearl of great price. I might have set up early enough to inspect the moon in detail, but I am not a lunar observer. No doubt Bob Botts and Gary Colwell will have taken a lot of beautiful shots of that crescent moon using their Nikon Coolpix cameras.

I set up the Celestron 11" GPS in alt-az mode on the back patio and let it cool down while I got some early evening shut-eye. There is no better way to get dark-adapted than to sleep in a dark room for a few hours before observing. Besides, I had eaten a great dinner.

It's best to observe in a group, or at least with someone else. I phoned around, but during the week it's hard to coax members out to observe on cold December nights. They want to finish their Christmas shopping. I was able to talk the Observatory's curator to observe with me, and by 11 p.m. Heather Neproszel had arrived. We collected the bino-viewer, eyepieces and filters we would use for the night's sky tour with the 11"scope.

SATURN was first and loveliest on the list of things to see. We spent almost 90 minutes and found: Titan, Dione, Rhea, Tethys and IAPETUS (off to the East and making a splendid asterism in the midst of some 10th and 11th magnitude stars. Even under the Hamilton sky, it was easy to see 13th magnitude stars. Heather searched for Enceladus and Mimas but did not see them in the glare of Saturn. I could see them with averted vision like tiny diamonds of light, shimmering to the S of the planet's disk.

Tethys, Enceladus and Mimas were all in a line; equidistant S of Saturn. They stayed that way throughout the night, racing from West to East.

The transparency was excellent, though the seeing was rather poor during the night. I was glad to have recently collimated the telescope. Planet Saturn gave me the opportunity to take Heather through the Saturn Study sites. She saw the Shadow of the Planet on the Rings to the S and observed that Starry Night Pro was in error! It shows the shadow across the entire ring system when in fact, the shadow extended across the A ring but stopped at the Cassini Division. Heather was certain that the B ring was visible around the entire planet.

The Southern third of the planet's disk was darkened compared to the equatorial third of the disk. The S Polar Cap was quite dark, though not black like the shadow above it to the N on Ring A. The S Eq Belt was also dark, distinct from the Polar region although the space between them was not really bright. The Eq Zone was extremely bright, though not as bright as the B ring. There was a shadowy N Eq Belt, not as wide or as dark as the SEqB but seen clearly for the first time in this scope. The Shadow of the Rings on the planet's disk was quite dark, and Heather was able to distinguish that from the Crepe Ring. Rings C, B and A were clearly visible with the B ring much brighter and wider than A; the Cassini division looked as black as space. I told Heather that the next step in her observing Saturn was to give the relative brightness numbers and complete a Saturn Study Report sheet for me! We rested our eyes and made notes of our observations while we warmed up with hot apple cider inside.

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JUPITER was stunning, but the big excitement was the occultation of moon Io by moon Ganymede at 1:30 am 11 December. Heather was amazed at the blazing speed of satellite Io as it streaked behind Ganymede. The 11" scope showed the disks of each satellite, of course. G was obviously larger than Io and its orange colour was noticeable against Io's whiteness. In five minutes the scene went from "close separation" to "overlap" with just 10% of Io still showing, like a white hump on the disk of orange Ganymede, to "separation" once again. There will be many such occultations of moons by moons during the next 2 months while Earth passes through the plane of the orbits of Jupiter's moons - well worth watching!

The surface of the planet Jupiter was something to behold! Every few seconds the air would steady and swirling detail was manifest in the belts of Jupiter in stunning degrees of cream, brown, purple and red. The Great Pale Spot has darkened a bit since last spring, but is still only a pink-salmon colour pressed against the SEqB. We watched the planet spin that Spot from transit to edge during the night. Heather remarked how the Spot moved in the time it took to have a drink of hot cider! She also noted that the SEqB did not appear to be 2 parallel belts, as it often had in the past, but rather a series of pale brown knots, filaments and swirls much wider than the dark brown NEqB. She also noted that the Equatorial Zone between the belts was not a plain cream, but was made up of a number of swirls and filaments that extended from one Eq Belt to the other. The 11" shows a lot more detail than her 3" and 6"scopes.

DOUBLE STARS were also observed, since the seeing made stars into scintillating starbursts that emphasized their colours. I had seen Castor last night (mag 1.9 and 2.9 at a separation of 3.9") and decided to show Heather Gamma Leonis (mag 2.3 and 3.5, separation 4.7") just below Jupiter. Then as the Big Dipper was standing on its handle to the NE, she asked to see Mizar in the telescope. The Mizar-Alcor system is a naked eye visual pair but not a double star. In the telescope the two are widely separated and fainter stars appear between them. But Mizar itself is a binary star separated in the telescope (mag 2.3 and 3.9, separation 14.4").

DEEP SKY OBJECTS like NGC2237 in Monceros - the Rosette Nebula -were not readily visible in the light polluted sky of Hamilton. The grey sky enabled us to see to mag 4 with the naked eye - not very good for nebulae! Heather had been out observing M42 on 9 December, remarking that from her house in Burlington the nebula looks good but not nearly as extensive as when she had seen it in the same 3" scope from the dark skies of the Mid-Atlantic Star Party last month. Orion had passed into the trees, so I did not ask Heather to play the trapezium game with me this night. In the centre of M42 is a system of stars that any small scope shows as a quadruple star (Theta Orionis) but in larger scopes one can glimpse as many as 8 stars in the Trapezium. The system is mapped in the Hamilton Centre's Double Star Project handbook and Heather has seen star E on other nights with the 11".

Given the limitations of the sky, Heather took time to look at open clusters such as NGC 2632 in Cancer (M44 the Beehive) and NGC 2392 in Gemini (the Christmas Tree, which was upside-down). In the limited field of view of the 1.25" eyepieces in the bino-viewer these objects could not be seen in all their wide beauty, so I switched to a wide field 2" eyepiece to give Heather the best possible view. After all, December is the proper time to see al the little lights on the Christmas tree open cluster, eh? I like PLANETARY NEBULAE. All spring and summer I showed M57 (the Ring Nebula in Lyra) to anyone who approached my telescope. M57was gone but Heather enjoyed looking at NGC 2392, the Eskimo Nebula in Gemini, with its bright 10th magnitude central star and the eerie greenish-blue nebula surrounding it against the point-like background stars. Perhaps one night I will set up the CCD camera to take a photo of 2392, to

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see if any of the Eskimo's face can be captured!

At 2:30 we packed it in. Heather thanks for coming over and I hope you made it home to Burlington ok!

R.A.S.C. Hamilton Centre Calendar Of Events

January 2003

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2 Double Shadow Transit - Jupiter 00:16 U.T.	3 Double Shadow transit - Jupiter 18:44 U.T.	4
5	6	7 Double Shadow Transit - Jupiter	8	9 General Meeting Steam Museum 8:00 P.M.	10 Double Shadow Transit - Jupiter Public Observing Night - Leslie Powis Observatory 7:30 P.M First Quarter Moon	11
12	13	14 Double Shadow Transit - Jupiter 09:48 U.T.	15	16 Directors Meeting Observatory 8:00 P.M.	17 Double Shadow Transit - Jupiter 23:05 U.T. Triple Shadow - Jupiter 23:52 U.T.	18 Full Moon
19	20	21 Double Shadow Transit - Jupiter 12:24 U.T.	22	23	24 Public Observing Night - Leslie Powis Observatory 7:30 P.M	25 Last Quarter Double Shadow Transit - Jupiter 1:42 U.T.
26	27	28 Double Shadow Transit - Jupiter 15:01 U.T.	29	30	31	

March General Meeting has been changed
By Mark Kaye

Our regularly scheduled general meeting for Thursday March 7 2003 has been changed to Thursday February 27 2003. This change has been made to accommodate guest speaker, Mr. Rajiv Gupta.

Rajiv's topic is "Composite Digital Techniques for High-Resolution Astrophotography with Film".
The best deep-sky images now being produced are composites, formed by combining two or more individual exposures into a single image. Thanks to various powerful computer programs on the market, composite imaging is now easy. This talk will demonstrate some of these exciting techniques as applied to film, with several examples.

Over the past 8 years, Rajiv Gupta has been developing methods to produce finely detailed colour images using the black-and-white wonder film of astrophotography, Kodak's black-and-white Technical Pan. Rajiv is co-developer of RegiStar software, which automates the alignment of digital images, and is also editor of the Royal Astronomical Society of Canada's Observer's Calendar, in which

many composite images have appeared, editor of the RASC Observer's Handbook, and President of the RASC. By profession, Rajiv is a mathematics professor at the University of British Columbia.

Web Camera Workshop
By: Grant Maguire

On January 2, 2003 Roger Hill conducted a Web Cam workshop at the Observatory. The workshop was very well attended and received.

Roger did an excellent job of presenting the history of the web camera. He also discussed how we can build our own web cams, the limitations of the cameras, and gave us resources for the various freeware software programs that we will require to process our web cam images.

Due the positive feedback that Roger received I am sure he will be planning another workshop for the spring.

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