Royal Astronomical Society of Canada
BULLETIN
La Société Royale d'Astronomie du Canada

Supplement to the Journal / Supplément au Journal

June
juin
1991

Volume 1
Number 3

Reflections

Seeing The Light
by Clive Gibbons
Hamilton Centre

"*What does the Orion Nebula look like*?' That is a question I heard countless times while serving customers at my telescope shop. The easy answer might involve showing a long-exposure astrophoto of M42 and saying: "Something like that." It is tempting to resort to such a flippant reply, but unfortunately the "simple" answer is down-right misleading.

A significant number of newcomers to amateur astronomy, especially those who have never looked through a telescope before, have optimistic preconceptions of what they will see in the sky. Such fanciful notions may help to fire a beginner's interest in stargazing, but they should not be fostered to overexcite the imagination and "sell the sizzle" of astronomy.

Coming to grips with the realities of telescopic observation can be a terrific hurdle for some novices to jump over. It is not hard to understand why this is so. There is certainly no shortage of astronomy books written on a popular level which are chock full of colourful deep-sky astrophotos. Such books and photographs certainly are not published to deceive people or misrepresent the beauty of the heavens. It is just that most folks, when first exposed to astronomy do not know any better!

When informed that the objects in the sky seldom appear as spectacular as those shown in pictures, the novice often asks, 'How big a telescope would I need to see it like it is in the photographs?". My response to that sort of question usually convinced people that I was either morbidly cynical or trying NOT to sell them a telescope!

Candidly speaking, the great majority of deep-sky objects within the reach of amateurs are "faint fuzzies". This is especially true of galaxies, which unfortunately, are the glamour objects that beginners want to see. While there are some dazzling deep-space objects, observing the rest can best be described as "an acquired taste". While veteran observers can appreciate the intangible pleasures of seeing a thirteenth magnitude nebula that has taken an hour to find, trying to explain this type of enjoyment to a lay person can sound as logical as saying that you listen to music cassettes to hear the tape hiss. Please understand that I am not ridiculing the sensibilities of deep-sky observers! It is just that they are easily misunderstood by the general public.

Once a person's expectations have been re-tuned and, assuming they are still interested in astronomy, the question of "What can I see?" can be more objectively addressed. The best way to demonstrate the answer is during an observing session, under dark skies, with a lo tof different telescopes. If this is not possible (which is the usual case) the next best method involves a discussion of basic principles. However, few observers, let alone beginners, actually comprehend why bigger telescopes show what they do. Understanding why larger telescopes show fainter stars is fairly obvious. However, it is another story when one considers galaxies, nebulæ and other extended objects.

Let us assume that we are looking at M51 ,the Whirlpool Galaxy. with an 8" telescope. To make the galaxy appear as bright as possible, we should choose a magnification which produces a telescope exit pupil that matches the diameter of the eye's dilated pupil. For most people, this value is 7 mm and a magnification of 29x with an 8" telescope will result in an exit pupil of the correct size. If we next observer M51 with a 16" telescope, a correct match requires a power of 58x. There is no doubt that M51 would look better through a 16" scope compared to an 8" scope, but why? Surprisingly, M51 does not look "brighter" through the larger instrument! This is because an extended object, like a galaxy. has a specific surface brightness which **does not change**. The real reason M51 looks better in a bigger telescope (assuming an equivalent exit pupil) is because it appears larger.

Galaxies and nebula are low contrast, faint objects. The human eye has great difficulty perceiving such faint, low contrast objects if they are below a certain apparent angular size. In a 6" telescope, M51 's spiral arms are impossible to delineate, but in a 16" the galaxy will appear 2.7 times bigger, yet retain the same surface brightness. By enlarging the galaxy the spiral arms become visible because they are now larger than the limit that the human eye applies to low contrast, low surface brightness detail. Thus, larger instruments, with their higher "normal" magnifications, will give more satisfying views.

It is also interesting to consider the changes globular clusters can go through with different telescope apertures. Look at M13 with a 60 mm refractor and it appears nebulous no matter what power is used. That's because the brightest stars in the cluster are too faint to be seen individually with such a small aperture. As we increase the aperture, more and more discrete stars come into view until, with a very large instrument, it would be resolved to the core. There would, however, continue to be a faint haze of stars to dim to be resolved. Thus, larger aperture improves the view in two ways: it reveals more stars and also enlarges the nebulous haze of unresolved stars in the cluster.

Another common misconception that is held by many observers and propagated in space art and science fiction literature is that galaxies and nebula would appear brighter if we were closer to them. I am sure we have all imagined how spectacular M42 would look from 100 light-years instead of its actual 1,600 light-year distance. Actually, it is not very hard to move the Earth in a figurative sense. To approximate the naked-eye view of the Orion Nebula from 100 light-years, just look through a 4" scope at 16x! It is just another example of constant surface brightness but larger image size.

No, the universe is not always the dazzling technicolour canvas that the imagination conjures, but its subtle beauty is no less pleasing to the soul. You can prove it to yourself under a star spangles country sky and you will not even need a telescope! ✪

BULLETIN

is a publication of the Royal Astronomical Society of Canada and is distributed together with the Society's Journal. It contains articles on curreni activities of the Royal Astronomical Society of Canada and its Centres across Canada, as well as articles from members and non-members which are of general interest to members of the Society. Manuscripts (in English or French) should be submitted to the Editor at the address below. Inquiries about the Society should be directed to its National Office at 136 Dupont Street, Toronto, Ontario, Canada M5R 1V2.

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Printing: University of Toronto Press

This publication is printed on recycled paper conhtaining 50% pre-consumer recycled paper and at least 5% post-consumer de-inked fiber.

Deadline for the Ausust issue is June 30th.

Event Horizon

July 19-20
Gateway to the Universe '91
Munro Park, near North Bay, Ontario
Contact: Merlin Clayton, 50 Van Home Crescent, North Bay, Ontario P1A 3L3

August 7 - August 9
45th Astronomical League Convention
University of Massachusetts at Amherst
Amherst, Massachusetts
Contact: Bernie Volz, P.O. Box 1164, Framingham, Massachusetts 01701

August16- 18
5th Annual Alberta Star Party
Waterton Homestead Campground
near Waterton Lakes International Peace Park
Contact: R.A.S.C. Calgary Centre,
P.O. Box 2100, Station "M", Calgary, Alberta, Canada T2P 2M5

August 30 - September 2
NOVA EAST '91
Fundy National Park, New Brunswick
Contact: Doug Pitcairn, 13 Ferguson Road, Dartmouth, Nova Scotia B3A 4J8

Letters to the Editor

A Cure for Some Headlights

The mention of new cars whose headlights can't be turned off (in the March *Stardust*) promped me to write in two working solutions. My observing buddy, Jerry Spevak, came face to face with this problem with his family's new car. He is not the only one to experiment with this star party irritant, but we've found an answer.

Start the car with the hand brake on only one notch. Amazingly enough, the headlights refuse to turn on as the car is put into drive and driven off. Fortunately, driving with one notch of brake in place is not a safety issue, since many of us have done worse inadvertently. Just remember to let the brake go free when you are out of the observing area! So far, the hand brake solution has worked on a Toyota Tercel and a Pontiac Sunbird. We have also found that both a North American van and 4x4 will not automatically turn on their running lights if a light pressure is applied to the **foot** activated parking brake. It is possible that one of these solutions will work with all new vehicles. Good luck with your car!

Alister Ling
1017 Seneca Avenue, Apt. 310, Mississauga, Ontario L5G 3X4

Testing Jupiter's Disk

Roland Dechesne's article "*Can the Disk of Jupiter Be Glimpsed with the Naked Eye*" (**BULLETIN**, April 1991) prompted me to conduct some of my own tests. Under subdued lighting conditions, I had six subjects sit two metres away from a light source which had two 0.35 mm pinholes spaced 0.6 mm apart (center to center). I asked them to describe what they saw. Two of them saw just a tiny spot of light, while the other four noticed a slight elongation coincident with the orientation of the pinholes. No one was aware that there were two pinholes involved, let alone their orientation. The angular spacing of the pinholes was ≈60 arc-sec, but no-one could resolve them as such. In another test, however, it was possible for me to clearly see the millimetre gradations on a ruler at a two metre distance (≈100 arc-sec). This agrees with the author's conclusion that discerning dark lines or dots on a light background is easier than resolving bright point sources on a darker background.

Mr. Dechesne also refers to a 5 mm aperture having a theoretical resolving power of 24 arc-sec, but can this be practically applied to the human eye? I would be surprised if the eye's optical system could produce a recognizable Airy disk and even if it could, would only 1x magnification reveal itto the extent that Jupiter's disk could be differentiated from it? Such a feat would be akin to resolving the disk of Ganymede with an 8" telescope at only 40x.

Based on my own testing, I can conceive of someone looking at a thin crescent Venus and noticing an asymmetry in shape, but glimpsing the disk of Jupiter seems too optimistic. Since Mr. Dechesne was making his comparisons with Sirius and Mars, the disk-like nature of Jupiter might have been due to its unwavering brightness. Seeing conditions would certainly cause Sirius to twinkle and perhaps even Mars to a lesser extent, especially if viewed near the horizon or over a rooftop. Perhaps there is some psychological connection between brightness fluctuations (or lack thereof) and perception of a disk image.

Finally, Mr. Dechesne, being the obviously proud owner of a good set of peepers, may have innocently convinced himself of this remarkable visual feat. My suggestion would be to conduct further tests using a Jupiter-sized pinhole (0.35 mm ∅ at two metres) and a pinhole one half or one quarter that size. Tune the light sources so that both appear equally bright and have someone ask Mr. Dechesne which is which. By conducting this test, say ten times, and switching the pinholes at random, the author's claims could be more scientifically proven or discounted.

Clive Gibbons
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Astronomy Under Attack

Iraq's National Astronomical Observatory was one of many scientific institutions targeted by U.S. Air Force raids on Iraq. Such bombings had nothing to do with the liberation of Kuwait. There are signs of scientific awakening throughout the Islamic world, and such bombings of our scientific facilities will not stop our progress. No one on Earth could deny us our legitimate right to explore the universe.

When the late physicist Andrei Sakharov was prevented from leaving the Soviet Union, scientists worldwide stirred up a campaign for his cause and they were successful. Similar efforts were made for a Chinese astronomer, who was recently let out of China. Here in Iraq, a whole astronomical establishment was destroyed. Astronomers and scientists, especially in North America, should condemn such actions and launch a campaign to help rebuild the astronomical and scientific facilities which the U.S. military is responsible for destroying.

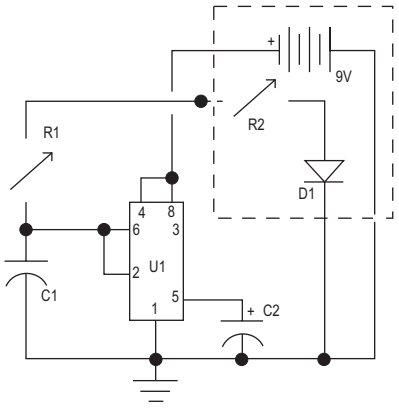
BasselA. Reyahi
P.O. Box 86, Tulkarm, West Bank, Israel

The Incredible Blinking Reticle

Greg Saxon
reprinted from ***The Niagara Whirlpool***

The problem with guiding eyepieces that are commercially available to the amateur and within his budget is that they do not incorporate the best quality eyepieces. They are usually a Kellner design, which yields poor contrast between the target object and the background sky. Since the reticle is placed in the eyepiece's focal plane, the entire field tends to wash out and in addition any small dust fibrils that are on the reticle's glass can be seen crystal-clearly and are brilliantly illuminated by the L.E.D.

Also, when trying to photograph large diffuse objects, such as comets or galaxies, the targets tend to overflow the reticle's crosshairs, making it difficult to keep the target centered to produce pinpoint images on the emulsion. Usually when trying to record a comet or galaxy on film, I am forced to turn down the reticle's brightness to such a low level that sometimes I don't know which is harder to see; the comet or the crosshairs. In order to center the object, I found myself turning the reticle's rheostat off and on to keep my target aligned. I figured that there had to be a better way. Thinking about it, I wondered what I needed. I enlisted the aid of centre member Mike Madsen, an electrician, to make my electron dream a reality.

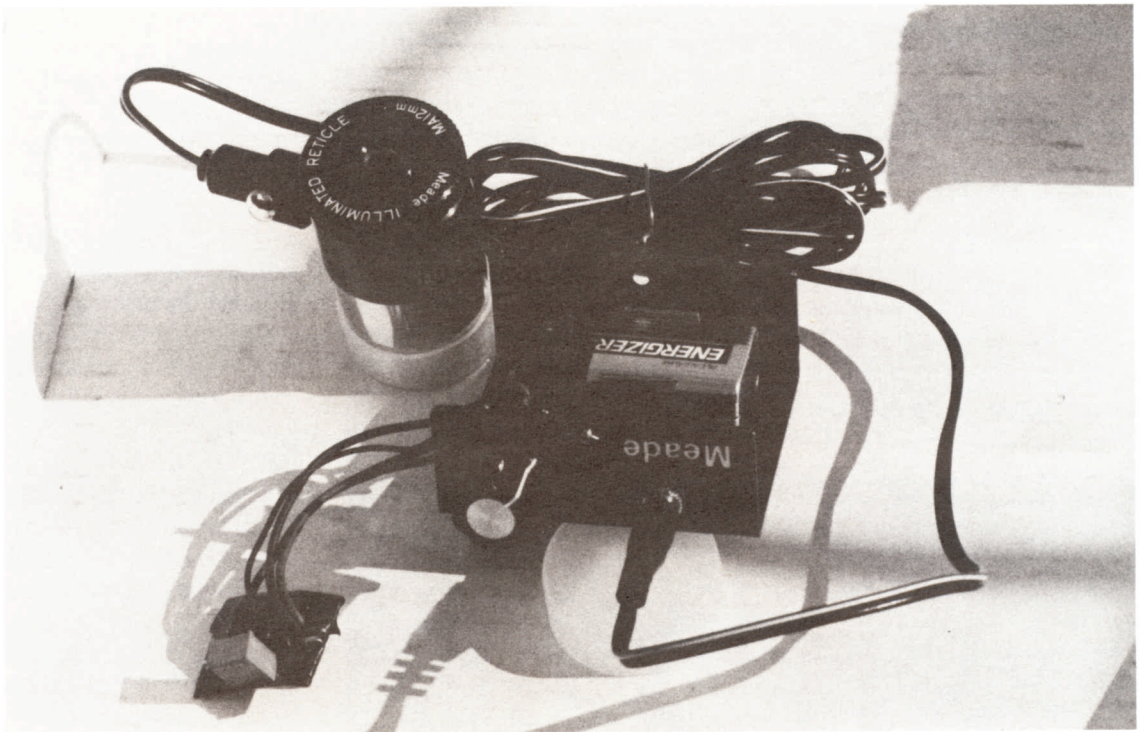


Schematic diagram of the blinking reticle.
U1 - 555 Timer IC Chip
R1 - 5 MΩ Potentiometer
C1, C2 - 0.01 μF capacitors
D1 - L.E.D.
R2 - Existing Switched Pot 1 kΩ

We decided to use the control box which runs off a nine volt battery that came with the guiding eyepiece to build a prototype of the blinker; if it worked satisfactorily, I would mount similar modules in my C-8's drive corrector and in my Meade's control panel to enable the reticle to run directly from the scopes' power sources. For about ten dollars we purchased the necessary capacitors, resistors and a 555 timer IC chip. Mike then wired up a compact system that causes the crosshairs in the eyepiece to cycle on and off at one second intervals while retaining control of the brightness settings.

Testing the prototype blinker over the past year and a half, I was able to guide with relative ease on a number of diverse objects: Comet Austin which was dim and very small, just a smudge lost in the stars of the summer Milky Way; Comet Levy, a fast moving comet with a large bright diffuse coma; and M31 with its large central core almost filling the entire reticle making it difficult to keep it framed around the crosshairs. While guiding, when the reticle blinks off, you can get a better idea of the target's size and its position within the field of view. Also, with the reticle blinking on and off, it is more difficult to fall asleep at the wheel, so to speak; your brain is kept alert as to where the center of the field is located and to whether your target is drifting out of the box.

It works for me! Any help that an astrophotographer can get is appreciated. The idea must have some merit because in recent issues of astronomy magazines, I've noticed advertisements from businesses that deal in astrophoto specialities flogging eyepieces that do the same thing. In the future I am going to adapt the same system to the reticle ports on my C-8's drive corrector and my Meade's control panel. ✪



A photograph of the finished product. The additional circuitry that causes the blinking of the reticle is located on the small square circuit board in the lower left corner. The rest of the apparatus is a commerically produced illuminated reticle.

Planets in the Palm of Your Hand

Brian McCullough
Ottawa Centre
reprinted from ***Astronotes***

Talk about the small screen! IMAX may have cornered the market on big screen presentations, but here's an imaging trick that will let you "hold" the night sky's brighter objects in the palm of your hand.

Some night when you are out with your telescope, steer onto a moderately bright celestial object such as a planet or the *crescent* Moon. (You want it bright, but not too bright.) Center the object in the eyepiece and take a really good look at it. Climb right in there. "Associate with it", as Stephen O'Meara says. Remember to keep your non-viewing eye open and relaxed.

As you concentrate on the image in the eyepiece, raise your hand on the same side as your non-viewing eye and cup it about fifteen centimetres under the eyepiece. At this point you should be able to see the object through your viewing eye, and your hand through the other. Now, let your brain do the rest. What you should get is a wonderful "3-D" image of the object in the palm of your hand'

I stumbled onto this while observing Saturn one night last fall. As I adjusted the slide focus on my refractor, a perfect image of the planet suddenly appeared in my cupped hand. Months later I put Jupiter up on the "EYE-MAX" screen and was rewarded with an absolutely stunning image of the Jovian disk and its necklace of Galilean satellites.

Sure, it's an illusion, but then most everything we look at through telescopes is an illusion to some extent. For instance, we see things as they were, not as they *are*. So take a moment and enjoy this illusion of 3-D planets in the palm of your hand. It's wonderful! ✪

Amateurs Needed to Observe Nothing

Douglas Pitcairn
Halifax Centre

Through great fortune, and my long reach, in the summer of 1990 I was able to obtain possession of a copy of E. E. Barnard's *Atlas of Selected Regions of the Milky Way*, the book that he published cataloguing the dark nebula for which he is now famous. Walter Zukauskas of the Dalhousie University Physics Department discovered this wonderful piece of work while rummaging through some of the little used portions of Dal's Killam Library, and brought it along to the Halifax Centre's June meeting of that year. Another member of our centre, Hugh Thompson, had already started my interest in observing these wonderful dark nebulae and reading this book has been a delight for me.

In the 1880s, Edward E. Barnard of the University of Chicago began systematically photographing selected regions of the Milky Way's star fields. He developed a list of the many dark regions, and for some time, the nature of these "dark nebula" or "voids" was a bit of a controversy. That issue is now more or less resolved, but the viewing of these elusive clouds of obscuring material seems, in general, to have been largely overlooked by many visual observers, possibly due to the difficulty of finding a listing of the easier visual dark nebula. One fairly extensive listing appears in the *SkyCatalog 2000, Vol.2*. while two star atlases which outline these objects are Becvar's *Atlas of the Heavens* and the *Uranometria 2000.0*.

This is a request for data. The listing on the opposite page is a selection of what appear to be (based on a visual inspection of Barnard's plates) the better defined regions which should be visible in a medium aperture amateur telescope. If you get a chance, please include some of these objects in your observing schedule. Note the conditions, minimum visual magnitude, instrument size and observer skill, and send your reports along to me. My address is: Douglas Pitcairn, 13 Ferguson Road. Dartmouth, Nova Scotia. B3A 4J8. I can also be reached by electronic mail at pitcairndc@watt.ccs.tuns.ca.

The first column is Barnard's original number for the dark nebula (except for the Coalsack). For simplicity, the "B" prefix has been omitted in this column, but normally these objects are labelled in the same manner as Messier objects (e.g. B81, B95). The next column is the constellation in which the object is located. The coordinates are for epoch 2000 and correspond to the center of the dark nebula. The opacity is on a scale of one to six with six being the darkest. There are some objects for which there is some discrepancy in the opacity ratings. The values may not reflect the object's true visual appearance. If you find any discrepancies in the opacity ratings, please let me know about. In general, the fives and sixes, being the darkest, should be the easiest to spot, as the visibility of these regions is mostly dependent on the contrast between the dark area and the surrounding star clouds.

The size is given in arc-minutes and was measured directly off the plates. Knowing the size of the nebula should help both in identifying the object and choosing a suitable magnification. Try to select an eyepiece with a field at least twice the object's dimensions. Although some of these nebula have a distinct shape, most will be seen visually as a gap or "hole" in the star field. Sweeping with low power is a good method of locating the more difficult targets. Some of the larger objects will no doubt be easier to spot using binoculars or a rich field telescope. They also make excellent photographic subjects. The visibility of most of these nebulae is dependent on the contrast with the surrounding star field, which is often very faint. Therefore, the best views of dark nebula will be obtained from ideal dark sky locations, void of light or air pollution, and using the largest aperture possible.

The problem with this data is that much of it is derived from measurements taken off the photographic plates in Barnard's Atlas. As you are all aware, the response of photographic plates and our eyes differ considerably. It is most probable that some of these nebula which are quite visible on the plates are quite impossible to view visually. I would like to find out which of these dark nebula are visually detectable and with what size of instrument.

I am very interested in obtaining any visual reports of sightings of these objects. Negative reports are also very useful. There is a good possibility that this data will be included in a new section in a future edition of the *Observer's Handbook*. ✪

Number	Const	R.A.	Dec.	Contrast	Size	Comments
211,213,216	Tau	4h25	+27.0	3	12x110	An elongated rift running NW to SE.
44	Oph/Sco	16h40	-27.0	6	35x300	Large dark strip from 22 Sco to 22 Oph.
45	Oph	16h46	-21.5	2	25x50	
46	Oph	16h56		6	7x12	On ecliptic, 20' north of 24 Oph.
244	Oph	17h10	-28.4	5	30x20	
250	Oph	17h13	-28.3	5	15	
63	Oph	17h15	-21.7	3	20x100	A large "C" shaped blob with the opening facing south.
64	Oph	17h17	-18.5	5	20	30' west of M9.
50	Sco	17h02	-34.0	6	16	Distinct eastern boundary.
68	Oph	17h20	-23.8	6	3	A hole in space!
72	Oph	17h23	-23.5	6	4	The famous "S" nebula. Excellent!
70	Oph	17h23	-23.6	4	4	
74	Oph	17h25	-24.2	5	15x10	30' west of 44 Oph.
75	Oph	17h27	-22.0	5	25x6	A line with a few bud-like branches.
78	Oph	17h30	-26.,0	6	60x140	2° ESE of θ Oph. The bowl of the "Pipe" nebula.
79	Oph	17h38	-19.5	6	3x15	A rift with indistinct ends.
83	Oph	17h38	-20.1	6	4	A hole in space.
84	Oph	17h46	-20.3	6	18x2	A distinct group of overlapping arcs.
51,47	Oph	17h05	-22.4	6	20x80	An oval with dark ends and a lighter center.
289	Sgr	17h56	-29.0	5	7x35	Orientated north to south.
84a	Sgr	17h57	-17.6	5	16	Like an upside-down teardrop, ninth mag. star in center.
57	Oph	17h07	-23.0	?	5x10	A challenge.
59	Oph	17h08	-27.5	?	25	Irregular. The mouthpiece of the "Pipe" nebula.
92	Sgr	18h14	-18.3	6	8x15	1° west of M24.
93	Sgr	18h15	-18.2	4	3x10	B92 is in the same field.
95	Sct	18h25	-11.8	5	15x28	Runs NE to SW.
85	Sgr	18h03	-23.0	6		The lanes of the Trifid Nebula.
86	Sgr	18h03	-28.0	5	5	Square: beside NGC 6520. Excellent!
88	Sgr	18h04	-24.4	5	3x0.5	Inside M8.
89	Sgr	18h04	-24.4	6	2x0.5	Inside M8.
87	Sgr	18h04	-33.0	4	10	Circular, with a beak "The Parrot's head Nebula".
104	Sct	18h47	-4.5	5	15x1	A check mark shape, 10' North of β Sct. Excellent!
138	Aql	19h14	0.0	3	8x180	A Long arc open to the east. Eastern edge is more distinct.
337	Aql	19h37	+12.5	4	3	
142/143	Aql	19h41	+10.9	6	30x48	The famous "E" cloud. Excellent in 6" or larger.
340	Aql	19h49	+1.4	5	7	
145	Cyg	20h03	+37.5	4	6x35	Triangular.
356	Cyg	21h02	+6.5	4	24	Halfway between 59 and 60 Cyg.
363	Cyg	21h27	+8.6	5	40x7	1° NW of M39.
365	Cep	21h32	+57.0	4	4x20	Less distinct "S" cloud. A hole in IC 1396.
170	Cep	21h59	+58.7	5	26x4	Has a star on either side. A dark "tail" off B171.
171	Cep	21h59	+58.7	5	19	A dark ring about a small "C" shaped star group.
34	Aur	5h45	+32.5	4	15	Like an inverse Tarantula Nebula.
	Cru	12h53	-63.0	3?	300x400	The Coalsack, Adjacent to Crux.

Discovery of an Observing Site

Dennis Ryan
St. John's Centre

I guess it must be the dream of every Centre to have an out-of-town observing site, because those Centres that I have been privileged to visit that do have a site with an observatory genuinely cherish them. They always seem well kept and well used, and I can see why. It is a place to be out under the clear, dark sky, enjoying both observatory and warm-up hut; a place to mingle with fellow enthusiasts and enjoy the adventure of seeing detail in Jupiter's bands or hunting down that elusive deep-sky object. It is your place to do astronomy.

So, even before I came to Newfoundland, that was the St. John's Centre's dream: to have that out-of-town site. I can remember going observing with some members of the Centre soon after I arrived. We ended up at an old, unused road outside a small town. It was a site the Centre members had chosen to observe from, but they were not really sure how long they would have it. When we got a chance to return some weeks later, the pavement had been dug up. It looked as though someone was finally paying attention to the road and our days of using it were numbered. We started to observe from an old quarry, about a fifteen minute drive outside St. John's and it was not a bad site. Despite its proximity to St. John's you could see the Milky Way. We had many, good times there during the summer of 1990, but the site was not accessible during the winter as the road was not ploughed.

It was on one of these earlier trips that I learned that the Centre had hoped to get some Crown land because it did not have the funds to buy land. However, that required the Centre to be incorporated, and as the law required the use of a lawyer to process the papers (also requiring funding that the Centre did not have) there was little the Centre could do.

Shortly after I became Centre President. we checked into the situation again and found that it had changed, and to our advantage. We could now make out the papers ourselves, pay the fee for non-profit organizations (less than $100) and we would be off. There were a few details to be worked out, but in June of 1990 we were officially incorporated and a party was held to celebrate the event. At a monthly meeting soon afterwards, Gary Dymond, John Bell and John Canning formed our Crown Land Committee and they set out to find a piece of land for us. Once again, we ran into difficulties. We had trouble finding a site not only because we were looking for something that was "just right" but also because government maps did not seem to be very accurate as to what was available and what was not. We felt desperate once again. We realized that we had two choices before us. We could either ask some generous member to donate a piece of land to us, or we could approach the people at Butterpot Park, a provincial park about a half hour's drive south of St. John's, to see if we could strike a deal with them. As some members had always seen the park as a possibility we decided to take that route.

One of our members knew a high-ranking official in the provincial parks department and spoke with him about it. We had to our advantage the fact that last summer we had held our "Starbeque" at Terra Nova National Park and the response had been very good. I then wrote on behalf of the Centre and was soon contacted by Mr. Bill Pinsent who arranged a meeting with him at the park to see if we could come to some sort of agreement. The spot they had in mind looked great. It was a parking lot, but was surrounded by trees which had the potential of blocking out a lot of the surrounding light. Next to the site is a hut that is normally used by cross-country skiers but the park officials granted us the use of it at night. And, of course, there was a road that went right into the site.

We spoke with the officials for about two hours and came away satisfied that we had the potential for a good deal. A week later we received the first draft of the agreement between the parks department and the Centre. With a few minor clarifications, it was passed at our monthly meeting the following week. On April 30th, we met with park officials to "dot the i's and cross the t's". On May 15th, I contacted Bill Pinsent again to see how the papers were coming along. He referred me to the regional parks director, who in turn told me that the papers were out at Butterpot and that we could go out and get things finalized. On May 18th, a very bad day weatherwise, Gary Dymond and I drove out to Butterpot, signed the papers, picked up the keys, purchased the season's passes and came home satisfied.

The icing on the cake in all of this, is that the Centre has also purchased its "Centre telescope", a twelve inch f/5 Newtonian, which is expected to arrive before June is out. It had been at the Montreal Centre, my old "alma mater" for a dog's age and when they offered itto us at an incredible price, we went for it. This summer should be an incredible one at the St. John's Centre (weather permitting)! ✪

Across the R.A.S.C.

London

The London Centre has recently purchased a used Meade DS-16 in excellent shape for $1000. The previous owner had tired of it and wanted to dump it. At present we have no permanent site for it, but a search for a site is actively going on. In the meantime, the DS-16 is being taken care of by centre member Steve Sharpe who uses it for his A.A.V.S.O. observing program.

The Centre's 4" f/15 refractor has recently been completed, with thanks to John Batty for the finishing touches. This instrument, along with our 8" f/4.5 Dobsonian are available for rent to centre members for $10 per month. Included with each telescope are eyepieces and a copy of *Sky Atlas 2000*.

The centre computer bulletin board service, run by Centre President David Toth, is doing very well and has recently been upgraded with a 300 Megabyte hard drive. Operating on a 386 Unix system, the BBS offers many services including a vast array of software. Most software is for IBM-compatibles but we are in need of more Amiga software as well. Phone (519) 660-1442 and hit your return/enter key to prompt the BBS. Baud rates are from 300 to 2400, your terminal should be set for ASCII mode with settings of 8-N-1. Different protocols for uploads and downloads are available.

The dates for our annual observing/camping weekend at the River Place Campground (the site of Starfest) have been set. This is not a star party, but an informal, relaxed opportunity to take advantage of the warm summer evenings. Any other R.A.S.C. members in Southwestern Ontario who wish to join us are more than welcome to do so. For more information, contact Joseph O'Neil at (519) 659-4709 or leave E-mail on the Centre's BBS. The date is July 12th-14th. Rain date is one of the weekends on either side of Starfest in Auqust.

Vancouver

February and March were wet and wild as usual, which left our observers little to do but cry in their tubes. We were treated to the new planetarium show on Chinese astronomy which further confirmed the value of ancient records for astronomical purposes. March was also our Annual Dinner. The Water Street Cafe was this year's meeting place and was well attended. The winner of our National Award Dale MacNabb, gave us a few inspiring words followed by our own Local Award of Appreciation, Barry Shanko.

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Ramblings of an Armchair Astronomer

Jim Low
Toronto Centre

Each time the *Bulletin* arrives, it's explored in as much detail by this armchair astronomer as is the night sky by a young, enthusiastic backyard astronomer. There was a time when I was an active observer, then an organizer in the R.A.S.C., and finally I became an advanced armchair astronomer. That final "advancement" wasn't exactly planned, but resulted from personal lifestyle changes and lack of time to actively pursue my first love.

Life is a fun learning experience and astronomy has always been a major fun and learning experience in my life. Not only have I learned the wonders of the universe, but my association with the R.A.S.C. has also taught me a lot about people. Pardon me while I drop some names of R.A.S.C. members - some famous - and some not so famous. These are a few of the people who have fuelled not only my interest in astronomy, but also helped me grow and contribute to society.

In the 1950's Richard Tanner, an R.A.S.C. member, Society Gold Medal winner and a staff member at the Dominion Observatory, was more than tolerant of this teenager as I regularly dropped into his office to pick his brain; he encouraged me in my interests. In 1956, when I joined the R.A.S.C. in Ottawa, I walked into my first meeting and was greeted by Stan Mott who made me feel welcome.

In 1958, I moved to Montreal where Frank DeKinder and Isabel Williamson took me under their wings and nurtured my interest in astronomy. It was there that I met Geoff Gaherty who taught me how to undertake detailed planetary observations. Although Geoff and I went our own separate ways, we met again in Toronto in the late 1980's and have become good friends and business associates.

It was Isabel Williamson who encouraged me to undertake my first administrative activities in the Society; I became Chairman of the National Society's Comet and Nova Section, which was part of the National Observational Activities Committee. This was an invaluable learning experience which was vital to my future development in life. Not only did I then start helping and directing other people, I also learned from those who were taking part in the program I was leading. One of my most active young observers in the Comet and Nova Section had valuable suggestions on how to improve the program. His name? David Levy. One of my co-chairmen on the Observational Activities Committee was Terry Dickinson who also gave me many good ideas on improving our programs. Although the National Observational Activities Committee was eventually disbanded, it was a valuable learning experience and stepping stone to the individuals involved, both as leaders and observers, and was invaluable in the growth of our Society.

Throughout the 1960's, I attended every General Assembly but one, and still attend as many as possible. I became more of a National Society member than a Centre member. As part of the National Observing Committee, I met many members across the country. I looked forward to the western GA's, as it was another opportunity to spend an enjoyable trip on The Canadian or Super Continental seeing our country. It didn't matter if the G.A. was in Vancouver, Calgary, or Winnipeg; that was the excuse to take the train to the west coast, with stopovers for the G.A. and other site-seeing. A G.A. was the time to learn more about our country and people.

Although a member of the Montreal Centre from 1958 until 1968, I made many trips to Toronto during that period. It was during this time I met Vern Ramsay, and we were usually at G.A.'s together. His enthusiasm for astronomy was contagious and he did more than his fair share of encouraging the young budding astronomers.

In 1963–65, I visited Toronto to undertake research on the interesting history of our Society for a paper I gave at the 1965 G.A. on the 75th anniversary of our incorporation. This would have been impossible without the active participation and help of Marie Fidler who literally gave me the keys to the National Office so I could continue my search through our dusty records and old transactions in evenings and on weekends.

During my research, I obtained valuable information from Dr. A. Vibert Douglas in Kingston, and Helen Hogg in Toronto, two more bright stars in popularizing astronomy. They went out of their way to help me. In preparing my works, both for publishing a report on the Comet and Nova Section and in preparing a paper on the history of the society fo rthe G.A., Ruth Northcott arranged for me to access records at the David Dunlap Observatory. She also made many valuable suggestions. And I mean valuable. She was honest and blunt. There were flaws in my work. She made sure I knew about them. Thanks to her firm but fair criticism, I was able to greatly improve by learning.

I will never forget Peter Millman. It was he who received the visual reports of aurora both during and after the 1957–58 International Geophysical Year. I sent in reports regularly, and sometimes enclosed a letter asking for more forms or asking questions. He often sent a personal note of thanks, and always sent a reply to my questions. He was never too busy to help a young enthusiast. I last saw him at the Ottawa General Assembly last year. I'm saddened that I will never see him again.

I moved to Toronto and joined this Centre in 1968. It was soon after that my armchair astronomy period began. However, I did spend a year on the council of the Toronto Centre before fading into the background. It was when I was on this council that I recall our Centre's then Honorary President, Helen Hogg, taking an active role in an important moral decision that was a good lesson in careful thought for all of us. A young member had his telescope equipment stolen from the optical workshop, and was politely requesting some compensation. The Board quickly decided, correctly, that we had no legal responsibility, and declined compensation. At the next Board meeting, a letter from Helen Hogg was presented expressing concern over our action (she read the Minutes). We failed to recognize a moral commitment to a young enthusiast with limited resources. Needless to say, we reconsidered and some compensation was granted. I'll never forget this valuable moral lesson that Helen Hogg taught us.

There are times I pull myself out of the armchair; but it takes a lot. I remain a very active observer of total solar eclipses. I'll be off to my ninth solar eclipse trip with the Toronto Centre this July. A total solar eclipse is so great, that there is no way to describe it and no photograph does it justice. Until I took my wife and young daughters to Gimli for the 1979 eclipse, they couldn't understand why I would put so much time, money, and effort into observing an eclipse. They understand now. In 1988, my teenage daughters even insisted on going to the Philippines with me to see the eclipse, and even saved up the money to pay their own way. One son saw the 1984 eclipse, and it's only limited finances that prevent them from joining me on the 1991 trip.

Those who study astronomy are fortunate. In their exploration of the universe and seeking of answers to the many questions about it, they can be led not only to a better understanding of the abstract and the far-out, but are forced to think out our place within society. Association with other enthusiasts of astronomy is a wonderful learning experience in life. ✪

Astronomie le long du Saint-Laurent

Marc A. Gélinas

En mars 1991 deux observations astronomiques intéressantes ettrès différentes l'une de l'autre, ont été faites a quelques heures de distance, au deux bouts du tleuve Saint-Laurent. La première, en banlieue de Montréal mettait en scène dans la nuit du 29 au 30 mars, l'astéroïde Pallas et une étoile de magnitude 9, AGK +6°26 (SAO 118404). Alain Roussel, secrétaire ala Société d'astronomie de Montréal noustaitun bref rapport de l'occultation qui s'est alors produit. Le lendemain, Sept-Iles sur le Golfe Saint-Laurent, Gaetan Morissette et sa femme ont assisté au spectacle imprévu de l'entrée dans 'atmosphere d'une famille de météores flamboyants. Nous avons reproduit son témoignage pour vous.

Occultation par Pallas - Alain Roussel

21h00: M. Roland Guilbault m'appelle par téléphone et me donne la position des étoiles dans son champ de télescope. Les coordonnées qu'il me donne sont: 10h38m, +6° 26'. Ceci correspond a la position de l'étoile le AGK3 +6° 26', de magnitude de neuf qui sera occultée par l'astéroïde numero deux, Pallas, de magnitude 7.3.

21h18: J'appelle M. Guilbault et je lui donne la position des étoiles dans mon champ et elles correspondent aux siennes. Cependant, nous ignorons laquelle est Pallas.

22h00: Je constate que les deux étoiles au nord demon champse sont rapprochées. J'augmente alors ma puissance a 111 x pour essayer de voir une autre étoile qui m'aidera a voir leurs déplacements plus facilement. Je perçois une 3è étoile juste au sud des deux autres d'une magnitude de onze environ.

22h28: Cette fois, l'étoile du centre s'est rapprochée de l'étoile au nord. Pour m'assurer de l'astéroide, je vérifie dans l'atlas U*ranometria* 2000.0, volume 1, si l'étoile au nord est ndiquée. Elle l'est, et de magnitude neuf environ. Par contre, aucune trace d'une étoile de magnitude sept a proximité. Bonjour Pallas!

22h47: L'astérolde atteint la mie-distance entre les deux étoiles, cette fois il n'y a plus de doute, c'est Pallas.

00h58: A cette heure, je ne suis plus capable de distinguer les deux astres. L'occultation a lieu. Cela dura six minutes parce qu'à 01 h04 une légére forme ovale commence a être visible. Si la qualité de seeing avait été meilleure, l'occultation aurait parue plus coutre. 01 h07: On distingue bien une séperation entre les deux astres et 'occultation est maintenant terminée. Snif...!

Escadrille exceptionnelle de météores - Gaetan Morrissette

Le dimanche de Pâques, 31 mars 91 vers 19h10, je me promenais tranquillement sur le rue Comeau a Sept-Iles, lorsque, tout excitée, ma femme me demanda d'arrêter lavoiture pour regarder un étrange phénomène urn ineux dans le ciel. Je lui dis: "Cette doit-être Venus ou un avion", mais comme elle insistait je me rangeai sur le côté de la route et je sortis contempler cette <OVNI miraculeux>.

Quelle ne fut pas ma surprise de contempler en direct une escadrille de cinq a six météores se dirigeant vers le nord parallèlement au sol et parallèlement entre eux, comme si un gros météorite s'était fragmenté en plusieurs morceaux en pénétrant dans l'atmosphère et que chacun d'eux continuaitde cheminer côte a côte dans le ciel. Leur mouvement ressemblait a une course de chevaux trés serrée. On pouvait distinguer la variation d'éclat de la tête et de la queue des différents bolides comme s'ils se désagrégeaient de façon irrégulière. Ce fascinant spectacle dura environ quinze a vingt seconds. En bout de course, us se sont éteints presque simultanément. Aucun bruit n'a accompagné ni suivi de près le phénomène.

En rentrant chez nous, j'ai téléphone a la tour decontrôledel'aéroport. Bien que les contrôleurs en poste ace moment n'aient rein vu, us avaient cependant déjà reçu beaucoup d'appels a ce sujet. Ils me conf irmèrent que ce devait être des météorites car, en plus des caractéristiques habituelles des météorites, il n'y avait pas d'escadrille d'avions prévue dans le voisinage.

J'aurais bien aimé avoir mon appareil photo avec moi car je crois que j'aurais eu letemps de fixer leur traces urunepellicule etainsi enregistrer la preuve d'un phénoméne rarissime. Je me suis quand même risque a réaliser une esquisse ressemblant approximativement au spectacle observe.

ERRATUM: Dans le text du Bulletin d'avril 1991, "La dichotomie de Venus 1989- 1990" une faute d'orthographe s'est glissée dans le nom de M. Todd W. Lohvinenko, toutes nos excuses a M. Lohvinenko.

Par ailleurs, sur le graphique de novembre 1989, vous aurez remarguer que a fléche du tableau pointait vers la phase 55% au lieu vers la ligne de 50%. - M.A.G. ✪

Across the R.A.S.C.

(continued from page 6)

The guest speaker was Dr. Graham Odgers, past Director of the Canada-France-Hawaii Telescope. His humorous anecdotes provided for an interesting evening.

In April, Dr. Bill Unruh was our guest, speaking on the topic of black holes. His research provided new insights and a better understanding to a confusing concept. Astronomy Day was a great success. The event was well attended by both members and the public. We even had a clear night with scopes aplenty. Our activities were centered on the Graham Southam Observatory. Mirror grinding, computer software, astrophotography and light pollution were our main static displays.

Victoria

Centre President Jack Newton was the speaker for our March meeting. He gave an interesting talk on his new S-Big/CCD system for his twenty-five inch reflector. Jack can now detect stars down to magnitude 21.5.

The April meeting was a members' night. Frank Shinn exhibited his attempt to add an audio component to a photometer. He hopes to eventually use it in occultation work. John Howell talked about his occultation work. Steve Rayner brought the comfortable life to amateur astronomy when he displayed his electric vest for cold night observing.

The speaker at our May meeting was our *Skynews* editor, Malcolm Scrimger, who talked about predicting, observing, photographing and listening to artificial satellites using computers and simple radio equipment.

Windsor

In November, the Windsor Centre had another speaker exchange with the Kitchener-Waterloo Centre; Bernie Mueller, President of that Centre and Professor Ray Koenig spoke on beginning and advanced astrophotography. On the 31st of January, our National President, Damien Lemay, gave a good presentation titled "Amateur Astronomy as a Hobby and as a Science". Later he observed Jupiter through Dan Taylor's (our new Centre President) new 20" Dobsonian. He stated that he had never had such a fine view of the planet up to that time.

On February 19th, our Honorary President, Dr. Mordechay Schlesinger (Head of the Physics Department at the University of Windsor) gave a thought provoking talk on atomic spectroscopy in astronomy with some scientific philosophical insight included. This spring, the Centre plans to support Astronomy Day by having one or two public displays. ✪