HAMILTON AMATEUR ASTRONOMERS

Event Horizon

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Editorial

Now that the holidays are out of the way, we can once again get down to some serious astronomy. If only the clouds would now move out of the way. Even if the clouds hang around for a while, we seem to have quite a full calendar of events unfolding this month. In my own bias opinion, I find it wonderful that Hamilton has two thriving astronomy clubs for me to enjoy. I realized this while I was assembling the current calendar of events. Between the two clubs, we have quite an impressive line up of educational meetings. It covers a wide spectrum of activities associated with the hobby. I love it.

Like magic, as the clouds started disappearing in the past little while, the temperature began plummeting to record lows. Yet still, a few crazy astronomers braved the weather and stole exquisite glimpses of the heavens.

As we all have fun at our meetings and observing sessions, we should remember that our Public Education Director, Grant Dixon is still busy giving regular planetarium shows on behalf of the club and keeping our bank account nicely padded.

Thanks to everyone for making a great newsletter and I hope we have inspired some other members to let us in on their astronomical experiences.

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HAMILTON AMATEUR ASTRONOMERS

Chair's Report

Happy New Year! I hope your holiday was filled with joy, and that you have a delightful 1995!

I want to take this opportunity to thank you all for your friendship and support over the past year, and especially for your concern over my Mom. She is back at home, after WOWING everyone at the hospital ("Oh, no, I'm someone else's doctor ... I just wanted to see the feisty little lady that everyone is talking about!"). I suspect she will be listed in the annals of folk heroes, having made an absolutely astounding recovery. We're all very proud of her.

As it turns out, I'm not the only club member who has had an exciting Christmas. **Stewart Attlesley** has been inundated with proposals of marriage (and related activities) since he announced that he and Santa had collaborated on the delivery of a 20" Obsession. Well done, Stewart! I'm not the sort of person to offer **my** body in exchange for a peek through the eyepiece, but I am willing to bake for you! No? How about my next child?

On the down side, I have received reports of a strange *malaise* running amok amongst the *intelligentsia* of the HAA. It seems the symptoms include counting the days near the Winter Solstice, and a predilection for standing raw eggs on their ends .... So far, those afflicted include **Ann Tekatch** and **Bob Botts**. May I extend my condolences to these poor wretches, and wish them a speedy recovery. I might add here, however, that eggs will stand on their ends at Perihelion, too. Not that I would necessarily know this first-hand, of course.

A warning to you all - medical scientists have confirmed that there is a possibility of a return of the affliction at Equinox. Oh, dear.

At this point, with trumpets blazing, I am thrilled to announce that the

Inside This Issue

HAA's **World Wide Web** page went online on December 30, 1994. A beautifully designed hypertext page, it has captured the imaginations of hundreds of people, as documented by the first-day log. In the first 24 hours, callers from corporations such as IBM, Hewlett-Packard, and Atomic Energy Canada, scientific organizations such as NASA, JPL, and USNO, universities such as Cambridge and Oxford, U.K., Berkeley, and M.I.T., and people from Australia, New Zealand, Japan, Sweden, Italy, Germany, South Africa, as well as Canada and the USA, logged on to read what we have to offer. A special thanks is here offered to **Doug Welch**, who masterminded this endeavour, and to his helpers **Stephen Sheeler** and **Richard Petrone**, for a truly magnificent home page!

Now that your appetites are whetted, here is how **YOU** can log on and surf the Internet! The address is "http://www.science.mcmaster.ca/HAA/index.html". The two best software packages to use to gain access are Mosaic and Netscape (I prefer Netscape). The home page allows you to warp to Weather, WWW Amateur Astronomy Resources, Telescope-Making Resources, Observing Resources, Images, Newsletters (ours, of course!), Calendar of Upcoming Events, Membership Application, and By-Laws. As a sampler, when you access the WWW Amateur Astronomy Resources section, you will be connected with computers worldwide, such as JPL and NASA, there to romp amongst photos from the Hubble as well as every major observatory in the world, plus film clips, sound clips, and the latest in scientific data and information. All information (including computer programs, photos as JPEGs, BMPs, GIFs, films as MPEGs, sound as AUs) can be downloaded and manipulated, or simply read onscreen. I have to be careful here, because I am so excited about this new technological marvel that I am capable of drooling and babbling endlessly, but suffice it to say, the whole thing is ***UNBELIEVABLY FANTASTIC!!!*** You have to see it to believe it!

If you don't have the graphics capabilities on your machine to access the Web fully, you have my sincere sympathy. However, you **can** access the text and download the images (some consolation, certainly) using the software package called Lynx.

As a postscript, **Ames Area Amateur Astronomers** are spawning **our** home page on **their** home page (we will be reciprocating). As you can see, your club is marching boldly into the 21st century! For more information, or help in setting up your system, give me a call! I'm happy to assist you.

Now that I've calmed down (a little) ...

First there was the Alamo, and now there is the Texas Star Party assault! A group of HAA members, led by **Doug Welch**, is interested in vanning down to Texas. If you are interested in joining the march, call me (I'm recruiting for Doug). Transport and bivouac costs should be less than $500.

If you like the sound of a Southern USA visit, there is another trip in the works. In the Spring of 1996, the incredibly clear skies and warm hospitality of Arizona beckons. We are in the early planning stages, but at the moment the general plan is to get a group rate on a flight down and then tour the observatories (with a possibility of access to some of the large telescopes). If you are interested, or if you have contacts or suggestions, please let us know. Meanwhile, start saving your pesos!

There you have it! 1995 is well and truly launched, and looks like a winner, with technological triumphs established and great plans for adventure underway. If you want to help with current projects, or have some great ideas for new schemes, call me. A group works best when all the members are involved and happy, and HAA is where it's at!

NEWS FLASH!

Congratulations to **Richard Petrone**, an illustrious member of HAA and RASC, who has been presented with the **W. Fautley Award** for 1994 for his Jupiter project. Most of us are well aware of the excellent strip drawings created by Richard, who compiled the results of a multitude of drawings of Jupiter made by himself and members of the HAA and RASC. This is a fine example of the valuable work that can be done in observational astronomy, and serves as an inspiration to all of us. Thank you, Richard!

Grant Dixon

Did You Know That ...

the most luminous star is one million times brighter than our sun but is invisible to the naked eye.

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the moon moves away from us at about 3 cm per year.

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a black hole the mass of the earth would be the size of a golf ball.

Observe the Moon? Get Serious...

Those of us who think of ourselves as hardened and seasoned observers consider the moon to be an obscenity - a naturally occurring source of filthy light pollution! But, a recent issue (Feb. 1994) of The Strolling Astronomer (the newsletter of the Association of Lunar and Planetary Observers (ALPO)) contains an intriguing paper by David Darling and David Weier entitled "Evidence of an Apparent Dust Levitation or Outgassing in the crater, Tycho". Thinking to myself, "great, not only is it too bright, but now the moon's either haunted or burping. Or maybe it's haunted by burps? Just what did those lunar astronauts eat up there anyway....?", I glanced through the article.

It outlines the re-occurrence of Lunar Transient Phenomena (LTP's for you acronym buffs) associated with the central peak in the crater, Tycho. Apparently, these two lunar observers (lunatics to you deep sky buffs) videotaped a glowing patch around Tycho's central peak at times when the sunset terminator crossed the crater. According to the authors, "The videotape showed a nebulous patch on the eastern side of the central peak that developed, fragmented, and then dissipated in a regular fashion." It seems likely from this videotape that material is being ejected from the central peak and streaming outward.

Darling and Weier go on to present various theories for their observations including outgassing from unseen vents in Tycho's central peak and dust levitating from the crater floor and reflecting the incoming, low angle sunlight. They await spectroscopic analysis and are expanding their program to include other craters on the moon.

This phenomenon is almost interesting enough to make me want to observe the moon. No, forget I said that! Me, observe the moon?! Never!!

Well, maybe just a 'peak'.....

Ann Tekatch

Internet Service Providers

More and more members of our group are making use of the InterNet to communicate with each other, track down information, and keep tabs on astronomical news and events. Many people have asked me how they go about getting access to the InterNet. Here I will provide a short list of starting points. I haven't actually used any of these services, so you shouldn't take this article as any sort of endorsement. However, I would be interested in your experiences if you interact with any of these services.

The services are listed in alphabetical order. Many providers have different packages depending on the expected usage. Also, some provide local numbers for the Hamilton area.

CRS Online
12 Steinway Blvd, Unit 24, Etobicoke, ON M9W 6M5
Phone : 1-800-563-2529, (416) 213-6000
Modem : (416) 213-6002 or 213-6003 (60 minutes free)
FAX : (416) 213-6038

Hookup Communications
Phone : 1-800-363-0400
E-mail: info@hookup.net

INterlog Internet Services
Phone : (416) 975-2655
Modem : (416) 515-1414 (8-N-1, login as 'guest')
E-mail: sales@interlog.com

Internex Online Inc.
Phone : (416) 363-8676
Modem : (416) 363-4151 (8-N-1, VT100, login as 'new')
E-mail: info@io.org

Onramp Network Services Inc.
Phone : 1-800-613-0413
E-mail: sales@onramp.ca
URL : http://www.onramp.ca/

Rosemedia BBS
Phone : (905) 731-8805
Modem : (416) 733-2285 (8-N-1)

TCN Systems
Phone : (905) 508-4915, (416) 359-0921

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The Brightest Stars of each Spectral Type

In an earlier article, I discussed the use of a new and relatively inexpensive transmission grating spectroscope made by Rainbow Optics of Hayward, California. Since starting to use that spectroscope, I have been interested in compiling a list of the brightest stars of each spectral type. Thanks to Stephen Sheeler, who imported a copy of the Yale Bright Star Catalogue into the Paradox database, I have been able to generate such a list. The selection criteria were that the star should be brighter than V = 3.0 mag and north of declination -30 degrees (equinox 2000.0). Also, a precise spectral type and class was required.

Below is the list. The spectral class is the leading letter and the sequence OBAFGKM is one of descending temperature. The subclass is given next (0-9.5) and then the luminosity class. The latter can be interpreted as follows: V = main sequence or dwarf star; IV = subgiant; III = giant; II,I = supergiant; a,b subdivisions of the luminosity class with a being more luminous. e indicates emission lines and element or molecule symbols indicate unusual metal (m) line strengths. n means lines appear fuzzy or 'nebular'. p indicates peculiar. Binary companions have been listed only when they are of comparable brightness.

There are lots of interesting things on which I could comment in this table, but I will save that for a future article.

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Star	RA (2000.0)	Dec	V	B-V	Spectral Type
Zet Ori	05:40:45.5	-01:56:32	2.05	-0.21	O9.5Ibe
Zet Oph	16:37:09.5	-10:34:02	2.56	0.02	O9.5Vn
Iot Ori	05:35:26.0	-05:54:35	2.77	-0.24	O9III
Del Ori	05:32:00.4	-00:17:56	2.23	-0.22	B0III + O9V
Gam Cas	00:56:42.3	+60:43:00	2.47	-0.15	B0IVe
Eps Ori	05:36:12.8	-01:12:06	1.70	-0.19	B0Iae
Tau Sco	16:35:53.0	-28:12:56	2.82	-0.25	B0V
Del Sco	16:00:20.1	-22:37:16	2.32	-0.12	B0.3IV
Kap Ori	05:47:45.4	-09:40:10	2.06	-0.17	B0.5Iav
Eps Per	03:57:51.1	+40:00:38	2.89	-0.18	B0.5V
Bet CMa	06:22:42.0	-17:57:20	1.98	-0.23	B1II-III
Alp Vir	13:25:11.8	-11:09:38	0.98	-0.23	B1III-IV
Zet Per	03:54:07.9	+31:53:01	2.85	0.12	B1Ib
Bet Sco 1	16:05:26.2	-19:48:18	2.62	-0.07	B1V
Pi Sco	15:58:51.2	-26:06:49	2.89	-0.19	B1V + B2V
Sig Sco	16:21:11.4	-25:35:32	2.89	0.13	B2III + O9.5
Gam Peg	00:13:14.2	+15:11:02	2.83	-0.23	B2IV
Eta UMa	13:47:33.1	+49:18:49	1.86	-0.19	B3V
Bet Tau	05:26:17.4	+28:36:35	1.65	-0.13	B5Ia
Eta Tau	03:47:29.0	+24:06:21	2.87	-0.09	B7III
Alp Leo	10:08:23.2	+11:58:02	1.35	-0.11	B7V
Gam Crv	12:15:49.0	-17:32:31	2.59	-0.11	B8IIIpHgMn
Alp And	00:08:22.8	+29:05:33	2.06	-0.11	B8IVpMnHg
Bet Ori	05:14:32.3	-08:12:05	0.12	-0.03	B8Iae
Bet Per	03:08:10.1	+40:57:21	2.12	-0.05	B8V
Bet Lib	15:17:00.7	-09:22:56	2.61	-0.11	B8V
Bet UMi	07:27:09.2	+08:17:23	2.90	-0.09	B8Ve
Alp Peg	23:04:45.4	+15:12:21	2.49	-0.04	B9V
Del Cyg	19:44:58.3	+45:07:48	2.87	-0.03	B9.5IV
Del Crv	12:29:52.6	-16:30:47	2.95	-0.05	B9.5V
Gam Gem	06:37:42.6	+16:23:59	1.93	0.00	A0IV
Alp CrB	15:34:40.9	+26:42:57	2.23	-0.02	A0V
Alp Lyr	18:36:55.5	+38:46:47	0.03	0.00	A0V
Gam UMa	11:53:49.3	+53:41:41	2.44	0.00	A0Ve
Zet Aql	19:05:24.7	+13:51:53	2.99	0.01	A0Vn
Eps UMa	12:54:01.1	+55:57:35	1.77	-0.02	A0pCr
The Aur	05:59:43.1	+37:12:49	2.62	-0.08	A0pSi
Alp CVn 2	12:56:02.7	+38:19:03	2.90	-0.12	A0pSiEuHg
Alp Gem	07:34:36.7	+31:53:24	1.59	0.03	A1V
Bet UMa	11:01:50.1	+56:22:55	2.37	-0.02	A1V
Alp CMa	06:45:10.8	-16:41:57	-1.46	0.00	A1Vm
Del UMa	13:23:54.9	+54:55:32	2.27	0.02	A1VpSrSi
Del Sgr	19:02:36.8	-29:52:48	2.60	0.08	A2III + A4IV
Bet Aur	05:59:32.0	+44:56:51	1.90	0.03	A2IV
Alp Cyg	20:41:25.9	+45:16:48	1.25	0.09	A2Iae
Eta Oph	17:10:22.6	-15:43:33	2.43	0.06	A2V
Alp Gem	07:34:36.7	+31:53:24	1.58	0.04	A2Vm
Bet Eri	05:07:51.3	-05:05:06	2.79	0.13	A3III
Alp Lib 2	14:50:53.1	-16:02:25	2.75	0.15	A3IV
Alp PsA	22:57:37.8	-29:37:11	1.16	0.09	A3V
Bet Leo	11:49:05.3	+14:34:25	2.14	0.09	A3V

Del Leo	11:14:06.0	+20:31:32	2.56	0.12	A4V
Alp Oph	17:34:55.7	+12:33:48	2.08	0.15	A5III
Del Cas	01:25:46.9	+60:14:09	2.68	0.13	A5III-IV
Bet Ari	01:54:38.0	+20:48:34	2.64	0.13	A5V
Alp Aql	19:50:45.2	+08:51:47	0.77	0.22	A7V
Alp Cep	21:18:33.7	+62:35:06	2.44	0.22	A7V
Del Cap	21:47:01.5	-16:07:23	2.87	0.29	Am
Eps Aur	05:01:58.1	+43:49:24	2.99	0.54	F0Iae
Alp Lep	05:32:43.8	-17:49:20	2.58	0.21	F0Ib
Pi Sgr	19:08:45.8	-21:01:22	2.89	0.35	F2II
Bet Cas	00:09:07.2	+59:09:08	2.27	0.34	F2III-IV
Alp CMi	07:39:20.5	+05:14:21	0.38	0.42	F5IV-V
Alp Per	03:24:19.3	+49:51:41	1.79	0.48	F5Ib
Rho Pup	08:07:33.0	-24:18:17	2.81	0.43	F6IIp
Alp UMi	02:31:36.4	+89:15:51	2.02	0.68	F7Ib-II
Del CMa	07:08:23.5	-26:23:36	1.84	0.68	F8Ia
Gam Cyg	20:22:13.7	+40:15:24	2.20	0.68	F8Ib
Eta Boo	13:54:41.3	+18:24:09	2.68	0.58	G0IV
Zet Her	16:41:19.0	+31:35:50	2.81	0.65	G0IV
Bet Aqr	21:31:33.5	-05:34:15	2.91	0.83	G0Ib
Eps Leo	09:45:51.2	+23:46:28	2.98	0.80	G1II
Eta Peg	22:43:00.1	+30:13:17	2.94	0.86	G2II-III+F
Alp Aqr	22:05:47.0	-00:19:11	2.96	0.98	G2Ib
Bet Dra	17:30:26.1	+52:18:04	2.79	0.98	G2Ib-IIa
Bet Crv	12:34:23.2	-23:23:44	2.65	0.89	G5II
Bet Lep	05:28:14.8	-20:45:29	2.84	0.82	G5II
Alp Aur	05:16:41.0	+46:00:14	0.08	0.80	G5IIIe
Bet Her	16:30:13.6	-21:29:24	2.77	0.94	G7IIIa
Gam Per	03:04:47.7	+53:30:24	2.93	0.70	G8III + A2V
Eta Dra	16:23:59.7	+61:30:48	2.74	0.91	G8IIIab
Eps Vir	13:02:11.6	+10:57:32	2.83	0.94	G8IIIab
Eps Gem	06:43:55.9	+25:07:53	2.98	1.40	G8Ib
Eps Boo	14:44:59.4	+27:04:26	2.70	0.97	K0II-III
Eps Cyg	20:46:11.2	+33:57:56	2.46	1.03	K0III
Bet Cet	00:43:34.6	-17:59:13	2.04	1.02	K0III
Alp UMa	11:03:44.6	+61:45:06	1.79	1.07	K0IIIa
Alp Cas	00:40:30.1	+56:32:16	2.23	1.17	K0IIIa
Bet Gem	07:45:21.3	+28:01:37	1.14	1.00	K0IIIb
Gam Leo 1	10:19:57.3	+19:50:37	2.61	1.15	K0III
Lam Sgr	18:27:58.4	-25:25:08	2.81	1.04	K1IIIb
Alp Boo	14:15:43.6	+19:12:37	-0.04	1.23	K1IIIbCN-1
Bet Oph	17:43:28.5	+04:33:54	2.77	1.16	K2III
Alp Ari	02:07:09.7	+23:27:52	2.00	1.15	K2III
Alp Ser	15:44:15.7	+06:25:30	2.65	1.17	K2IIIb
Eps Peg	21:44:11.0	+09:52:30	2.39	1.53	K2Ib
Gam And 1	02:03:53.7	+42:19:50	2.26	1.37	K3II
Iot Aur	04:56:59.5	+33:09:59	2.69	1.53	K3II
Gam Aql	19:46:15.5	+10:36:48	2.72	1.52	K3II
Alp Hya	09:27:35.3	-08:39:32	1.98	1.44	K3II-III
Del Sgr	18:20:59.5	-29:49:39	2.70	1.38	K3III
Bet UMi	14:50:42.8	+74:09:19	2.08	1.47	K4III
Alp Tau	04:35:55.1	+16:30:43	0.85	1.54	K5III

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SL-9 Observations by David Levy

Taken from the Nasa SL-9 WWW home page, David H. Levy of Tucson Arizona sends this report:

Date: Saturday December 17, 1994
Subject: Jupiter

This morning from 13:40 to 14:00 UT I observed Jupiter visually with my 20cm f/7 reflector, through poor seeing. The dark material left from the impacts of SL-9 is still there, and still obvious. Crossing almost across the correct latitude is a dark bar which widens into a large spot about a third of the way from the western limb. With the exception of the North Equatorial Belt, these features are the most conspicuous on Jupiter.

Jumping Jupiter- I have just returned from one of those "old-fashoined freeze your butt off and eyelids to the eyepiece mid-winter observing session". Jupiter was amazing! As Derek would say "We are not worthy!". It is almost worth the waking up at six, in -15 degree weather. Boy it was nice seeing Scorpius and Hercules etc. again, I think, that this is what one needs to cure Seasonal Adjustment Syndrome.
drawn by Charles Baetsen- (Jan 4, 1995)

Gam Dra	17:56:36.5	+51:29:21	2.23	1.52	K5III
Bet And	01:09:43.2	+35:37:20	2.06	1.58	M0IIIa
Del Oph	16:14:20.9	-03:41:31	2.74	1.58	M0.5III
Gam Eri	03:58:01.6	-13:30:24	2.95	1.59	M0.5IIICa-
Alp Ori	05:55:10.2	+07:24:25	0.50	1.85	M1-2Ia-Iab
Alp Cet	03:02:16.8	+04:05:27	2.53	1.64	M1.5IIIa
Alp Sco	16:29:24.5	-26:25:54	0.96	1.83	M1.5Iab-Ib
Bet Peg	23:03:45.8	+28:04:51	2.42	1.67	M2.5II-III
Mu Gem	06:22:57.4	+22:30:54	2.88	1.64	M3IIIab

The Wonderful World of Nebula Filters

This article is intended to take the mystery out of nebula filters. At the end of this article I hope to leave you with an idea of how what nebula filters do, what objects are good candidates for filters, and why filters should be included in every serious observer's equipment bag.

Nebula filters first appeared in the mid 1970's. Like most things they sounded too good to be true, and were viewed as gimmicks by most amateurs at the time. Fortunately they were wrong, as nebula filters do help bring out the invisible. How do they do this? They can't intensify light from distant objects can they? No they can't, but what they do is increase the contrast between an object and the background sky. As most astronomers know, even on the darkest night, far away from the city lights, the sky is never perfectly dark. One reason is that dust in the atmosphere scatters sunlight (and city lights etc.) reducing sky contrast. Another reason for this "sky glow" is auroral activity. Even on nights of no auroral activity, there is still a sky glow due to solar activity. This is especially noticeable in Western and Central Canada because of the proximity of the North Magnetic Pole (NMP). Curiously enough, the strongest aurora (and hence sky glow) occur not at the NMP but in a ring several hundred kilometres out from it.

To combat these effects nebula filters were invented. These take advantage of the fact that emission nebula emit light at discrete wavelengths (colors) of the spectrum. Filters are designed to pass only particular wavelengths of light. Ideally, only these wavelengths emitted from the object should be passed by the filter, increasing the contrast. As one might expect, in practice this is not the case, but a range of colors is passed (known as the bandwidth). The narrower the bandwidth, the less unwanted light is passed, and hence the greater contrast.

Light emission in nebulae is primarily due to excited hydrogen and oxygen atoms. Hydrogen emits light in two areas of the spectrum called H-alpha (656nm) and H-beta (486nm). You may recall that H-alpha is the type of light you want to see if you are looking for granules and prominences on the sun. Doubly ionized oxygen (called OIII) emits light at both 501 and 496 nm wavelengths. This type of emission is quite common, hence the development of the OIII filter. Some emission nebula have strong emissions of nitrogen (NII) light at 658 nm. In comets, cyanogen, a gas peculiar to comets emits light between 494-518 nm. Street lights also emit light at discrete wavelengths which means a filter could be designed to block only that light (hence light pollution filters). Stars, and hence clusters and galaxies emit a broadband spectrum of light and are not good candidates for filters, as almost all of their light would be blocked.

The two most common filters are the narrowband (i.e., Lumicon UHC and Orion Ultrablock) and OIII (Lumicon) filters. The narrowband filter has a bandwidth of 24nm and lets light pass through from 482-532 nm. This will let the two OIII and H-beta emission lines through. These filters are also designed to let the H-alpha light through as well. This filter darkens the sky increasing the contrast between the sky and the object. It is a good general purpose filter for viewing emission nebulae from suburban and rural locations. The OIII filter is of similar design, but has a narrower bandwidth of only 11nm, boosting the contrast even more. This is particularly good filter for viewing most planetary nebulae and supernova remnants like the Veil. Another type of nebula filter is the broadband (i.e., Lumicon Deep Sky, Orion Skyglow). These, as their name suggests, pass a much wider band of light through. There purpose is to reduce the light due to light pollution (Na and Hg vapor lights). These are useful for photography since they reduce sky fog, extending useful exposure times. As mentioned above, comets emit light due to excited cyanogen molecules, which makes it possible to use comet filters.

As you might have guessed, the only objects nebula filters can be used on are emission nebulae. This includes both diffuse and planetary nebulae. All planetary nebulae glow due to fluorescence, making all of them good candidates (assuming they emit the right light). On the other hand, not all diffuse nebulae are good candidates for filters. Reflection nebulae (generally blue in photographs) reflect the broadband light received from nearby stars and hence suffer the same problem as stars, clusters and galaxies, that is, almost all of their light would be blocked by the filter. Even for emission nebulae, only 85% to 90% of their light is passed. Filters dim everything!

However, the goal here is to dim the unwanted light more than the nebula light. Even under dark rural skies, filters can help bring out detail because of the natural sky glow. Personally I think a good set of nebula filters (particularly a narrowband and OIII set) should be included in everyone's bag of equipment. The typical cost of a nebula filter is around $150 CDN, making it a cheaper alternative to that 24" scope. If you can have both, than your really cooking!

Charles W. Baetsen, Second Chair
524-0148

Software Review GUIDE CD-ROM Star Chart, Version 3.0, Project Pluto

If you've been looking for an excuse to buy a CD-ROM drive for your computer, here it is. You may have seen the ad for this software package in Sky & Telescope magazine recently. It caught my interest because the General Catalogue of Variable Stars and a listing of over 14,000 suspected variable stars is contained on the compressed CD. I'm an avid variable star observer and couldn't resist!

The GUIDE database also includes the entire Hubble Guide Star, Messier, NGC, IC, SAO, Yale, PPM, WDS, PGC, MCG, and UGC catalogues. Over 1200 MEG of data is compressed onto one CD. What is truly amazing, however, is that this software package uses all of that data to print star charts to a limiting magnitude of 15 or 16! (This varies depending on what area of the sky you are using. The inconsistency is due to the way the Hubble Guide Star catalogue was obtained and is explained in the software manual.)

Anyone with a larger aperture telescope (8" +) will benefit from having star charts plotted to a limiting magnitude of less than 10. Uranometria, the standard against which all over deep sky charts are measured, only goes to about 9th. or 10th. magnitude. There is a definite need for better charts as larger aperture telescopes and CCD cameras become more prevalent among amateur astronomers.I think this programme fills that need.

GUIDE's star charts can easily be customized in many different ways. I have not seen another programme with this degree of flexibility. All of the catalogues can be turned off, on or left on "auto" which allows the programme to select the most suitably bright objects for the scale you've selected. (Obviously, if you're looking at half the sky, 15th. magnitude galaxies would seem out of place among the naked eye stars!) All of the Bayer and Flamsteed stars are labelled, as are the variables.Oojects are given their catalogue designations.

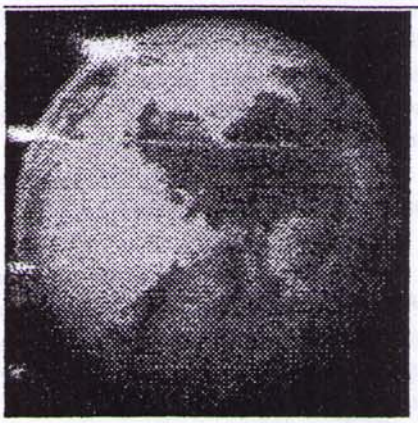
An interesting situation arose when we looked at the sky surrounding M87, a Virgo galaxy. Two other nearby galaxies were labelled M87 also! (I'll bet you didn't realize that the Messier catalogue was actually *112* objects!) Bill and I assumed that this was a bug in the programme and reached for Uranometria as a reference. Did you know that the NGC number for M87 (NGC4486) is shared by *three* galaxies? NGC4486, NGC4486A and NGC4486B are all located in the same part of the sky, within 20 arc-minutes of each other. (I suspect that this bug in the programme has something to do with the way Messier objects are identified from the NGC.)

When we asked the programme to GO TO NGC4486 or NGC4486A or NGC4486B, it located the correct M87 of the three shown. Other than this minor flaw, the star charts generated by GUIDE matched up perfectly with Uranometria and also with the AAVSO comparison charts I use to observe variable stars.

GUIDE allows you to view the sky from anywhere in our solar system. It can also simulate eclipses, occultations and the orbits of the Galilean moons. However, the graphics are somewhat less than awe-inspiring.

The user interface for GUIDE is practical and quite intuitive. It does not use Windows and its presentation is rather 'blah' when compared to The Sky, Dance of the Planets or Earth Centred Universe (ECU). But, for hard core observers looking for those really faint NGC objects, GUIDE provides the most detailed star charts. At $69.00 U.S. (*including* shipping to Canada), it's a real bargain!

Ann Tekatch



MARS looks particularly beautiful right now. Last Thursday night it was brutally cold but very clear out. I observed Mars and was amazed at how clear the polar caps were. It was also possible to see some dark patches close to one of the polar caps. I used approximately 250 power. (as high as I could go without blurring the image). With the use of the Royal Astronomical Society of Canada 1995 Handbook, it is possible to calculate the central meridian and verify exactly what dark feature I observed. I can't wait to get out there again. I am hoping to view Sirtis Major sometime soon.

Patricia Marsh

What's Your I.Q.?

I'm glad to see you all had a great Christmas. I enjoyed every minute. I watched all the parties and dropped in on a few. It certainly was an exhilarating experience. Welcome to the new year. My questions await your inquisitiveness. What's in a question? Why do you strive to know the answers? I give up. But its fun giving you a challenge.

1) Nowhere, because Vulcan does not exist. During the nineteenth century it was often thought that unexplained irregularities in the movements of Mercury indicated the presence of an inter-Mercurial planet, and the French astronomer Le Verrier, for one, was convinced of its existence; it was named Vulcan. However, the movements of Mercury have now been thoroughly explained by relativity theory, and there is no doubt that Vulcan is a myth.

2) False. The Moon has nothing whatsoever to do with the seasons.

3) 1910 and 1835.

4) Venus, which can approach us within 25 million miles (40 million kilometres). Mars can never come much closer that 35 million miles (56 million kilometres).

5) Isaac Newton; the great book was published in 1687.

6) In round figures, 365 days; actually 365 days, 6 hours, 9 minutes, 10 seconds.

I hope you got them all. This month I'll let you off easy. After all its the new year. I now know how it is after all that celebrating. Humans and extra-terrestrials need a rest.

1) Who first described the principle of the reflecting telescope?

2) T / F The Sun is much less luminous than the Pole Star?

3) T / F Barycentre is the largest of all the Moon's walled plains.

4) Give the odd one out: Aries, Libra, Pisces, Cygnus, Taurus, Aquarius.

5) Identify the stars often called (a) the Eye of the Bull, (b) the Dog Star, (c) the Wonderful Star, (d) the Garnet Star, (e) the Solitary one.

6) Name the south polar star.

Good Luck. See you next month.

Io, Keeper of the Flame,
Jupiter Co-ordinator

MACHO in California

It has now been a month since I returned to Hamilton from the sunnier climes of California. My home away from home was the Lawrence Livermore National Laboratory which is run by the Department of Energy in the United States. Ensconced there in the Institute for Geophysics and Plasma Physics is one portion of the MACHO collaboration. MACHO stands for MAssive Compact Halo Object, and the project is an ambitious one! It was designed to search for the amplification of light received from a background source (star) due to the presence of a sizable mass object (that is not necessarily luminous) between the source and the observer. The background source is gravitationally lensed, but the images produced by lenses of stellar or sub-stellar mass objects are so close to the source position itself as to be indistinguishable, even with HST. The one observable effect is an amplification in the amount of light received by the observer. Problem is that even optimistic predictions of how frequently this might be detectable indicated that only about one star in a million would be expected to be affected at any time. Hence, finding that star is like searching for a needle in a haystack!

Undaunted by the prospects, an international collaboration was formed to attack the problem. They would need telescope time - lots of it! Far more, in fact, than they could expect to get through ordinary procedures. Another consideration was the availability of suitable background sources. Such objects need to be sufficiently far away that they can probe the halo of our galaxy, where much of this under-luminous or non-luminous material may be lurking. Only a few objects are both sufficiently far away to be interesting and yet have millions are stars which are bright enough (and sufficiently uncrowded) to be measured accurately. Those sources are the Large Magellanic Cloud (LMC), the Small Magellanic Cloud (SMC), and the bulge of our galaxy. All of these objects are best (or only!) observed in the southern hemisphere.

It so happened that the Mount Stromlo had a 50-inch telescope available in one of it domes. The telescope would need a lot of work, but if they could fix it up, it could be dedicated to the project. The site, near Canberra, is farther south than observatories in Chile and observations of the LMC can be obtained year 'round as a result. So Lawrence Livermore National Laboratory (LLNL, in Livermore, CA), the Center for Particle Astrophysics at UC Berkeley and Mount Stromlo and Siding Springs Observatories joined forces to undertake to search for these elusive events.

One of the first considerations was the camera. They would need to build a camera which could not only observe a large area of sky at one setting, but would also take observations in two colours simultaneously. (One of the predictions of so-called 'micro-lensing' events is that they are achromatic - the amplification will be the same at all wavelengths. Even the available 2048x2048 chips did not

provide enough areal coverage. So they decided to build a "Super Camera". The entire top end of the telescope was replaced with not one, but two mosaics of 4 2048x2048 CCD chips. Now even a single CCD of this size requires a significant amount of time to read out - I have encountered readout times as long as 6 minutes at professional observatories. Multiply this times eight and suddenly one is faced with hours of lost time for a few exposures - obviously unacceptable. To increase the yield of useful CCD chips, manufacturers have started putting readout registers on two sides of the chip. If one doesn't work, maybe the other one will. The MACHO designers decided to make use of both serial registers - each one reads out half of the chip. And they read all 8 chips simultaneously! So there are 16 channels of data coming out of the system and a pair of images totally 32 Mbytes is readout in under a minute!

The amount of data taken every night is roughly 6 Gbytes and the experiment is to last through 1996, at least. The upshot? About 10 Tbytes (yes, that's terabytes - at one thousand gigabytes apiece) of images. Obviously a potentially lethal case of data-poisoning without a pipeline reduction and database system. But the experiment has worked. Four events have been seen in the direction of the LMC and over forty toward the bulge of the galaxy. Needless to say, along the way they have assembled the most remarkable variable star database in existence. (Which is where I come in!)

Variable stars in the LMC have played a central role in our understanding of both stellar evolution and, ultimately, cosmology. Henrietta Leavitt, working at the Harvard College Observatory in 1908, noticed that the Cepheid variable stars which were brightest on the photographic plates of the day also took the longest time to go through a variation cycle. She realized that if the brightness of Cepheid variables could be calibrated locally then they could be used to estimate distances. Miss Leavitt was taking advantage of the fact that all the stars in a galaxy are at the same distance from us (to very good approximation). The evolutionary status of a type of variable star may also be inferred by where they are found in the Hertzsprung-Russell diagram. Especially when such stars are found in clusters. In our galaxy, there are relatively few rich young clusters near the sun, but in the LMC and SMC such objects are quite common. So, again, the Magellanic Clouds are a rich and fertile ground for variable star research.

I have been making use of only the first year's worth of reductions. Despite this, the Project has found about 40,000 variable stars. Roughly 1500 of these are Cepheid variables. Around 1200 are eclipsing binaries. Some 8000 are RR Lyrae stars, and the remainder are red variables - semiregulars, Miras, supergiant LPV's and such. Even this first year of data yields some 200-300 brightnesses and colours for each star. In short - a goldmine!

Part of my activity as a MACHO Project affiliate is to refine the calibration to a standard photometric system. Not a trivial task with eight chips and two orientations of the telescope for each field. I will also be assisting the Project in preparing the variable star database for future users. In a future article I will tell you about some of the results which have already come from this research.

Doug Welch
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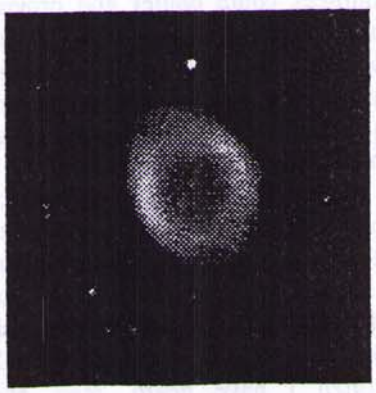

Networks We ShallBecome!

It may not be apparent yet, but the focus of astronomy clubs is changing. In their heyday, a club's principal function was to bring amateurs together to pass the torch of experience and to socialize. Traditionally clubs were places where information was handed down from weather-beaten veterans to novices through discussion, demonstration, and hands-on experiences.

However, meeting the needs of amateurs in a club today has become a multi-faceted task. The diversity one sees in club membership, even in a small group such as mine, challenges the resources and ingenuity of the organization to maintain members interest.

Today's amateurs are nurtured in a high-tech environment: computer telescopes that locate challenging objects with the click of a mouse, access to atlases and other databases once available only to professionals, and instant access to gigabytes of information via modem make these amateurs well informed and self-sustaining. It is no longer necessary to belong to a club to gather information about equipment, observing, or particular celestial objects.

The clubs of earlier times were places where conversation and social bonding occurred. Today, however, computer bulletin boards are fast becoming the vessels of social contact, like ships sailing in and out of port around the clock and around the world. They make companionship ubiquitous and only a connect-fee away, a reflection of our changing, mobile, and diverse society. If I want, I can upload a CCD image to a distant friend or download one in trade.

Members are finding that they have less time for club-related activities in a losing attempt to balance personal lives with their avocation. Most of us now have to drive many miles to find dark sites - and that's just to observe casually. Even more time is consumed by acquiring and processing our astronomical images, reading magazines, and communicating via computers with other amateurs around the globe. This leaves little time for less informative and less stimulating activities like club events.

The newsletter, once essential reading for club happenings and events, fares poorly as a conduit of information. It frequently becomes antiquated before it gets off the press, its subject matter having been seen, heard, and written about numerous times in some shape or form through other media. No matter how creative their staffs attempt to be, newsletters have become perfunctory, an artifact of the past.

Meanwhile, there has been a proliferation of publications like Observing Techniques, Deep-Sky Journal, and CCD Astronomy to provide technical advice and experience. Mainstay publications like Sky & Telescope and Astronomy have expanded their coverage of product lines, often publishing thorough commercial oriented reviews that reduce or eliminate the need to gather such information at a club session. And some companies make videocassettes available to pitch their products, "infomercials", that explain how their gizmos work in step-by-step fashion.

Can the clubs of yesteryear provide for the amateur of today? Most likely, no! The information I get at club meetings and through newsletters, simply can't compete with the volume of computer accessible information and the speed at which it encircles the globe, nor with the rapidity of changes that occur. We now live in a "real-time" world.

Of course, clubs do try to keep their members informed of current astronomical events. They sometimes show replays of television show on space exploration or astrophysics, but ultimately these offerings are "untimely". Others provide lectures that border on the courageous, as some poor soul attempts to discuss black holes with no better visual aids than a blackboard and overhead projector. But beginners hungering for guidance are too often presented with a smorgasbord of topics steeped in technical lingo. They may become confused and dismayed.

If we want our clubs to flourish and grow in the future, I believe a transformation must occur. Amateur astronomy is no longer simply learning the constellations from an atlas and getting the knack of polar alignment. Clubs need to establish astrotechnology committees to help their beginners and less technical members swim rather than sink in a sea of digital information. Guiding prospective members through the nuances of astrotechnology will spare everyone frustration and minimize the loss of membership down the line.

The key to this transformation, I contend, will be efficient communication - via computers - among club members and their committees. Computers will be as common as telephones in our homes in just a few years. The development of a club-sponsored computer bulletin-board system could easily provide a central focus for involvement, engender a sense of "belonging", and encourage "active" involvement. Eventually, interactive meetings would take place with on-line participation. Club business could be conducted, agendas established, and committees could confer and provide reports. All this would foster a new sense of community. and it could save time too, especially for those members who live far from the clubhouse or otherwise don't attend meetings at all.

Newsletters don't have to be archaic or boring. Through expanded electronic contacts, newsletter editors will actually find it easier to produce timely materials and even to solicit contributions from other members. All too often I have heard, read, and experienced the unanswered plea for articles from members. But those using the club bulletin board could easily upload articles, comments, and images. The electronic newsletter would evolve into a "living voice" of the club's members. And on a practical note, it would alleviate the hassles of reproduction and distribution.

Ultimately, the network would become the club itself, and face-to-face meetings might cease altogether. Groups of specialized observers - for example, those with particular interest in deep-sky objects, variable stars, and the planets - could maintain separate file areas in the computer system. These could contain personal observing experiences, images, and group projects. Members, unable to participate in an on-line "meeting" could review current happenings at their leisure. New members could be drawn from a global, rather than local, community.

In essence, I am advocating the use of computer technology to support and elevate amateur astronomy into the next century. If we are unable to make this adjustment our clubs will gradually grow stagnant, and we will become islands unto ourselves. We are social animals, longing for connections and the pleasures of contact with other humans. The time spent sharing and networking with one another will draw us closer together. That is the quintessential club.

PATRICK THIBAULT

Thibault belongs to a 12-member astronomy "network" in Willmar, Minnesota, that plans to establish a computer bulletin-board system in a few months.

Editorial from Sky&Telescope 1994

Submitted by Bob Botts

Greek in the Round

The stage setting this month revolves around numerous characters and short stories. Sit back, relax and let yourself drift to the ancient times of the Greek Sky Theatre. ~ By Ev Butterworth

GEMINI The constellation Gemini hosts the two stars known as the twins. Castor (beaver) and Pollux (much new [or sweet] wine). The Greeks called the stars the "sons of god" because according to some myths they are the mythological offspring of the king of the gods, Zeus (Jupiter in Roman mythology). Their mother was Leda, wife of King Tyndareus, whom Zeus had ravished while in the form of a swan. It is said Castor and Pollux sprang from swan eggs, each in the company of a sister - Clytemnestra and Helen (of Troy). Castor and Clytemnestra, were mortals because they shared a half-mortal parentage, while Pollux and Helen were immortal. The two brothers looked identical and were inseparable. When Castor was slain in battle, Pollux refused to live without him. This display of brotherly love was rewarded when Zeus placed both Twins together in the sky.

In the Greek world, Castor and Pollux were venerated by mariners, and were invoked for protection against storms and the perils of the seas. In the legend of the Argonauts we find them guiding and protecting them in their quest for the Golden Fleece.

The Homeric "Hymn to Castor and Pollux" refers to this tradition:

"When wintry tempests o'er the savage sea
Are raging, and the sailors tremblingly call
On the Twins of Jove with prayer and vow...

CANCER In classical antiquity Cancer and its counterpart Capricornus held the positions of the Sun at the solstices. Today we see relics of this - The names of the tropic lines of latitude where the Sun is overhead at the beginning of winter and summer.

One legend concerning these two constellations was a belief that the world would be consumed in flame when all the planets met in Capricornus - or drowned in a flood when they all came together in Cancer.

We don't know how long Cancer has been called a crab, but it seems to have been a tortoise in both Babylonia and in early Egypt around 4000 BC. Two thousand years later it is identified in Egyptian records as a scarab beetle - sacred and symbolic of immortality. A tortoise, scarab, and crab all move with an awkward, scuttling motion. The application possibly derives from the fact that the sun's northward motion slows and appears hesitant around the time of the summer solstice - before it begins to sidle with a crablike movement southward again.

One Greek myth tells us that the crab was sent by the queen of gods, Hera, to bite the foot of Hercules. The crab pinched the foot of Hercules while he was fighting the Lernean Hydra. The legendary strongman simply crushed the crab beneath his foot and went on to destroy the Hydra. This made Hera angry and she rewarded both Hydra and Cancer with places in the heavens near each other - and also near a third foe of Hercules, for Leo is often regarded as the Nemean Lion.

Two of Cancers stars Gamma and Delta Cancri were also known as the Aselli, or asses. Gamma is Asellus Borealis - the northern ass and Delta is Asellus Australis - the southern ass. A Greek myth tells that these asses aided the gods by adding their brays to the gods' shouts to help terrify a group of fierce giants who were coming to avenge their brothers, the Titans, by overthrowing the Olympians. The asses were placed in the heavens flanking the mysterious glow called the Manger - M44 discovered by Galileo.

The name Praesepe, which means "Manger" was probably given to the cluster after the naming of the Aselli. The cluster was seen as a nebula or "little cloud" by the ancient Greeks. In fact, it was the only universally recognized "nebula" before the invention of the telescope. The Greeks also used Praesepe as a weather forecaster. It was a sign of coming rain if the Aselli looked unaltered but the Manger looked "murky". An object like M44 would be affected more noticeably by thin cirrus clouds or the increased humidity preceding a rain system, so these early meteorologists may have been on the right track.

LEO Unfortunately, as majestic as it is, Leo does not have a great deal of lore behind it. The origin of the zodiacal lion is somewhat obscure though the Greeks identified it as the famous Nemean Lion. Leo is associated with Hercules and King Eurystheus of Argos who imposed twelve labours on Hercules and in return for these labours would be given immortality. Leo was the first of the twelve labours and Hercules destroyed the nemean lion.

To the Egyptians however, Leo was the *HOUSE OF THE SUN*, and Pliny stated that the constellation was worshipped because the annual rise of the Nile coincided with the Sun's entrance into Leo.

Both Leo and the Dog Star (Sirius) were believed to contribute to the heat and storms of summer; Aratus refers to this ancient tradition when he writes:

"Most scorching is the chariot of the Sun
.....when he begins to travel with the Lion.
Turbulent north winds then fall on the wide sea
With all their weight; no time is that
For oar-sped barques; broad ships be then my choice;
O helmsman! Keep the stern before the wind!"

Upward Skybound

Welcome to the new year of 1995. I trust everyone had a very Merry Christmas and a Happy New Year! I do believe that the cold weather has finally sprung itself upon us. The last couple of times I've been out, everyone has been bundled to the hilt. We have a Full Moon Partial Eclipse in April, a Full Moon "Hunter's Moon" Penumbral Eclipse and a New Moon Total Eclipse in October to look forward to.

Mercury: is visible most of the month low in the southwestern in the early evening sky. It will disappear before the month end.
Venus: is brilliant in the southeastern sky before dawn.
Mars: in Leo rises in the northeast mid-evening.
Jupiter: in Scorpius and Ophiuchus rises in the southeastern dawn sky. I understand the belts are beginning to form a band. Look for it.

Workshops: Sat. Jan. 21/95 8:00pm McMaster University, Room B148 "Variable Stars" Ann Tekatch will give us an insight to the magic of variable stars and how to observe them, starting naked eye, moving to binocular to telescopic stars. Come and vary with us.
Sat. Feb. 11/95 8:00pm. will be open observing at Binbrook Conservation Area in Binbrook. Call for the lock combination if you don't know it.
Jovial Satellites: Feb. 13/95 7:00pm McMaster University, Room B148. The kid's will be learning how to use binoculars and simple star charts. If you have 7 X 35 binoculars that you would be willing to allow the kids to use (with proper instruction) I'd be grateful. Weather permitting we'll take the kid's outside.

Clear Skies Above,
Ev Butterworth, Observing Director

Off the Beaten Path

This month as winter is upon us, observing times comes at a premium. To help maximize your observing sessions, I have prepared the following list of interesting and often overlooked objects to observe this month.

NGC 1907 - This tiny smear of light is located south west of M38 in Auriga. It may seem uninteresting but it is a curious group of stars in contrast to M38.

IC 405 - Called the "Flaming Star" nebula, it is a faint wispyemission nebula (read: use filters) that is powered by the unusual star AE-Aur. This star normally shines at 6th magnitude, but is capable of irregular and bizarre flares, hence dropping in brightness.

NGC1931 - Known as the "Peanut Nebula", this peanut shaped emission nebula lies midway between M36 an Psi-Aur. In an 8"scope it looks like a double lobed patch of light.

NGC 1535 - Located in one of the lesser observed constellations, Eridanus, it is one of the best planetary nebulae to observe their characteristic colours. This 9th magnitude object unmistakably shows a strong bluish-green hue in almost any scope.

NGC2392 - Well known as the "Eskimo" nebula because of its mottled disk surrounding this planetary. It is located halfway between Kappa and Lambda - Gem, and is a pretty object in a 6" or larger scope.

J900 - For those of you who are bored with the NGC and IC objects, try this one. This 12 magnitude planetary is the challenge object of the month.

NGC 2371/72 - This is a somewhat larger planetary than M76 (the Little Dumbbell) in Perseus. This 13th magnitude object has a low surface brightness and appears like two half circles almost in contact with each other.

With any luck you will be able to find most of these objects on that next clear cold night. Be adventuresome and go off the beaten track. Enjoy the new scenery.

Charles W. Baetsen
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Amateur Telescope Makers

Some members of the club have been busy over the last year or so building telescopes and even completing them to find that they now have their own finely tuned optical instruments.

We are quite aware of Bob Botts' trials and tribulations according to his article in last month's issue of the newsletter. Don't let him fool you, his telescope looks and works great. He should be very proud.

Last summer, Ron Marcoux and his friend built their own telescope from bits and pieces. The telescope looks great and I was impressed with the views I saw when they brought the scope to Dundas Valley.

Colin Broughton initially

purchased his homemade telescope completely assembled. Due to an accident, Colin was forced to completely rebuild the entire scope. Only the tube assembly survived the crash. With the craftsmanship of his son Colin, the Broughtons again have a magnificent looking 6"f8 telescope on a dobsonion mount. Well done guys. Oh, I should mention, Colin (Sr) has been grinding an 8" mirror that is close to being finished. At the same time, Colin Jr. is giving the finishing touches to a new tube that will house the 8" mirror. Show and tell when its done .

Some of us who started making our telescopes some time ago, have decided to get real fancy (namely Glen Horn) and make a difficult equatorial mount that will eventually be driven. I look forward to an update on this particular mount (a subtle hint for an article).

Then again some of us who have limited time on our hands decide to put the polishing compound away and purchase a ready made scope (and if you are going to go this way, might as well buy one of the biggest) I won't mention any names here. He can do that himself in an upcoming article that I will beg him for later. All I can say is, for some of us, this hobby has become an Obsession.

Some members are not satisfied with making one telescope. Ann Tekatch had a bad case of aperture fever and decided that her variable star work requires a 12" telescope if it requires anything. I'm sure she will let us know of her progress in the future.

It would be nice to see these telescopes at future club meetings, to let everyone know the ATM group is very alive and well.

Patricia Marsh

Editor's Address

Please submit all articles, thoughts, or ideas to this address:

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Hamilton, Ont. L9C 2T8

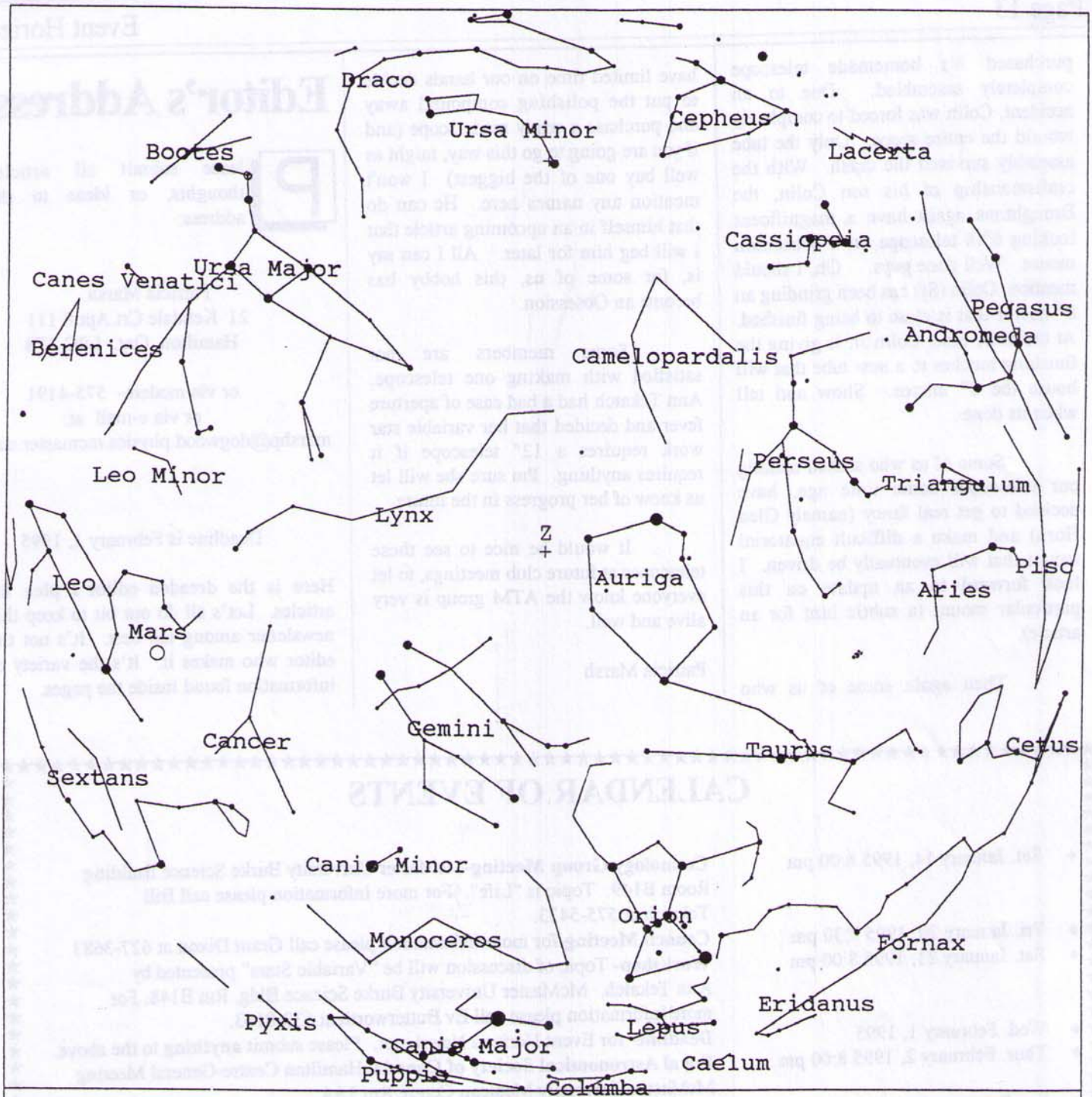
or via modem- 575-4191
or via e-mail at:
marshp@dogwood.physics.mcmaster.ca

Deadline is February 1, 1995

Here is the dreaded editor's plea for articles. Let's all do our bit to keep this newsletter among the best. It's not the editor who makes it. It's the variety of information found inside the pages.

CALENDAR OF EVENTS

♦ Sat. January 14, 1995 8:00 pm	**Cosmology Group Meeting**-McMaster University Burke Science Building Room B149. Topic is "Life". For more information please call Bill Tekatch at 575-5433.
♦ Fri. January 20, 1995 7:30 pm	**Council Meeting**-for more information please call Grant Dixon at 627-3683
♦ Sat. January 21, 1995 8:00 pm	**Workshop**- Topic of discussion will be "Variable Stars" presented by Ann Tekatch. McMaster University Burke Science Bldg. Rm B148. For more information please call Ev Butterworth at 632-0163.
♦ Wed. February 1, 1995	**Deadline**- for Event Horizon Newsletter. Please submit **anything** to the above.
♦ Thur. February 2, 1995 8:00 pm	**Royal Astronomical Society of Canada,** Hamilton Centre-General Meeting McMaster University Medican Centre Rm 1A4
♦ Sat. February 4, 1995 8:00 pm	**R.A.S.C.** Hamilton Centre invites you to an evening of "Photometry" being held at the observatory in Flamborough. For directions please call Richard Petrone at 547-2589.
♦ Fri. February 10, 1995 7:30 pm	**H.A.A. General Meeting**-Spectator Auditorium. Guest speaker will be Mr. Petherick. Topic will be "Building a CCD camera".
♦ Sat. February 11, 1995 8:00 pm	**Observing Session**- Binbrook Conservation Area. Dress warm and bring your equipment out. (weather permitting). To be sure, please call Ev Butterworth at 632-0163
♦ Mon. February 13, 1995 7:00 pm	**Jovial Satellites**- meeting at McMaster University Burke Science Building Rm. B148. Bring binoculars and warm clothing if it is a clear night.
♦ Fri. February 17, 1995 7:30 pm	**Council meeting**- for information please contact Grant Dixon at 627-3683



FEBRUARY NIGHT SKY

UTC: 1995/02/16 at 02:00 RA=06h25.2m Dec=+43°39′

LMT: 1995/02/15 at 09:00pm Field=180.0° Azim=344°44′ Alt=+90°00′

Mr. Charles W Baetsen
#307-75 Mericourt Rd.
Hamilton, Ontario
Canada, L8S-2N6
January 1995