NOVA NOTES

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THE NEWSLETTER OF THE HALIFAX CENTRE OF THE RASC
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NOVA NOTES, the newsletter of the ***Halifax Centre of the Royal Astronomical Society of Canada***, is published bi-monthly in February, April, June, August, October, and December. The opinions expressed herein are not necessarily those of the *Halifax Centre*. Material for the next issue should reach the editor by **July 9, 1993**. Articles on any aspect of astronomy will be considered for publication. "Letters to the Editor" or to our resident expert: *GAZER* are also most welcome. The editor can be reached at:

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Special 1993 GA Issue!

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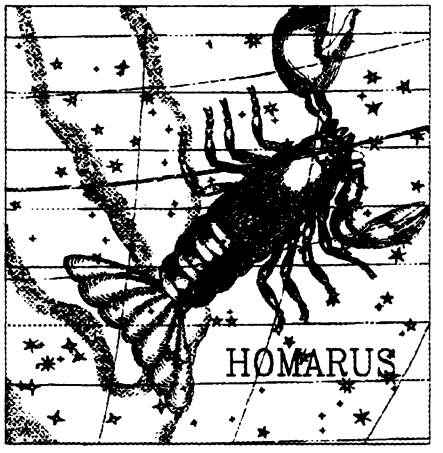

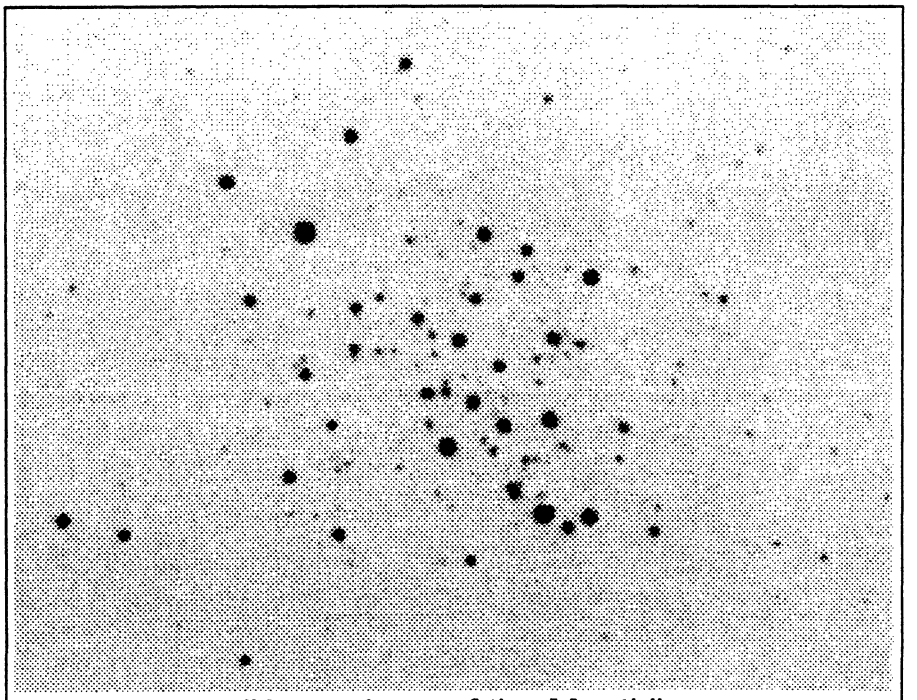

"Astrophoto of the Month"
M67 - an open cluster in Cancer

This photograph was taken by Mary Lou Whitehorne using a Meade 8" SCT at f6.2 with Fujichrome 1600. The exposure time was 16 minutes.

Editor's Report

In additions to the regular stuff, this issue includes a couple of historical reprints for the benefit of our GA delegates who will also be receiving a copy of this newsletter. The first is an article written by David Levy, our Northcott Lecturer at the GA, back in 1970 when he was a *Halifax Centre* member while attending Acadia University.

The second is an article written by our honorary president, Dr. Murray Cunningham following a talk he gave at our annual banquet in 1985 which provides historical information on the rise and fall and rise of the *Halifax Centre*. Ω

President's Report

As I have been informed that this issue of *Nova Notes* is almost full, I will try, for once, to keep my report relatively brief and to the point. I know you have heard that before, but this time I really mean it. Whoops! Guess I had better get back to business!

Paul Gray reports that he is coming along nicely in his upgrade of the Halverson Telescope. He is converting the scope from an equatorial to a Dobsonian mount and replacing the focuser, etc. The biggest problem so far has been trying to determine how to get the mirror recoated, although we are looking at several possibilities.

Another centre member has finished his Messier list and been granted the centre's coveted Messier Certificate! Our congratulations goes to Reg Henderson of Truro, who finished off his list in the depths of the Virgo Cluster! A group of members consisting of Shawn Mitchell, Paul Gray, Jason Adams and Dave Lane (*I did? - Ed*) have decided to form a committee to investigate the possibility of getting a dark sky sanctuary set up as part of Dollar Lake Park. If any other members are interested in giving them a hand, I am sure that they would be more than happy to hear from you.

Shawn Mitchell has ordered lapel pins with the *Halifax Centre* logo on them for us to have available for sale both at the GA and to interested members. They will have arrived in time for the June meeting. The *Halifax Centre* was responsible for instituting the society's Simon Newcombe Award (or Professor Moriarty Award, if you have read the recent *Sky & Telescope*!). Due to a lack of entries over the last several years, we have asked the national awards committee if they would automatically consider all articles that are submitted to the *Journal* by amateur members for the award. We should know at the GA whether they decide to adopt this recommendation.

Speaking of the GA, I would like to take this last opportunity to invite all centre members to participate in this event. I have been to quite a few and they are not only a great learning experience, but they are also a lot of fun! We are even going to have a few new tunes for the song contest from the *Halifax Centre*, so if you ever wondered why most of the people on the executive have not given up their day jobs for a singing career, now you will get your chance! (Members of the audience are responsible for bringing their own ear plugs!) Ω

Letters to the Editor

Dear Editor:

Gee, this Anthony Amateur (*see the letter to the editor in the April issue - Ed*) is quite a skilled observer, isn't he? (So is he an *observer* or an *armchairist*?) Well, he has hit a few nails on the head with his letter. He is quite correct in surmising that there may be a severe shortage of folks willing to serve as executive members for the next year or so. This is a real threat to the *Halifax Centre*.

I wonder ... Anthony has obviously given this matter a great deal of thought and he must care about the Centre at least a little bit or he wouldn't have bothered to voice his concerns so eloquently and in such a public manner. Maybe there are others like him out there in member-land? Maybe there are lots of you that stand afar from the activities - just observing from a distance as if the activities were stars, planets, and galaxies. Maybe this would be a good time to get a little closer to the action and become an executive member? Why not?

- Mary Lou "Observer" Whitehorne

Dear Editor:

re: the anonymous letter to the Editor about armchairists versus observers in the *Halifax Centre*

I am a member of a small independent astronomy club and we had much the same thing going on, but on a smaller scale ... until the last dues renewal. Those who chose to appreciate astronomy in a leisurely manner ... all 12 of them ... didn't renew their memberships! We are in the process of dropping our liability insurance because of lack of funds.

There is a certain critical mass that needs to be exceeded to support the overhead and we are now beneath that level. We can survive without it. We just won't be able to do any Mall displays and will have to keep our public nights in check, in fear of financial ruin should we be sued for injury by an attendee.

Hand in hand with this matter is the article in the April/93 *S&T* on page 102 about the late Clinton Ford. Apparently he never could be talked into going to local meetings like *Stellafane* because he was never comfortable "with all those cretins oohing and aahing over M13." It seems that the predilection for judging the worth of others activities, or worse, the worth of others based on their preferences in a hobby or activity, is widespread. There isn't anything more divisive than this kind of thinking when it takes active form within a group. A comment or two from an "active" observer about the lack of observing activity of others can set off a chain reaction of bad feelings that may never be reversed. Better is the simple acceptance of another's interest level, whatever it is. And if one has a tendency to "look down the nose" at others who are not as technically interested in stellar photometry,

variable star estimating, or capable of grinding, polishing and figuring a parabolic mirror surface to 1/10th wave, then it is best to keep those feelings cloistered in your cranial cavity. Some people who fall into this group tend to spout off because they don't have the presence of mind to realize the social consequences of their actions. They can be devastating.

So, think before you offer an opinion to another. If the *RASC* is to continue to be the group detailed by Peter Jedicke in his May *S&T* Focal Point article and not "splinter" into disassociated fragments, then it will have to, forthwith, find a solution to intolerant behavior. Maybe all who aspire to membership should have to take a prerequisite psychology course before being admitted? How poorer will you be if the telescope makers, the variable and double star observers, the photometrists, and astrophotographers, the planetary observers, and the armchairists go their separate ways never again to associate regularly and share the riches of their experiences, their discoveries and feelings?

Greg Palman
Penobscot Valley Star Gazers
(Bangor, Me)
And RASC Halifax Center Ω

Scheduled and Public Observing Sessions

Scheduled Observing
Saturday, June 19 - Dollar Lake Park site
or if cloudy on Sunday, June 20

"Parks are for People"
Public Observing Sessions
Friday, July 23 - Dollar Lake Park site
or if cloudy on Saturday, July 24
Friday, August 13 - Dollar Lake Park site
of if cloudy on Saturday, July 24

For information or for directions to the Dollar Lake site, call Paul Gray (864-2145) or David Lane (443-5989)

The Art of Comet Hunting

by David H. Levy

Reprinted from *Nova Notes* (Vol. 1, Issue 2, December 1970)

On September 8, 1965, Kaoru Ikeya, a piano-factory worker, was peering through the eyepiece of his homemade eight inch reflector when he spotted a little spot of haze in the field of view. Ikeya, knowing the sky, was fairly certain that the object was not supposed to be where it was. His star atlas showed nothing in that position, and a look through the eyepiece a short while later convinced him that he really was looking at something new, for the fuzzy patch had moved.

This new object was doubtlessly a comet, and Ikeya lost little time in sending a wire to the Tokyo Observatory. Just one hour later, Tsutomu Seki found the same object, and the finding of the new comet Ikeya-Seki was made known to the world.

The rest of that story, is familiar to most of us (*Not me! I was only 2 years old! - Ed*); an eighth magnitude fuzz that sprouted a tail and danced around the sun, rivaled the full moon in brightness and the Sistine Chapel in beauty, displayed a gorgeous tail seventy million miles long, and started to move away toward the dark void of interplanetary space from where it came.

All this started through the effort of one amateur astronomer who, with a little enthusiasm, quite a bit more patience, lots of warm clothes and an eight-inch telescope, has since found several comets.

Although there are several modes of comet hunting, the type that is the most challenging, and in my opinion, the most fun, is the telescopic comet hunt. Point your fairly short focus telescope at any area of the sky. Looking through the eyepiece you check the field of view for any fuzzy object. After a five second gaze you move on to the next field, and to the one after that. Sooner or later a little spot of haze will enter your field and you must then refer to a star atlas to locate the precise position of the object you see. In almost every case something will be shown there, for the sky is full of galaxies, star clusters, and nebulae (gas and dust clouds) which are thousands of light years from us. In a telescope, however, a comet bears a strong resemblance to these masqueraders. Luck and perseverance will one night bring you an object that does not belong, and, before panicking, make sure of the position, and see if there is any motion. If there is, panic. The Smithsonian Astrophysical Observatory in Cambridge, should however, know the reason of your unusual psychological state, in the form of a telegram stating all the information about your new object. The observatory will try to confirm your discovery of it; and if it succeeds, the comet will be named after you; otherwise you try harder next time.

Comet hunting has attracted the fancies of many men, including William Brooks, who, in the late 19th Century, hunted in his yard with a nine-inch refractor and picked up over twenty comets; Charles Messier, better known for his "non-comets"; Leslie C, Peltier, who between 1925 and 1954 gathered twelve comets and an assortment of novae; and David H. Levy, who between 1965 and 1970 has found nothing - absolutely nothing (*in 1984, David discovered his first comet - Ed*).

How long should you count on hunting before a little comet hails you? A rough average is 400 hours for your first comet and 200 hours for each subsequent comet (almost like using a parking lot, isn't it?). But you could go on almost forever without any luck. Or to be more optimistic, you could have the luck of Alcock, who found two comets within a week, or Brooks, who dared to discover three comets in five weeks.

How can we justify these many hours at the eyepiece in a seemingly hopeless search? Leslie Peltier (Starlight Nights, 1965) rationalizes it this way:

Time has not lessened the age-old allure of the comets. In

some ways, their mystery has only deepened with the years. At each return a comet brings with it questions which were asked when it was here before, and as it rounds the sun and backs away toward the long, slow, night of its aphelion, it leaves behind with us those questions, still unanswered.

To hunt a speck of moving haze may seem a strange pursuit, but even through we fail the search is still rewarding, for in no better way can we come face to face, night after night, with such a wealth of riches as old Croesus never dreamed of. Ω

Astronomy for Everyone

by Dr. Murray Cunningham
Honorary President

Reprinted from *Nova Notes*
(Vol. 16, Issue 2, July/Aug 1985)

Editor's Note (Pat Kelly in 1985): The following is a condensed version of the talk that Dr. Cunningham gave at this year's (1985) annual banquet at which time he was welcomed as our new Honorary President.

In December 1949, the *Halifax Astronomical Society* wrote to the Chicago Tribune, of all places, asking for the use of a piece of land at Geiser's Hill. The Chicago Tribune allowed the local society to use it and it was used as an observing site for several years. In the January/February 1956 newsletter a record of the presidents of the Halifax astronomical group was given. The first official meeting was held in the Board of Trade Building in October 1951. It was then known as the *Halifax Astronomical Society* at a subsequent meeting. Presidents of the society were: M. H. Goodwin, 1951-1952; A. H. MacMillan, 1952-1953; and B. J. Edwards, 1953-1954. Presidents since becoming the *Halifax Centre of the RASC* were: B. J. Edwards, 1954-1955, and James Paul, 1955-1956. Father W. M. Burke-Gaffney was elected honorary president at the first official meeting in 1951.

Don Crowdis was a senior person in the Nova Scotia Museum at this time. I am not sure what his training was but he certainly looked after the obtaining and installation of the planetarium. He put me in touch with the Nova Scotia Archives for the minutes of the old scientific societies in Nova Scotia. These make for most interesting reading. For several years the secretary was Joseph Howe, and the records are all in his handwriting. The details of any of the talks on astronomy, however, are completely lacking. It just says that someone gave a talk on astronomy but not what they said. There is a mine of further information to be obtained from the archives if anyone would like to dig it out.

In September 1955, the newsletter was known as the *Star Gazer*. A letter which was dated from the summer of that year from Dr. R. M. Petrie to Mr. B. J. Edwards announced that at a recent meeting of the general council it was learned that a Centre of the *Royal Astronomical Society* had been organized in Halifax, and this would now be known as the *Halifax Centre of the Royal Astronomical Society*. The next issue of the *Star Gazer* was December 1955 and now there was a new executive. The president was James Paul, first vice-president Major C. A. Anderson, second vice-president M. H. Goodwin, secretary Basil Nowe, librarian Dr. W. A. Bridgeo and the council members were Henry Shae, B. J. Edwards, G. W. G. Allen, R. L. Baglole and W. F. Dawson.

Also in September, a four man delegation from the *Halifax Centre* visited the Wolfville Observatory. This was on a ridge up behind Acadia University. It contained a six inch refractor that was manually driven. The observatory had not been used for approximately 25 years but could easily be put back into commission. The original observatory there had been instituted 80 years ago but all that remained of it was the telescope; the original building having been destroyed by fire. The person that gave the tour was Dr. Noble of Acadia University while Mr. G. Briers, James Paul, and Milton Goodwin were the others on the tour.

On December 7th, 1955 there was a preview showing of the new Spitz Planetarium in the Nova Scotia Museum of Science. Don Crowdis was very influential in getting this planetarium, the first in Canada!

Father Burke-Gaffney gave a talk on interstellar matter at the March 1956 meeting. The next meeting in April, was the first regular meeting to be held in the Nova Scotia Museum with the main part of the evening devoted to a second demonstration of the planetarium. Much of the business was conducted by Don Crowdis, who pointed out the advantages of moving into the museum as a regular venue so that the museum could help the society and vice-versa. It appeared about this time that dues were not being collected all that readily.

Volume II, No. 3 of the *Star Gazer* gives a review of the meetings held in May and June, the autumn session was open to all, and finally a plea from Mr. M. H. Goodwin for everyone to dig in and help the society. It seemed to be a low ebb, as this was the last issue of the *Star Gazer*.

I think that I am the only one remaining from the original *RASC* group here, but I think that the following shows where it was and how it ran. The meetings were held in the centre of the planetarium. After the address and the business at hand, the projector was wheeled out to the centre of the floor and Mr. John Hault ran the planetarium show. Now this is what divides the real astronomers from the rest of us.

He ran the show with a slow dimming of the lights and the birds chirping and you could see the outline of St. Mary's Basilica, St. Matthew's Church and between them, the old Capitol Theatre and then up Spring Garden Road to the few buildings that were visible then. The whole Halifax skyline was apparent as the sun set and the stars came out. John Hault could talk up a really inspiring show. Let me recommend to all of you to go to the planetarium sometime and see if you can run it. I assure you that I could not. I did it three times and

stumbled over my words. I could not distinguish Alderbaran and Arcturus and I made a mistake of calling galaxies constellations, and other such things, trying to make the whole thing lively and amusing, but really bungling the whole show.

Our observing sessions in the early astronomical society consisted mostly of going out to the neighbourhood of Lt. Commander Mary King's residence in Ferguson's Cove. This was a desolate slum in those days, except for Mary King's splendid little house. For the most part, it was on par with Africville - little shacks perched on the rocks and the water supply being a little stream that ran down the hill to the sea - but it was dark and we would go there after sunset, and walk up a little trail to York Redoubt. We didn't know it was York Redoubt in those days. It was just a little summit with a wall and there was one remaining cannon still in place on the wall, which was very rusty. But when it got cool and we wanted to warm up, we could move the large cannon from side to side and up and down, though it certainly couldn't have been fired.

I can't recall us having any astronomical instruments. Although the big brass 3.5 inch telescope was available to us, we never took it on any expeditions. There were some with binoculars, though I think that they were mostly young people. The skies were magnificently dark. There were no satellites in those days and mark this, there was only one blemish on the entire skyscape. It was the flame at the top of the tower at the Imperial oil refinery way across the harbour. It was so bright that you had to shield your eyes from it. After our observing sessions, we usually rambled down the hill to Mary King's house where we would drink cocoa and have some cookies.

Dr. R. L. Akin was my senior in the *RASC* in those days. I think he was either President or Secretary at one time or another and I think he gave us a talk but I have forgotten the subject matter. Certainly Mary King was quite active in those days as she had been making many observations of occultations and became so well known for it that Halifax became one of the standard viewing stations. She also gave a splendid talk on Easter Island and it was while on this expedition that she obtained a Questar, which in those days was a remarkably good instrument. The last time I talked to her on any astronomical matter was after she had watched Comet Kohoutek in the early pre-dawn sky and she described to me how spectacular it was. Certainly her house would have had a magnificent dawn view of it.

What leads to the decline and fall of such a splendid organization as an astronomical society? I had only arrived in Halifax in 1961. Barry Matthews and John Hault were active in the society as well as Dr. Bob Akin. I think Mary King came frequently, too, but I can't recall any of the names of the lecturers. Towards, 1966, the only the only think that happened was a demonstration of the planetarium by John Hault and then the society folded. What our relationship with the *Royal Astronomical Society* was at the time, I don't know, but somehow we owed them $250 and I have no explanation of where that went.

There were four intervening years during which the Burke-Gaffney Observatory and the Saint Mary's University astronomy department became well established and on September 18th, 1970, the newly revived *Halifax Centre of the Royal Astronomical Society* was convened.

The organizer, Barry Matthews was elected chairman while Peter MacGuigan was secretary-treasurer. at the second meeting Dr. Roy Bishop spoke on telescope optics and everything was off to a good start. On November 20th, we had a visitor from Dalhousie, Dr. Robert MacCorkell, who spoke on the origin of the planets. On October 23rd, 1970, the headline in the newspaper read "Will name proposed observatory for Jesuit, Governors agree unanimously". And so, the "Father Michael Burke-Gaffney Observatory" will be built on top of the new residence building when it is finished.

From there on the newsletter became *Nova Notes* which it has remained to this day. The person that succeeded Barry Matthews was John Shaw. The vice-president and co-ordinator was Walter Zukauskus. A most notable meeting at that time was in December of 1970 when by David Levy talked on comet hunting. David was a distinguished member of the early second *Halifax Centre* and was a student of English at Acadia University. Roy Bishop must have been one of his science professors. Along with Sherman Williams, an elementary school teacher in the valley, these people became the valley spearheads for the new *Halifax Centre*. Certainly David Levy gave some notable addresses including "Astronomy with Children". Although David started out as an English major, he is now a very respected astronomer. He spoke well on comet searches and he has searched patiently for years and finally found one late last year, Comet Levy-Rudenko.

The first General Assembly of the *RASC* held in Halifax was in 1975. I believe that I exhibited my stamp collection of Copernicus stamps then. The collection is now in the stairway leading up to the Burke-Gaffney Observatory. We had the general assembly again very soon after in 1980. This was the first joint meeting of the *RASC* and *CASCA*. That general assembly, I think, was a most notable success as it was so much larger than any of the previous ones. This was a time when amateurs and professionals could talk together. The model of the Canada-France-Hawaii telescope was a great hit and I think that my model of Stonehenge was also well appreciated. Bob Levy was there with his car license, CYG-433, which of course. is this monstrous phenomenon in the sky which we haven't really explained yet. Helen Hogg was marvelous at this assembly.

Despite the faltering start, it is clear that the *Halifax Centre* is well on its way in its goal of providing astronomy for everyone! Ω

Nova East '93:
by Doug Pitcairn

Well we have done it, we've established a permanent star party for the Atlantic Canadian area. *Nova East* is now past that "push it till it rolls" stage and is developing a bit of momentum of its own. It is praised for its location, and its informality, and perhaps someday for its tradition... If you would like to see what its all about, why not check it out this year? *Nova East* occurs in Fundy National Park in New Brunswick every summer. This year, it is on the weekend of Friday, August 20th to Monday, August 23. There is an optional registration of $10 per astronomer which includes camping fees and door prizes. When entering the park, obtain a map from the information booth and head for the Micmac Group Campsite. For those of you who are not "campers", there are motel units both inside the park and in the neighbouring village of Alma, but you must book ahead.

Those of you that have already been there know that a star party is the best place to meet others who share your interest. Especially you rural members who don't make it in to meetings very much. I invite you all to come and make this the best *Nova East* ever. People wanting more detailed information should contact me at my home address or call me at work. See you there! Ω

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The Winter Star Party:
by Greg Palman and David Lane

Nirvana, Utopia, Valhalla. All of the foregoing refer to places offering the perfect social and political system or a paradisiacal life for the souls lucky enough to be admitted. Nice to read about but just myth. Or are they? I just returned from a trip to Southern Florida and the *Winter Star Party*, the likes of which I have not experienced before. If those mythical places were ever to exist in reality, the *Winter Star Party* is definitely the pattern that would be followed when creating them. It's the amateur astronomers Valhalla, where the weary souls of beleaguered Northern observers bravely fallen in battle at the feet of Old Man Winter, feast at the eyepiece in total comfort.

This year's event was the 9th rendering of the ever popular observers gathering. Held on West Summerland Key on the grounds of Camp Wesumkey, February 15 through the 20th and sponsored by the *Southern Cross Astronomical Society* of Miami, it attracted upwards of 550 people and their gear. The 12 or so acres of land is an idyllic site. It borders the ocean on the south thereby offering an unobstructed view of several constellations we see only low to the horizon or not at all. It offers reasonably dark skies in that direction and overhead, has excellent tenting and cabin (called Chickees down in Seminole country) facilities, as well as ample meeting halls for lectures and commercial vendors. A second floor dining facility was run by a local restaurateur. They provided excellent, albeit somewhat overpriced, meals featuring lots of local culinary treats ... such as dolphin (not Flipper!), grouper and plenty of BBQ. But enough of the main course, what about desert?

I arrived Monday a little after 2 p.m. A quick walk through the efficient registration line took care of cabin assignment formalities. After buying the obligatory T-shirt or two I unpacked and they went scouting for telescope space before the main body of attendees arrived. Half way down the drive I noted several refractors set up about forty feet from the ocean's edge and nearby to some majestic coconut palms (shade for daytime lounging!). One of the instruments looked familiar ... yes, it is an Astro-Physics! No, they ALL are Astro-Physics tubes. Wow, what a place to be! I found my ground and spent the next half hour setting up my observing gear.

That done, I began a walk around to check out the telescopes. That particularly large refractor turned out to be one of the new 8" f/7.9 ED triplets on the company's new and extremely massive 1200 mount. It was on loan to a gent by the name of Dan Goode from Pennsylvania. He had ordered one two years ago and not yet taken delivery. This one was on loan from Company Seven, a Maryland dealer. It was an impressive looking piece of gear. Motorized on both axes, it also featured digital setting circles and an autoguider interface. And yes, that accessory was on hand too. As a matter of fact, ST-4's where seemingly everywhere. What has ever happened to astrophotography the old fashioned way?

The other A-P's were in the 5" to 6" diameter range, one on a massive Schaefer mount ... a most impressive and rock steady platform. Venturing further on presented me with a view of telescopes and accessories the likes of which I had never seen before. Everything from a 36" dob "yard scope" owned by Tom Clark of Tectron to 5" Takahashi fluorite refractors, all manner of SCT's, homemade Newtonians and dobs in the 12 to 20 inch range, to 100mm binos and several Schmidt cameras. Serious dudes here! The 36" is a massive instrument. It stands 15 feet tall when pointed at the zenith and was serviced by a 12 foot stepladder! Then there were the computers. Not laptops, but full fledged 386 and 486 mini-towers. Some were cabled into nearby telescopes. Running software such as "The_Sky", the owner was able to click a deep sky object on the screen and viola, like a mouse homing in on cheese, the motors would whir and hum the scope right to the thing! This was professional observatory activity I was witnessing here. all from the back of a van. Well at least the reputation of the van is on the mend!

Other units were hooked to new ST-6 imager/guiders, all ready for dark and battle with some obscure NGC, IC, PK or Abell object ... to electronize the photons on disk and ready it for

the image processing software. Wow! Two hours after arriving and I'm drunk on gadgetry. What a feast for the senses!

But, the best is yet to come. There he is. It's Dave Lane. Late as usual, but here nonetheless. After exchanging pleasantries, we decided to get some supper and ready ourselves for what promises to be a great night. Back on the field just ahead of dark, the air is still and warm. Temperature is in the high 60's F. There is Mercury low in the west, framed beautifully by two palm trees. Higher is Venus. At -4.6 mag. it is diamond like in the crystal clear sky. Through my telescope, a 6" refractor, Venus shows it's crescent shape beautifully. The view is as steady as I have seen it in years (you Nova Scotians can commiserate with this Mainer when it comes to less than good seeing for planetary observing...eh?). Nearly overhead (from this + 24.6°N latitude site) is Mars at about -0.5 mag. In my scope the view is incredible. Steady, no atmospheric turbulence to speak of and full of detail. At 300x the north polar cap is readily observable along with Syrtis Major and several lesser features. Although only about 14 arc seconds in diameter, the views are enhanced by the great seeing and the high northern declination of the planet this year. According to the *Observers Handbook* we Northerner's won't have a more favorable opposition until 2003. What a year to go to Southern Florida, renowned for its steady air and good planetary observing. I push the magnification to 425x and the image holds its sharpness. Never before have I been able to do this in Maine. What a night. At midnight I decide to try and capture the Orion Nebula on film...a difficult undertaking for gear prone to freezups in the cold north, not to speak of what happens to the owner. Half way through a 40 minute shot high clouds begin to roll in. My guide star fades and returns, then fades again. I cut the pic short only to be rewarded with clearing. I try again and again the clouds roll in.

I quit in disgust, but my temperament quickly improves when I lean back in my chair and observe the Milky Way high overhead, Jupiter rising in the East, and the whole of the constellation of Centaurus with the Southern Cross nearby in the South. What a sight! I quickly grab my atlas and pinpoint the location of Omega Centauri. Looking up I spy it about 12 degrees above the horizon, a gigantic naked eye object. Through the 6" at 175x many stars are resolved and the cluster fills the field. Incredible. A quick roll-over to Hercules in the northeast yields M13 for comparison. Now our showpiece globular is great, but ... Back to Centaurus. Four degrees north of Omega and there's Centaurus A, the famous radio galaxy. In my scope the dark central dust lane is clearly evident. I could continue on, but I hope this gives you a hint of the experience from this observers perspective. Every other night was clear, some offering even steadier seeing than Monday, others breezy with lesser planetary observing conditions, but crystal clear air for great deep sky observing. Tuesday Jack Newton did three images of M51 through the 8" refractor with an ST-6 and red, green, and blue filters. These can be viewed separately or combined into a color image for processing. I managed to get the owner of the laptop, Steve Pearce from London, Ontario, to copy the disk for me and Dave Lane. Maybe if you're real nice to him, Dave will let you see a Jack Newton original at some point. Now I'll let Dave fill you in on some of the exotica we observed and the scopes used as well as the speakers and programs. Take it away Dave.....

Boy, long winded, isn't he! When I arrived, I set up at dusk and to my horror in the morning - I was surrounded by Astro-Physics refracting telescopes! And all I had was a Tele Vue!

Well, the seeing down there can not be overrated. The views of the planets were outstanding. I have never seen so much detail on Mars and Jupiter. In addition to the refractors, there was a very nice 18" dobsonian telescope nearby, too. Well, actually it was a truss-type newtonian mounted on a d'Autumn equatorial table - sort of like a poncet platform but much more elegant. It was owned by Jupiter Telescopes of Jupiter, Florida (yes, he lives on Saturn Street!). This telescope was the best scope there, in my opinion. Highly recommended!

It was computerized with one of those digital setting circle gadgets which made finding objects down there in unfamiliar skies a treat. Best of all, the owner would often wander off and say as he was leaving: "Go ahead and use the scope if you want." Well, he was not even out of sight when Greg and I would commandeer the helm, in search of the "real" deep southern sky. We would pick out a *Sky Atlas 2000.0* chart and attempt to see all the objects on the chart - what fun!

But the highlight of this telescope was its planetary views - full aperture! The view of Jupiter on one night was absolutely outstanding. Who needs Voyager II!

I also tried some astrophotography and had some good success. I obtained nice frames of the Rosette Nebula and the Horsehead. Using another nearby large telescope (a 20"), we could actually see the Horsehead Nebula, and with the Lumicon H-Beta filter it was easy to see!

I got a good picture of the "globulus maximus" Omega Centauri globular cluster, considering my telescope's short focal length (500mm). I also was able to capture the famous southern galaxy NGC-5128. But enough about the after-dark activities and on to the day events.

There were high quality talks every afternoon for four hours! There were talks on observing, sketching, astro-photography, ccd imaging, and so on. Speakers ranged from Stephen James O'Meara from *Sky and Telescope* who showed slides of his trip to Pic du Midi Observatory in France (see his article in a recent S&T) to Donald Parker, who showed the work that he has been doing photographing the planets. Don Parker's work is truly remarkable. I used to be skeptical when I saw those highly processed images of Mars or Jupiter in the pages of *Sky and Telescope*, but after seeing more

samples of his work, I was convinced! He can actually detect the clouds that trail off the mountains on Mars! And he easily shows the rotation of Mars using sequences of images taking sequentially.

Jack Newton of the Victoria Centre showed examples of the absolutely amazing work that he has been doing in True-Colour CCD Imaging. He will be giving at paper at the GA, which will be on this very topic.

There were also lots of door prizes donated from vendors. Roy Bishop, who was also an attendee, donated some Handbooks, too.

Well, this issue of *Nova Notes* is busting at the seams, so I'd better stop here. Greg and I (and probably Roy) will be doing a slide show at *Nova East*. The big question is: will I be back next year - you bet, it was the most fun I have ever had! Ω

Messier Marathon # 1:
by Paul Gray

It was that time of year again, when the Moon is out of the way and the Sun is placed so that you can see all of the list of Messier objects on a single night. Well, after trying it in 1989 with some fellow observers in Digby, Dave Lane and I decided to try it from our Beaverbank observing site. The observing window was from March 19th to April 4th.

Our first real attempt this year was planned for the 18th. The weather outlook on the evening of the 19th was clear and sunny for Saturday. We decided that we should take this early chance and try it, but this is where we faced our first problem. The night of the 19th was also the monthly meeting of our centre and the guest speaker was our National President! It was decided that it would not be proper for two executive members to not show up for this meeting, so we thought we would attempt to observe all the objects during a 24 hour period, rather than the traditional "all in one night" session.

We left the meeting early enough to be at the observing site and ready to begin observing at midnight. We would then observe until dawn and hope that Saturday evening would be clear, so that we could observe the evening objects before midnight on Saturday. It sounds good, but it doesn't always go as planned.

After leaving the meeting at 22:30, we stopped first for food at "The Golden Arches", also known as Casseopia! And then at "Tims" for a "fill-er-up" on hot-chocolate to go. Darren Talbot, a Toronto member now living in Port Hawkesbury also joined us for the first part of our session. We arrived at the site and were set up to observe by 00:08. We started to observe and at 00:09 we located our first object, M40. From there until 1:38 things rolled along quite well with us logging the last of the spring galaxies, M49. At this time, we decided to try to find Pluto. It was actually quite easy and was found by 02:00. This was part of a plan to try to observe all the planets that night, too, but that was not to be. We did observe Venus, Mars, Earth, Jupiter, and Pluto, however.

A little after 2am we decided to take a break by taking all necessary gear down to the car and heading off to the Tim Horton's in Sackville. Upon sitting down, we flipped through our guide book to realize that at this time "you can now take a SHORT break, but not too long for you should begin the morning sky by 2:30." Ooppps!

Upon arriving back at the site at 2:55, Dave located the next object, while I went to light my little camping stove to provide a small source of heat for the few remaining hours. Well, for the first time, my trusty little "Peak 1" stove would not light! I then realized how cold it was out. I have used this stove in -16°C weather before with no problems, but it happened to be -19°C at the airport that night! If there had been any wind at all, we would not have lasted this long.

So, we just kept hopping along from 3:03 when we found M5 to 4:47 when we located M2. Now, we had all but 5 objects and we believe we could have "bagged" three more, but due to the cold and the long night, we made a bad judgment and gave up in the hope that Saturday evening would be clear so that we could come back and get 40 or so easy evening objects. Our total count was 81 objects.

I have a part time job, being a student, and had to be at work for 9am (yes, only four hours from now!) until 3pm in the afternoon! As the day passed on Saturday, the weather got worse and worse, which ended our plans of completing the list that evening. This night does, however, solidify one known fact: Its ALWAYS clear on *RASC* meeting night during new Moon! Ω

Messier Marathon # 2 Went With a Hitch!
by David Lane

Tuesday night (March 23), Paul and I again tried the Messier Marathon. We were prepared to devote the whole night this time. We planned to observe the fall through spring objects in the evening, go home, and come back in early morning to complete the summer objects. We arrived at about 7pm at Beaverbank, with my 13" scope in tow. Mary Lou was also to show up soon. as was Blair MacDonald. As soon as α and β Arietis became visible I began searching for M74 in the twilight. After about 10 minutes or so, it was visible in the eyepiece. Paul had a look, then proceeded to go sliding in the snow down one of the nearby hills. Mary Lou had brought a sled to transport her telescope. By the time they had returned, I had found M77. These two were supposed to be the hardest to see, but M33 took longer to find. It was quite diffuse in the twilight, so we nabbed M31, 32, and 110 and the globular in Lepus, M79. We returned to M33 to finally find it at 1 minute to eight.

The next lot of 20 objects were easy; most were spotted in binoculars. These ranged from the planetary M76 (probably the most difficult), to the Auriga clusters (M36,37, & 38), and the Orion Nebula (M42). The time is now 8:18pm. The spring galaxies are now before us, but first the double star M40 was nabbed. I swept it up quickly,

because I was familiar with the star patterns used to find it. Paul found the next 5 objects in Ursa Major; M109, M97 (the owl), and M108 in the same field, and the pair M81/82. I then found M51 ... and so on until Paul found the Blackeye Galaxy (M64) in Coma. It is now 8:39pm; boy is this going fast! We have already observed 48 objects! Look out *GAZER*!

The dreaded Virgo Cluster was next. We had gotten momentarily lost in there on Friday night, but this time it proved easy. In less than 20 minutes, the 14 galaxies in the core of the cluster were observed. Paul then proceeded south to find M49 and M61. And the I hopped up from Corvus to find M104. It is now 9:01pm and we have covered an entire hemisphere of sky. We then tried to see M68 below Corvus, but could not convince ourselves that it was there. But then again, the tree-tops were in the same telescopic field!

The mirror cell and eyepieces were taken down to the car (the rest of the scope was left set up - who would want to steal some old plywood!). We said good-bye to our observing companions and drove off to Paul's place to return at about 3am to observe the rest of the sky. This was not to be, however, since the sky was completely "socked" in at 3am, so no observing could be done at all. But, we had to drive out to Beaverbank anyway to pick up the scope. There was a small band of clear sky overhead, but the south and north were completely clouded.

The total count for the evening was 65 objects. This works out to one object every 1.5 minutes of observing. When adding in the non-duplicated objects from Friday's expedition, the total would have been 105, and I'm confident that if the weather had permitted, the number obtainable that night would have been, 107 or 108. The question is do we **ever** get 24 hours (or even 12 hours, except meeting night!) of clear sky in Nova Scotia? This may be the real limiting factor in completing a Messier Marathon from Nova Scotia!

To conclude, it was a lot of fun, very tiring, but it definitely improved my star hopping skills. It was also great to be able to compare so many of Messier's Nebulae in one evening. Ω

Athena Messier Marathon:

by Bill Thurlow, Observing Chair Athena Club

On Tuesday, March 23, 1993 (new Moon), the *Athena Community Astronomy Club* of Summerside, PEI, held a Messier Marathon at Chris Jette's place at Rice Point. Ten members observed in the evening and four of these stayed up for the entire night. The all-nighters were Chris Jette, Jim Bennett, Rollie Chaisson, and Bill Thurlow. Although the night looked clear, the unaided visual magnitude was only 5.8, probably related to the overhead jet stream. Almost everyone had binoculars to go with the three telescopes: 17.5" dobsonian reflector, a Celestron C-8, and the Athena Club's 8" home made dobsonian reflector.

The session started well with M74, M77, and M33 identified successfully. What followed was easier for a few hours. A particular delight was showing some of the less experienced members the planetary nebula within M46. M102 overhead was easier than usual following a tour of the late fall and winter objects followed by Leo's 5 and Ursa Major's 7 objects. M3, M53, M68, and the spring galaxies followed although M83 was difficult with haze on the horizon. After a warmth and nutrition break, many globular clusters were seen. Unfortuneately, eastern and southern clouds entered and M62 could not been seen although M19 was above the haze line. M4 and M80 were just barely sighted with the 17.5" dobsonian. M29, M39, M11, and M26 were above the cloud line. Then attention turned to sighting M6, M7, M8, M20, M21, M22, M28, M23, M18, M17, M16, and M25. M71 was seen, but by this time M27 was hazed out! In spite of waiting till dawn, the situation did not improve and we had to be satisfied with only 98 Messier objects when we had planned to catch 109 (M30 is too close to the Sun at this latitude on this date). Bill T. found all 98. with all eyes viewing every object sighted through the big scope. Others found a majority of objects in addition to viewing through the 17.5". All loved the session and were happy with the experience. Ω

Meeting Report March 92:
by David Turner

The March 19th meeting of the *Centre* followed the area's 10th "severe winter storm" in the previous 5 weeks, some sort of local record I'm sure. The storm at least provided one possible excuse for the restrained attendance of about 35 starry-eyed members, some of whom were anxious for the meeting to end so that the planned Messier Marathon and planet hunt could begin in earnest.

Pat Kelly started the meeting a bit late with only a few notices to announce. This was followed by Paul Gray's observing report, which naturally emphasized the Messier hunt. His remarks on the visibility of Venus drew a few of the usual snarky comments from the audience, including some from myself as well as from observing chairman-turned-newsletter-editor Dave "Venus-Who?" Lane. Shawn Mitchell was then called upon to introduce his transformed Scorpius-Homarus T-shirt design (the constellation Scorpius as a lobster, for the uninitiated) which is intended as a hot-selling item for the July GA, and was followed by Mary Lou searching for a volunteer speaker for a junket in Hubbards. Such moments are always enlightening, since they give members a better appreciation for the enormous amount of unrecognized work that Mary Lou does for the *Centre*.

RASC President Peter Broughton was then formally introduced by Pat in somewhat mischievous fashion, since the first item of business was the notification of the awarding of an *RASC* Service Award to Dave Tindall and the Chant Medal to Mary Lou Whitehorne. This involved semi-official presentations by Peter, accompanied by descriptions of how the nominations for both awards were handled surreptitiously so that the recipients could be kept "in the dark" (if you will pardon the expression). Peter then gave a talk on "What is the *RASC*?", which involved a brief discussion of the early history of the *RASC* , from its beginnings in 1868 as the *Toronto Astronomical Club*, its charter in 1890, and its renaming in 1905. The various periods of the *RASC*'s history marked by the completion of the Dominion Observatory in 1905 to the founding of the professional organization — the *Canadian Astronomical Society* — in 1970 were illustrated with photographs from these earlier eras. Much of the talk highlighted the events of the last 50 years or so, during which the *RASC* underwent a metamorphosis from an organization dominated by professionals to one in which amateurs play a stronger role. The talk ended with a somewhat unexpected open discussion with the audience of the role of the *RASC*, which allowed several points of view to be aired. The inevitable motherhood discussion on the *RASC* Journal and its production costs proved to be the most interesting.

From a personal point of view, I found Peter's selection of old pictures of friends and colleagues (some now deceased) in their younger days to be most refreshing. However, I can also appreciate that this type of presentation may have been anathema to many of the younger members. Memories of Mary Grey's marathon talk on the Dominion Observatory from a few years ago were quick to surface. However, Peter quite capably kept his dialogue to a minimum and reached the interactive portion of his presentation fairly quickly. Ω

Constellation of the Month: Cygnus
by Joe Yurchesyn

The identification of Cygnus with some sort of bird, although not necessarily a swan, was quite common in the ancient world. It has been associated with an eagle, a hen, a partridge, and a pigeon, and in fact Alpha Cygni's name Deneb comes from the Arabic *Al Dhanab al Dajajah*, "The Hen's Tail". [*Note: Other Deneb's are also found, such as Denebola for Beta Leonis and Deneb Kaitos for Beta Ceti.*]

For northern observers, Cygnus's northern declination means that it sets in the early evening at the beginning of winter and rises in the early evening by late winter. As such, it is visible for most of the year and is better placed than Sagittarius through out the summer observing period. Unfortunately, Cygnus does not have the quantity of nebulae present in Sagittarius. In more southern latitudes Sagittarius really dominates.

Cygnus is a large constellation dominated by five 1st, and 2nd magnitude stars forming a large cross shaped asterism. Straddling the summer Milky Way, Cygnus is positioned between Cassiopeia and Aquila and is surrounded by the small constellations Sagitta, Delphinus, Vulpecula, and Lyra and the larger constellations Lacerta, Cepheus, Draco, Hercules, Aquila, and Pegasus. The Cygnus asterism is more easily recognized under bright sky conditions. This is because the brighter stars are widely spaced and the multitude of background Milky Way stars overwhelms them, causing the asterism to become somewhat indistinct. Deep sky objects associated with the plane of the Milky Way, such as star clusters, nebulae, and planetaries are present in profuse number, but only two Messier objects (M29 & M39) are found in Cygnus. Due to competition from numerous Deep Sky objects present in other parts of the summer sky, only the two Messiers and the North American (NGC-7000) and Veil (NGC-6992) nebulae attract the much attention. *[See "Deep Sky", Issue #7 (Summer 1984, pp. 7-15, "Summer's Swan Song") for more details on the Cygnus star clusters.]*

At a distance of 1,600 ly's, a computed luminosity of 60,000 suns, and a mass of 25 suns, Deneb is one of the greatest supergiant stars known. Among the 1st magnitude stars, it is equalled only by Rigel. Our sun viewed from the same distance would be a paultry magnitude 13.3. It is estimated that an A-type star requires 20,000 years to evolve to a type M red-giant, with a consequential change in temperature of 0.3°K/year. Such a steady drop in temperature should produce measurable changes in the

spectrum over a period of time of less than 100 years. As one of the most luminous supergiant stars known, Deneb's spectra has been examined in an attempt to detect such evolution induced changes. However, a study of spectra obtained between 1887 and 1964 seemed to indicate a change only attributable to atmospheric activity and not to stellar evolution.

Three degrees to the east of Deneb lies the North American Nebula (NGC-7000), and lying in the Sargaso Sea area is the fainter Pelican Nebula (IC-5067). About 1½° south is a detached section (IC-5068), which would correspond to the Caribbean coast of South America. With the exception of a missing Hudson's Bay, it is a good likeness. The most remarkable area is the "Mexico-Central America" region, where bright and dark masses meet; producing a striking effect on high resolution photographs. In addition, IC-5067 & 5068 appear to be composed of faint wisps and streamers. At an estimated distance of 1,600 ly's, the nebula would be 45 ly's in diameter and 70 ly's distant from Deneb, probably its chief source of illumination.

A further 6° northeast of the North American Nebula and about 800 ly's distant is M39 (NGC-7092). It is a large sparse group, easily found in binoculars, and as such, does not provide a very good telescope view. Discovery is credited to Le Gentil in 1750, but it may have been noticed by Aristotle as a comet like object in 325 BC. Some 30 stars are accepted as being cluster members. They are all main sequence stars, and the few brightest appear to be beginning their evolution toward the giant stage.

The intersection of the two arms of the cross is marked by Gamma Cygni. Located about 1.7° south southeast of Gamma lies M29 (NGC-6913). It is 7,200 ly's distant, and may be obscured by up to three magnitudes due to the intervening dust. It could be a rather striking object, if viewed "in the clear".

Marking the head of the swan is Beta Cygni, also named Albireo. This name is probably a mistranslation of the term *ab ireo* in the 1515 edition of Ptolemy's *Almagest*; the original Arabic name being *Al Minhar al Dajajah*, the "Hen's Beak". Albireo is the most beautiful double star in the sky for a small telescope. There is an easy 34.3" separation between the golden yellow primary and sapphire blue companion. It is believed to be a physical pair even though orbital motion has not been detected since the first recorded observation in 1832. At an estimated distance of 410 ly's, the actual separation is 4,400 AU (400 billion miles), and 55 solar systems could be lined up edge to edge across the gap.

Between Albireo and Gamma lies the great *Cygnus Star Cloud*, a superb region for study with binoculars or a small telescope. It is a portion of one of the spiral arms of our galaxy, lying some 7,000 ly's distant. Cygnus also marks the beginning of the belt of dark dust clouds, known as the *Great Rift*. It runs all the way to Centaurus and splits the Milky Way into two parallel streams. The obscuring clouds lie at an average distance of 4-5,000 ly's.

Centred about 1° east-northeast of 52 Cygni is the Veil Nebula, a very old supernova remnant. It is composed of two bright arc segments, NGC-6960 & 6992. NGC-6960, the fainter of the two, actually lies in the field of 52 Cygni, which is a foreground object. It was discovered by William Herschel in 1784 with an 18" reflector, but the brightest portions are reported to be faintly visible in 7x50 binoculars. It is an easy object in a 6" telescope under dark skies. The Veil is estimated to be 1,500 ly's distant, making it 70 ly's in diameter. Based on the maximum present rate of expansion of 45 mi/sec, the cloud would have required 150,000 years to attain its present size. However, it is almost certain that the initial velocity of expansion was greater than 1,000 mi/sec, so this age represents an upper limit. There is no doubt that the Veil is expanding into a dusty region, and sweeping up interstellar material as it goes. The sky within the loop is noticeable clearer than that outside, as evidenced by the number of faint stars visible in the two regions. The nebula shines by fluorescence light, requiring a star to excite it. However, a candidate star has not been found to date. The fine filamentary structure also remains a mystery. It may be thin sheets of gas, seen edge-on, that are too faint to be seen face-on.

The second strongest radio source in the sky is located in Cygnus and is designated *Cygnus A*. Despite its radio brightness, the optical object that appears at that position (5° west of Gamma) appears as two fuzzy 18th magnitude smudges 2" apart. From their spectra, it is thought that the image is that of a direct collision of two giant galaxies, some 500-700 million ly's distant. Another possibility is that the object is a single galaxy with a dark central band, similar to NGC-5128 in Centaurus. This idea is supported by the fact that the radio emissions are from two large invisible lobes about 100" apart and on either side of the optical object, also similar to NGC-5128.

Cygnus is also the home of a strong X-ray source that varies in intensity on a time scale of less than 50 ms, suggesting a gravitationally collapsed object. It coincides with a 9th magnitude star ½° east northeast of Eta Cygni. This star is a very hot and luminous B0-type supergiant with a surface temperature of 30,000°K, a mass 20-30 suns, and lying some 6,500-8,000 ly's distant. It is also a single-line spectroscopic binary. The unseen companion seems to have a mass of at least 10 suns (more likely 15 to 20) and the rapid X-ray fluctuations imply a very small size (less than 100 mi). The mass is larger than that thought possible for a white dwarf or a neutron star, so the most likely interpretation is that the object is indeed a *Black Hole*. Surprisingly, the concept of an object with an escape velocity greater than the speed of light, which would of course be invisible, was first postulated in 1798 by Pierre Laplace!

Just a little something to ponder, when you next gaze in the direction of Cygnus. Now?... If I could just figure out how to image "Cygnus A" in radio waves.Ω

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Notice of Meetings and Events

Date:	**Regular Meeting - Friday, June 18th: 8:00pm**; 7:00pm for the executive meeting (all welcome).
Place:	Lower Theatre, Nova Scotia Museum, Summer Street, Halifax. Access is from the museum parking lot.
Topic:	**"Annual Members Night"** This is your chance to tell us all about your astronomical projects that you have been up to over the last year. Note that there will be no trivia contest this year because we are have a "Reach for the Stars" game at the General Assembly.
Date:	**"The General Assembly"** July 1st to 6th.
Place:	Mount Saint Vincent University, Halifax, Nova Scotia.
Details:	If it past the registration deadline now, but if you have not registered you may still be able to participate in some of the events. Call David Lane for information (443-5989).
Date:	**Public Lecture- Tuesday, July 6th: 8pm.**
Place:	Beverage Arts Centre, Room 244, Acadia University Wolfville, Nova Scotia
Details:	David Levy, renowned observational astronomer, will be speaking on the subject of: "Terrible Swift Swords: The Perils and Pleasures of Comets".
Date:	**"Nova East '93"** August 20th to 23rd.
Place:	Fundy National Park, New Brunswick
Details:	See the article in this issue of *Nova Notes*.

Halifax Planetarium Shows

The Halifax Planetarium, located in the Dunn Building at Dalhousie University, provides shows each week in June on Thursday evenings at 7pm. There will be no public shows during the months of July and August. Contact the *Nova Scotia Museum* at 424-7391 for show information.

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