HAMILTON AMATEUR ASTRONOMERS

Event Horizon

Volume 1 Issue 6 April 1994

Editorial

It is here, the month before the big astronomical event of the year. As I prepare for May's annular eclipse I find myself reminiscing about the last solar eclipse I saw. It was July of '91 and unlike those in Hamilton who only saw a small fraction of the sun disappear. I was fortunate enough to be in Mexico where the sun was totally eclipsed by the moon. This time, however, I will not have to traverse the width of the continent to stand in the shadow of the moon. The proximity of this eclipse nearly makes up for the fact that I will only stand in the penumbral shadow whereas in Mexico I stood in the Moon's umbral shadow. (Translation for newies ~ the Moon will not completely cover the sun in May as it did in Mexico.)

Have you made plan's for May 10? Have you decided where you want to observe the eclipse? Do you know if you are going to photograph the spectacle? Have you got a solar filter? Have you told your boss that you are going to be sick on May 10? The articles that appear in this month's issue should help you plan how to observe the eclipse. If you showed up at the April meeting the problem of the solar filter would have been solved, as welder's glass was given out to members. (Makes you want to attend the meetings, eh?)

May's big event, however, should not eclipse the other astronomical events occurring in the sky. (No pun intended, honest.) There are two supernovae as well as the surprisingly bright comet McNaught-Russell. Also, there is the matter of the asteroid Ida and it moon, as well as the "big splash" that is going to occur in the summer when comet Shoemaker-Levy smashes into Jupiter.

HAMILTON AMATEUR ASTRONOMERS

One last item, after the eclipse is over, sit down in a comfortable chair and reflect upon what you saw, and while you are at it, why not record those reflections on paper. Who knows maybe there is an article in it. (HINT, HINT, HINT)

Stephen Sheeler
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Chair's Report

It has been an interesting month. While we slept on March 15, a tiny asteroid fragment whizzed by Earth at half the distance of the moon. Comet McNaught-Russell (1993v) was supposed to be 11.5 magnitude, but ended up being 6.5 (nice to see that predictions are sometimes too dim!), and there have been two supernovae bright enough to see in amateur telescopes (one in NGC 4526 in the Virgo cluster and one in M51).

The big event before the next meeting is the annular solar eclipse on May 10 - see separate article(s). This is the last time that we will be in the path of a solar eclipse until April 8, 2024 (which will be total). The last time we were this close to the path was January 24, 1925 - which, surprisingly, I can't remember.

An annular eclipse presents us with a dilemma - on the one hand, this is a rare and exciting opportunity to observe one of nature's most wondrous events. On the other hand, it is not a total eclipse and consequently it will be dangerous to observe the sun directly. The danger arises not because of some special ray that is given off during eclipses. Indeed, it is always dangerous to look at the sun. There is just more incentive to do so during an eclipse? This is one of those times where one would like to show the world how spectacular astronomy can get, but prudence dictates that any direct observation of the sun be discouraged. Since the time of mid-eclipse is just after lunch on a school day, it is likely that most school classes will be encouraged to stay inside. Much as I hate to admit it, I think that this would be a good decision. So please do not encourage people to check this one out without explaining the indirect methods of observation in detail. Remember, your retina feels no pain.

That aside, May 10 will be a time that few of us will forget! Let's see how many ways we can record the event for posterity.

Doug Welch

Inside This Issue

Eclipse Circumstances

NASA Reference Publication 1301 (April 1993) entitled "Annular Solar Eclipse of 10 May 1994" contains almost everything you ever wanted to know about the eclipse - but were afraid to ask.

When: The four key times are called first, second, third, and fourth contact. First contact is when the limb of the moon first starts to cover the sun and it happens at 11:40:03. This is almost a non-event in the sense that you will hardly notice it happen. After that time, the moon will cover progressively more of the sun's disk until second contact at 13:20:26 (1:20:26 pm) when the moon will appear completely silhouetted against the disk of the sun. This will continue until 13:25:22 (1:25:22 pm) - third contact - when the eclipse becomes partial once again after almost five minutes of 'annularity'. Finally, the eclipse will be completely over at 15:07:01 (3:07:01 pm) when the last piece of the solar disk is again uncovered by the moon.

This is an annular eclipse because the apparent size of the moon is slightly less than that of the sun. At mid-eclipse, some 94% of the solar disk will be covered. The fact that parts of the 5800 degree K surface of the sun can be seen at all times during the eclipse means that it should never be viewed directly with the eye.

Where: In Hamilton, we are somewhat north of the path's center, so the moon will be seen the ring of sunlight coming around the moon at mid-eclipse will be somewhat fatter on the north side of the disk. The part of Toronto closest to the lakeshore is barely inside the northern limit of the path. Welland, Ontario is very nearly in the centre of the path, which is about 230 km wide.

A challenge: See it you can see Venus near mid-eclipse. It is to the east of the sun (and moon!) and should be relatively easy to find.

Doug Welch

An annular eclipse. Our's however will not be over water, nor will it be as cloudy

Observing the Eclipse Safely

The simplest way to observe the eclipse safely is to make use of a pinhole camera. The basic principle is simple: rays from different parts of the sun go through the pinhole in different directions and as a result an image of the sun is seen behind the pinhole.

Pinhole camera design is as simple as putting a hole in a piece of aluminum foil. There is a tradeoff between hole size, resolution, and brightness. A big hole will let through lots of light and it will be easy to find the image, but the image will be more blurry. A small hole will form a nice crisp image, but the image will be faint and so too much scattered light from the surroundings may actually render it invisible

The diameter of the image will be 0.0092 times the distance behind the pinhole. Here is a list of solar image diameters for reasonable distances:

1m	9.2 mm
2	18.4
3	21.6
4	36.8
5	46.
6	55.
7	64.
8	74.
9	83.
10	92.

To see the image easily, it is important to mask off as much of the ambient light as possible. One good way to do this is to purchase an 8- or 10-inch concrete form (a.k.a. sonotube) from Beaver Lumber and to tape some aluminum foil over one end. The bottom end can have either a sheet of white board or tracing paper on it. If white board, some access hole will need to be cut near the end of the tube so the image can be viewed. Tracing paper allows several people to view it simultaneously. One drawback with a long cardboard tube is that it is difficult to point accurately. Remember NEVER sight along the tube; just try to minimize the shadow?

My favourite technique is to mount a small mirror (preferably front surface, but not necessarily so) on a camera tripod and mask all but a small portion off with tape. This is a reflective pinhole camera and works exactly the same way. There are several nice features about this arrangement. First there is no bulky tube to try to hold steady. Second, the reflec-

tion can be directed almost anywhere - a good location being a garage. It is best to mask off the mirror after you have positioned it. I find that a quarter-inch opening on the mirror for a reflection distance of 8 metres (and an image of about 3 inches diameter) is a good compromise between image brightness, size, and image quality. A white sheet, section of drywall, or projection screen can all be used to view the image. The great thing about a garage is the number of people it can hold!

Doug Welch

Upward Skybound

Welcome to April, the month of rain. Just a little clear sky, if you please. Some interesting things to see this month. April 11/94 affords the opportunity to hunt for the 'Young Moon' very low in the western sky about 20 - 30 minutes after sunset, and on Apr. 12/1994, Venus and the Moon will be very close together making a picturesque view, also low on the horizon in the western sky. Comet Temple 1 is visible at 10th magnitude and will brighten over the next few months. Jupiter is becoming easily visible in the evening hours now, so keep your eyes on it. A tremendously fun planet to observe.

Mercury - is in the morning sky for the first half of the month but is not in a favourable position for northern observers.

Venus - will be getting higher in the sky as time goes on, 19^{o} at mid-month. Look in the western horizon.

Mars - is in Pisces in the pre-dawn sky and is also difficult to see (very low in the southeastern sky).

Jupiter - in Libra is now rising shortly after sunset and will be visible all night. It reaches opposition on Apr. 30/94.

Saturn - in Aquarius rises low in the southeast before sunrise. Again, difficult to see. The visibility will improve as the month passes.

Member observing nights at Beamsville will be held on Sat. Apr. 9/94, Sat. May 14/94 and Sat. Jun. 11/94. Remember this is a public park and you are free to observe there anytime. These nights are put aside as nights that we can all be together near New Moon for a night of good observing. As yet we've to have a clear sky on a New Moon. Maybe this time!!

Clear Skies
Ev Butterworth, Observing Director
632-0163

Solar Eclipse Photography

Many of us will not only be watching the May 10th annular eclipse but also photographing it. Of all the objects available to astrophotographers, none is easier and, paradoxically, more difficult to photograph than the sun. I say it is the easiest to photograph because its brightness allows very fast shutter speeds, avoiding the need for guiding. At the same time, however, photographing the sun demands special filters and precautions.

Because this upcoming solar eclipse is an annular one, the camera (and/or telescope) must remain filtered at all times. Safe solar photography can be done using either a Mylar filter specifically manufactured for use as a solar filter or a special metal-coated glass solar filter.

Mylar filters are the least expensive of the two. One of the best Mylar, solar filters, Roger Tuthill's Solar-Skreen, consists of 2 layers of Mylar plastic each of which has an aluminum coating on both sides. DON'T USE ORDINARY MYLAR FILM!!!! Mylar solar filters are used at the front of the telescope or camera. The image of the sun will appear blue through these filters.

Metal-coated glass filters such as those manufactured by Thousand Oaks are also used at the front of the telescope or camera. They are more costly than Mylar filters but provide an orange-yellow image of the sun and I find them to be slightly better optically than Mylar. That's just my opinion, though. Others prefer the contrast offered by Mylar's blue image.

Whichever filter you use, remember that BOTH the camera lens and the viewfinder (if separate from the lens) must be filtered. This applies to telescope viewfinders, too! Don't make the mistake of carefully filtering your lens and then look directly into the sun with your unprotected eyes to centre the image or focus!! PROTECT YOUR EYES!!

Exposures will depend on f-ratios and film speeds. For solar photography I prefer film speeds of 100-200 ISO. During the partial solar eclipse of July 11, 1991 here in Hamilton, I had good results using Ektar 125 with an f/10, 1000 mm focal length system and shutter speeds of 1/250 sec. to 1/15 sec. To add extra brilliance to the sun's ring around the moon, try even slower shutter speeds.

Most importantly, as in all astrophotography, it is absolutely imperative that you practice until you are familiar with your equipment. Don't do your practicing during the eclipse.

Lenses of 200 mm focal length or less will present very small images on the film and your final picture. A lens of at least 500 mm is needed to get a decent sized image of the eclipse on your film. If you haven't got a suitable lens, use a 2x teleconverter. These can be bought for less than $100 for cameras that allow interchangeable lenses. They double the focal length of any lens they are used with.

One last word - if you're new to photography or you don't know an f-ratio

from an f ration, don't get caught up in the hysteria of recording the event forever on film. You'll miss the view?

Ann Tekatch

Greek in the Round

We open the curtain this month with Hercules son of Perseus and Andromeda. Hercules was indeed a hero. This story revolves around just one of his triumphs.

Killing the lernean Hydra, son of Typhon, was the second of the twelve labours imposed on Hercules by King Eurysteus of Argos. In return for these labours, Hercules was to receive immortality. He was sent to the large swamp inhabited by the fearsome beast called the Hydra. It was so evil that its mere breath could kill, as would even a whiff of its footprints.

The Hydra siblings included the Sphinx, and the Nemean Lion (Leo - the first of Hercules' labours). Though the constellation has the form of a long snake, the mythical Hydra had the body of an immense dog surmounted by many heads. Hercules rode into the swamp accompanied by his nephew Iolaus. Hercules shot fire-arrows into the Hydra's lair to lure the beast out. Iolaus then set the nearby shrubs on fire to confuse the creature while Hercules clubbed and hacked at its many beads, holding his breath to avoid the fatal stench. But when be chopped one head off, two grew in its place. Just as Hercules made this frightening discovery, Hera sent a crab (represented by Cancer) to distract him by biting his foot. She hated Hercules because he was the result of her husband Zeus' dalliance with a mortal woman. Impatiently. Hercules stamped the crab into the ground.

Soon the hero found that if a
Hydra neck stump was burned, no new heads grew. Iolaus was then commanded to cauterize the stumps with a flaming branch. At long last the middle and immortal head fell to Hercules' sword and, spitting with fury, it was crunched under a large rock The Hydra was no more.

Although Hydra was defeated, it was this monster who eventually proved to be the bane of Hercules' mortal existence. Hercules soaked his arrows in the Hydra's blood which was a fearsome poison. Years later, the hero was tricked into putting on a shirt soaked in the blood of a victim of the poison and thus found himself cloaked in the wicked potion. The poison burned like a ceaseless fire, and though Hercules was strong enough to survive, he willingly gave up his life to escape the torment. But his story did not end tragically, for we are told that he was accepted by the gods, and reconciled with Hera - perhaps explaining his Greek name, Heracles, "glory of Hera"

“Wish Upon a Star”
Ev Butterworth

Variable(s) of the Month

At our last general meeting, I mentioned that a star long thought to be an ordinary long period variable had recently been identified as an R Coronae Borealis (R CrB) star. This finding is significant for two reasons. R CrB stars are very rare (only about 40 are known in our galaxy) and this discovery shows the contribution that can be made by a persistent observer with a modest telescope. The star, Z Ursae Minoris, was being studied by a grad student, Priscilla Benson, at Wellesley College. Although Ms. Benson was using a CCD camera to monitor this star, the observations are well within the capability of visual study.

The study of variable stars by amateur astronomers around the world is encouraged and directed by the American Association of Variable Star Observers (AAVSO). This large pool of eager observers has developed a database of continuous observations that is available to the professional community. Such a database would be impossible to maintain with the limited time available for such work on professional telescopes. Studying variable stars is one way that amateur astronomers can make a real contribution to science. It is also a lot of fun!

R CrB stars are normally at maximum light. Irregularly, they dim to minimum, dropping as much as 9 magnitudes in brightness! David Levy describes these stars as acting like "a nova in reverse". The periods of minimum brightness can last from weeks to years and usually the fall to minimum happens faster than the climb back up to maximum brightness. R CrB stars are supergiants of spectral class F. They are intrinsically very bright stars whose spectra are hydrogen-poor and carbon-rich. Astronomers think that the dimming is due to a cloud of carbon particles enveloping the star.

Finder charts for Z Ursae Minoris and R Coronae Borealis (the first star of this type ever identified) accompany this article. Although Z UMi is visible at maximum brightness only in telescopes of 6" aperture or larger, R CrB is easily seen in ordinary binoculars when it is at maximum brightness (6th. magnitude). Whenever you're out observing, keep an eye on these stars and remember all those amateur astronomers, just like you, who are helping out by watching the skies for their professional counterparts.

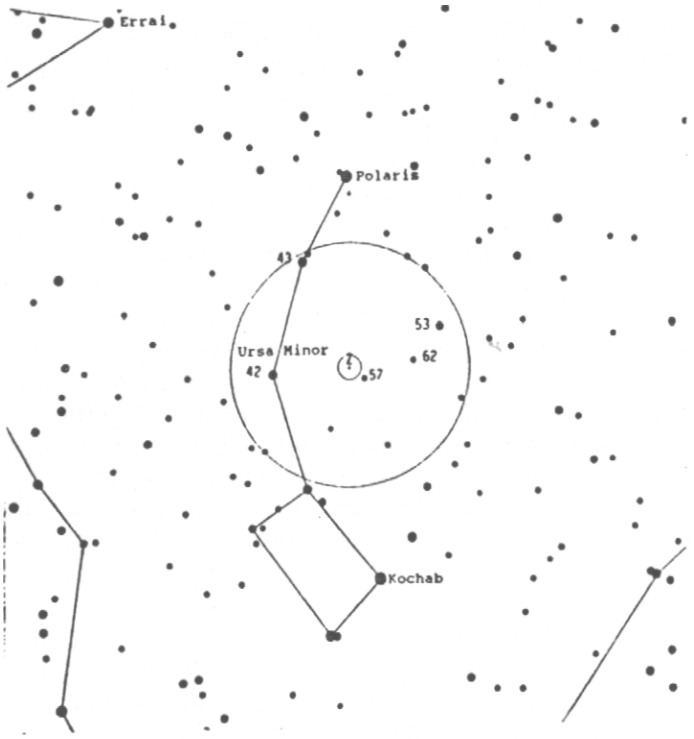
Ann Tekatch

Supernova Alert!

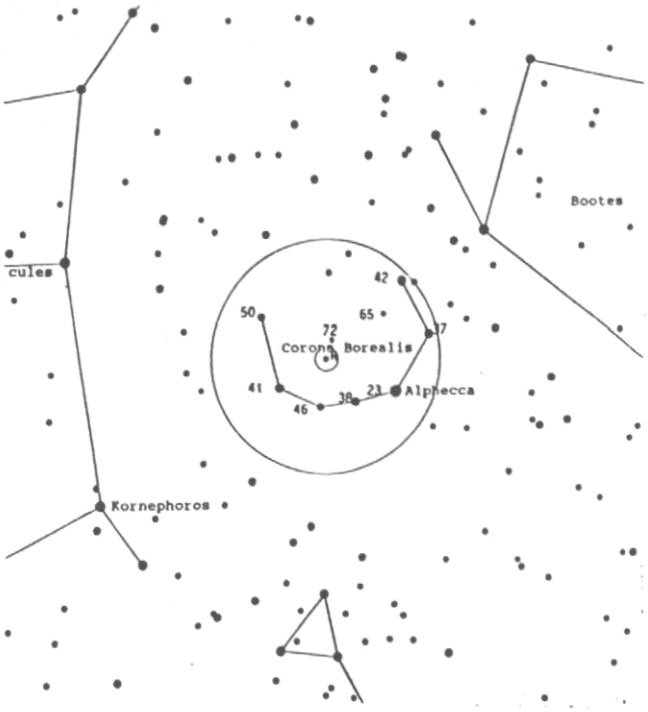
A supernova, designated 1994D, was discovered March 7th. in the Virgo galaxy, NGC4526. The star, normally dimmer than 17th magnitude had reached 12th magnitude by March 25th.

NGC4526 is located at R.A. 12h34'; DEC +7 degrees 42' (2000.0 coordinates). Its magnitude is 9.6. The supernova is located 9" west and 7" north of the galaxy nucleus. Both the galaxy and the supernova should be visible under reasonably dark skies in a 4" or 6" telescope.

Ann Tekatch

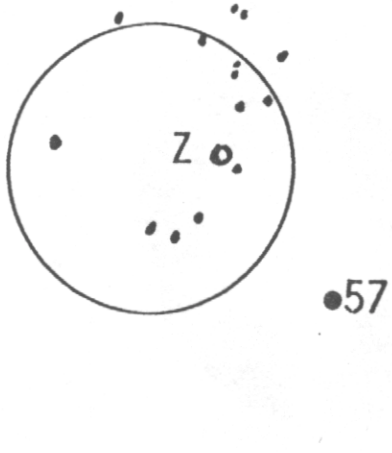


Z Urase Minoris



R Coranae Borealis

Z UMi Enlarged Finder Chart



The Cosmology Corner

We had a really good meeting March 26, 1994 on magnetic fields. We covered the universe, and even discussed things I never heard of such as the Bolm-Aharanov effect (thank you Gary Sutton). But as usual, we uncovered some questions that could not be answered. One such question was "Why do the magnetic fields of the sun and the Earth reverse polarity?"

Our next meeting will be in May, on the topic of Gravity (General Relativity). Details will be announced in a future issue of Event Horizon.

Bill Tekatch 575-5433

Planetary Nebulae ~ Part 2

As promised last month I will now cover the observation of nebulae. These fuzzy disks have their light spread over a large area making some of them difficult to observe. If you use my suggestions you should have no serious difficulty in locating many of these objects. Don't be discouraged if you have trouble at first especially if you are a beginning observer. The more time that you spend at the eyepiece the more adept you will become. Since you are reading this in the HAA newsletter you already have access to the best resource to overcome any difficulties - your fellow members.

Equipment-
Planetary nebulae come in a vast range of size and brightness so there are some that can be found with binoculars and others require the largest scope that you can get. Any type of telescope can be used for these objects but in general the larger the aperture the more detail you will see. I personally prefer using a Telrad finder instead of a finder scope. A Telrad finder gives no magnification but does give you a red "bulls eye" with circles representing 1/2, 1 and 2 degrees. It is a good idea to check the alignment of your finder with a bright star at the beginning of every observing session.

You will need good star charts especially for the more difficult planetaries. I use a combination of Sky Atlas 2000 and Uranometria. Use a red flashlight to read your charts. Your eyes take about 15 - 30 minutes to reach maximum sensitivity in darkness so don't spoil it by using a white light flashlight.

Location-
The darker the better. Having said that you can still see some planetary nebulae from a downtown location. A good example of this is M57, the Ring Nebula. Whether or not you have access to a dark location, a black cloth draped over your head can block out a lot of unwanted light enabling you to see fainter objects and more detail.

Observing-
Before beginning an observing session it is a good idea to make a list of suitable objects. Suitable means objects that are within reach of your equipment, experience, and well positioned in the sky. When I go observing I like to start with the easiest objects first to "warm up". As the night progresses I work on the more difficult ones sometimes trying for ones that are "impossible" with my equipment.

There are two approaches to locating an object, using setting circles and star hopping. I would highly recommend the latter technique if you want to learn more about the sky and to develop your observing skills. With star hopping I first locate the nearest naked eye star on my charts then I overlay the chart with a piece of overhead transparency material onto which I have copied ½, 1 and 2 degree circles to match my Telrad finder. After measuring the distance from the bright star to my target in terms of these circles I then do the same thing with my scope. A low power eyepiece (a 26mm with my 6" f/5 reflector gives about 30 power.) can then be used to centre the object. If it is not visible at this point I sweep the area. If I am still unable to locate the object I then use Uranometria, which shows much fainter stars, to look for distinctive patterns of stars in the vicinity. If you still can't see the object and you are sure that you are in the correct location try switching to a higher power eyepiece. Tapping the scope can sometimes reveal an especially difficult object since our eyes are quite sensitive to movement.

Once you have located your target spend some time looking at it. An excellent idea is to try to make a drawing. You will be surprised at how much more detail you will see when you take the time to do a drawing. Using averted vision will also reveal more detail. Our peripheral vision is more sensitive to light and movement than the colour sensitive centre portion. Try looking a full 360 degrees around the object to get the most detail. Don't forget to take notes. When reading notes from old observing sessions you will realize that as you gain experience more details will become visible to you.

If you have the budget there is one more tool that can be used for observing planetary nebulae. These objects radiate light in the green portion of the visible spectrum which is given off by doubly ionized oxygen, referred to as O-III (un-

M57 ~ The Ring Nebula

ionized oxygen is O-I). This feature has been exploited with the use of O-III eyepiece filters, which are designed to block all light except that given off by O-III. This can be used as a test to determine if a suspected object is a planetary nebula and to make these objects more visible since the surrounding star field will become darker. I do not find this filter of any use in locating the object initially since it can actually darken the surrounding star field to invisibility.

Sample Planetary Nebulae-
Here are a few Planetary Nebulae that you can try to find.

NGC 3587 in Ursa Major (M97 or the Owl Nebula) - visible now. Discovered by Pierre Mechain on February 16,1781.
R.A. 11h15m DEC. 55 deg. 0.6 min.
Size 3', Mag 12
Central star Mag. 13.2
Uranometria pg. 46
Sky Atlas 2000.0 chart 2

To find M97 start at the southwest star in the bowl of the Big Dipper (Beta Ursa Majoris or Merak). Move just over 2 deg. southeast to a pair of bright stars aligned roughly north-south. M97 forms a right angle triangle with these two stars, with M97 situated to the east at the 90 deg angle. If the upper right of the 2 deg circle on a Telrad finder is placed on Merak and the 1 deg circle is placed on an imaginary line between Merak and Phecda (Gamma Ursa Majoris) then M97 will be centered in the eyepiece.

A 3" scope will show a faint patch of light at high magnification with a transparent sky. My 6" f/5 reflector at 120 power shows a circular disk with a hint of detail. A 10" scope (or larger if the sky conditions are less than ideal) is required to see the central star (with averted vision) and the two dark patches that look like eye.

NGC 6543 in Draco (Cat's Eye Nebula) - visible now

R.A. 17h58.6m DEC 66 deg 37.9 min (2000.0)
Size 18" Mag 8.1
Central star Mag 10.6
Uranometria pg. 30
Sky Atlas 2000.0 chart 3

The Cat's Eye Nebula is located approximately halfway between Delta and Zeta Draconis 4 deg south-east of Omega Draconis. This nebula sits at the north end of a straight line of 9th magnitude stars orientated north-south. To locate this object with my Telrad finder, I imagined a line between Zeta Draconis and Phi Draconis and positioned the finder 1.5 deg to the south-east on a line running perpendicular from the centre of the first line.

I saw this object for the first time early this morning April 4. I had some difficulty locating this planetary nebula since it did not look like I was expecting it to. I was looking at M97 earlier in the evening and it was a 'typical" faint fuzzy object so when I started hooking for NGC 6543 I was expecting something similar. When I failed to locate it in my low power eyepiece I decided to take another look at the properties of this object It is 1/6 the diameter and over 3 magnitudes brighter than M97! Switching to 120 power it didn't take long to find what appeared to be a star that would not focus to a point. Slipping an O-III filter in front of the eyepiece was final confirmation that I had found it No detail was visible at this power. It will obviously stand a lot more magnification - next time.

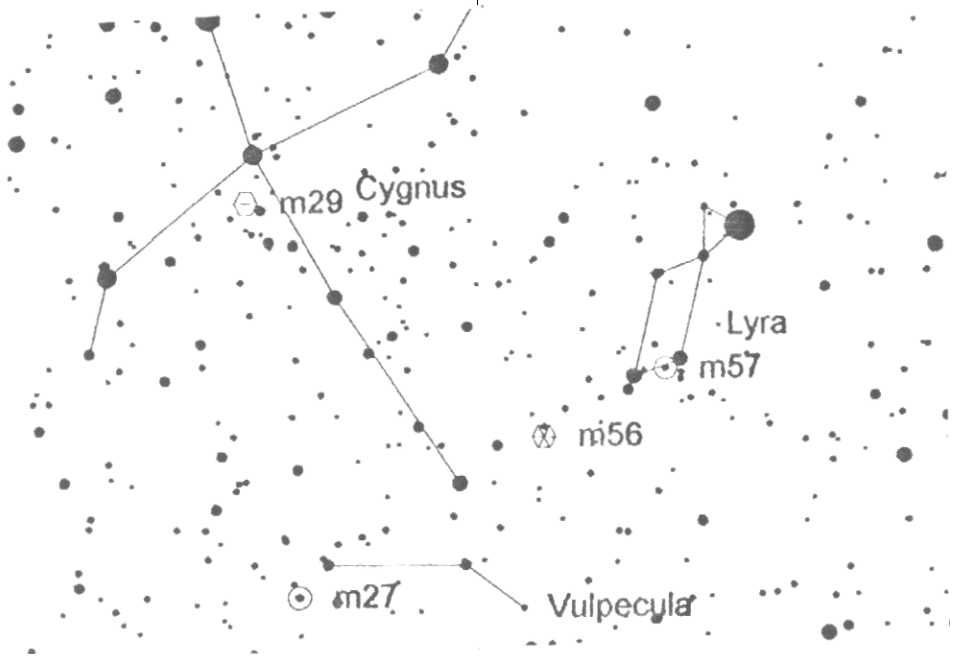
NGC 2392 in Gemini (Eskimo Nebula) - visible now but not for much longer
R.A. 7h29.2m DEC 20 deg 54.8 min (2000.0)
Size 15" Mag 9.1
Central star Mag 10.5

Uranometria pg 139
Sky Atlas 2000.0 chart 5

NGC 2392 is located just over 2 deg south east of Delta Geminorum 20' north west of a group of stars that resembles a backwards "C".

This nebula appears as a double ring with the outer one being fainter. In long exposure photographs it resembles a face surrounded by a fur-lined hood hence the name. This is another one of those planetaries that is quite small and star-like and requires a high power eyepiece.

NGC 6720 in Lyra (M57 or the Ring Nebula) - wait until the summer unless you are willing to stay up late. Discovered by Antione Darquier de Pellepoix in January. 1779 with a 3" telescope.



Finder Chart for M57

R.A. 18h54m DEC. 33 deg 1.8 min. (2000.0)
Size 80" x 60", Mag 8.8
Central star Mag. 15.7
Uranometria pg. 11.7
Sky Atlas 2000.0 chart 8

M57 is easy to find if you use a low power eyepiece to place Gamma and Beta Lyrae in your field of view. You will find M57 situated almost exactly between the two stars. The 1 deg circle on a Telrad finder sits nicely on these two stars.
A 2" scope will show a pale grey disk but a 3" scope and averted vision is required to see the ring shape. In my 6" scope the ring shape is obvious. A very large scope is required to see the central star. I have viewed the Ring Nebula through a 20" scope and was impressed by how bright the ring was but I failed to see the central star. Some people report being able to see a greenish colour with larger scopes but I have had no success.

NGC 6353 in Vulpecula (M27 or the Dumbbell Nebula) - another summer object. Discovered by Charles Messier July 12, 1764.
R.A. 20 h DEC 22 deg 43.3 min (2000.0)
Size 8' x 4' Mag 7.4
Central star Mag 13.8
Uranometria pg. 162
Sky Atlas 2000.0 chart 8 and 9

To locate this planetary nebula, start at Gamma Saggitae and move just over 3 deg north to a C shaped group of stars. M27 is located in the middle of this group. M27 is visible in binoculars. In a 3" scope M27 appears to be a disk with two bites taken out of it. Larger scopes reveal a mottled patchy appearance.

This is just a sample of the many planetaries that are accessible to large and small telescopes and beginner and veteran observers.

Stewart Attlesey

HAA First Annual Summer Star Party

Join your fellow members for a weekend of observing under the incredible dark skies of Silent Lake Provincial Park, 30 km north of Peterborough on Highway 28!

Silent Lake offers full camping facilities in a beautiful setting. The park management has agreed to let us use the open spaces of the picnic area at night for setting up telescopes and observing. Camping sites are available elsewhere throughout the park.

Reservations for the July 9-10th weekend must be made early. The camping fee is $14.00 per night and a non-refundable deposit of $4.50 per night must be sent in advance. To register, let me know the night(s) you wish to reserve, your name and phone number. Make your deposit cheque payable to "Hamilton Amateur Astronomers". Campsites with hydro hookups are available - be sure to specify if you need this. Hydro is not available at the observing site.

Registration deadline is May 13th.

Ann Tekatch
575-5433 (evenings)
527-9153 (days)

Hamilton Amateur Astronomers
Bylaw Committee Report
Proposed Bylaws
April 1,1994

After several months of intense scrutiny and deliberation, the following bylaws haw been proposed by your Bylaw Committee. Please give these bylaws your careful consideration and direct any inquiries to the council.

BYLAW #1

There shall be no bylaws.

BYLAW #2

Refer to bylaw #1

As always, we welcome your comments and suggestions. Kindly forward your written submission to the Bylaw Committee, taking care to conform to the special notice provisions inherent in subsection 2(a), part III, paragraph 63, line 212 of Bylaw #1.

Events and Announcements

- **Cosmology Discussion Group**

Next meeting will be in May. The topic will be Gravity (General Relativity.) See next month's Event Horizon for details.

- **May's General Meeting**

The next meeting will be held on Friday May 13, at 7:30. If you have photographed the eclipse, bring along the fruits of your efforts and share them with fellow members.

- **Sky & Telescope – Magazine Subscription Offer**

Discounted subscriptions to Sky & Telescope are available to HAA members as $29.96 U.S. funds. Contact the treasurer, Ann Tekatch, at 575-5433 (evenings) or 527-9153 (days) for details.

- **Event Horizon Deadline**

Send your articles, suggestions or drawings to the address on the first page by May 8. If you have any pictures, drawings or reports of the solar eclipse I will accept them after the 10th, however, please get them to me quickly.