

Event Horizon

Volume 1 Issue 9

September 1994

Editorial

This edition of Event Horizon marks several firsts. The first first (initial first?) is that Event Horizon will now have a world wide distribution! Before you start complaining about the mailing costs, let me explain. Perhaps you have heard of a thing called the Internet. If you haven't, it's basically a network of computers spanning the globe. There are a number of ways to retrieve information off the internet. One of the most popular ways of retrieving information off the Internet is to use something called the World-Wide-Web (or WWW or W3). The WWW provides a graphical environment in which to view information. Users connect to "servers" that provide information they are interested in (such as Astronomy). Thanks to the generosity of the McMaster University Science Faculty, the HAA now has its own WWW server. Which means that people from around the world can log onto a computer at McMaster and read about things we do here in Hamilton and read our newsletter. They can also print out a copy of our newsletter, at no cost to use. In fact this will be the first newsletter to appear on the Web. Our presence on the Web will expand our club around the world!

More technological firsts for Event Horizon: This will be the first Event Horizon to contain astronomy pictures *before* they appear in the astronomy magazines. It is also the first time that images taken by a local CCD camera appear in Event Horizon. It is not likely to be the last, for I understand that Charles Baetsen, Rich Petrone and Roger Hill have plans to build their own CCD camera.

This is also the first editorial to be written outside of Hamilton. As you may already know I have been admitted to the University of Waterloo and am presently adding the finishing touches to my editorial between frosh events.

This brings me to one "last." This will be my last issue as editor. Patricia Marsh has bravely stepped forward to take over the reigns as editor. I am sure that you will continue to provide her with support and, most importantly, articles.

Stephen Sheeler

Chair's Report

OK... I was wrong! I admit it. The collision of Comet Shoemaker-Levy 9 with Jupiter was the event of the decade. Not only did it produce multiple mushroom clouds seen over the limb -- it also produced long-lived dark spots on the surface at each impact location that were obvious in even the smallest telescopes. Obviously some interesting chemistry at work. At this writing, the effects of the impacts are still visible.

This has been a very exciting summer for the HAA. The Great Silent Lake Observing Expedition was a big hit. I

took me 6-year old son Robbie along and he had the time of his life. The first evening was hot and humid, but the second provided some very dark skies between occasional low cloud. The Milky Way was spectacular. As always, we managed to attract a crowd. Word spread like wildfire through the campground that there were astronomers about. During the day we did some excellent rock-hunting and visited an amazing cave/mine in the region.

Even though we have had an annular eclipse and a planetary collision that just won't quit, nature has yet another spectacle in store this summer -- the Perseids. This summer we have arranged to have it on a Friday night near new moon, with the maximum coming at dusk. We have arranged to host the event at the Dundas Valley Conservation Area on Highway 99 outside Dundas. Those of you who showed up last year may recall the turnout of approximately 1000 people. We would like to have as many HAA folk (with as many scopes!) as possible to show people the variety of things out there in the universe. Please give me a call if you are interested in helping out. Once again, the W.J. McCallion Planetarium at McMaster will be co-sponsoring the event.

Our first meeting in the fall will be Friday, September 9, followed by a star night, again at the Dundas Valley Conservation Area, on September 10. And,

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of course, the public education programme at the planetarium will ramp back up soon thereafter, so we will need your participation.

I hope, as always, that you will bring your new ideas forward and get involved with our very active group. And feel free to bring along friends to our meetings and events - they need not be members. The only requirement is that they must be interested in astronomy!

-Doug Welch

Off the Beaten Path

Well summer is soon drawing to a close. In some ways, at least in terms of observing the summer sky, it feels like it never begun. With any luck, the next few months should give way to more transparent skies. In the late August skies we again can see such familiar constellation such as Andromeda, Pegasus, and Aquarius. The following is a list of often overlooked objects visible in these and other constellations this month.

M10 & M12: These are two fine, almost naked eye globular clusters in Ophiuchus. These are so bright, that I have seen them through a 6" reflector from within the city! The trick is to find the guide stars that point to them. Don't be afraid to try for these with binoculars from your backyard.

NGC 6210: This planetary nebula is located roughly 2/3rds the way from Delta to Beta Her. Not described in Burnham's Celestial Handbook, it is nevertheless a good planetary to view in a 6" scope.

M54: This small but bright globular, located in Sagittarius has a total integrated magnitude of 8.7. Although it may seem like just another globular, it is special. It is the only bright globular that is probably not associated with our galaxy. It is

associated with a newly discovered satellite galaxy (see S&T, August '94) which is almost completely obscured by the bright Sagittarius Milky Way. Had it not been in the plane of the Milky Way, it would be one of the largest objects in the sky, covering almost 10 degrees.

M22: Just north of Lambda-Sgr, M22 is an easily resolved object in a 6". It makes a great target for those of you who own (or can borrow) some Nagler eyepieces. It is actually brighter than M13 in Hercules. This is one of those objects that one can star at all night.

NGC 7009: Known as the Saturn Nebula because of two appendages that stick out from either side, it is wonderful planetary to observe in a 10" or larger scope. A 6" scope will reveal its featureless disk, but the appendages will not be visible. It is located about a degree away from Nu-Aqr and has a magnitude of 8.

NGC 7293: The Helix Nebula. This is big, covering as much sky as 1/2 of a full moon! Because of its size, it has a low surface brightness. An OIII filter will help bring it out of the dark. It also shows well in binoculars under extremely dark skies. Although in pictures it resembles the famous Ring Nebula, it appears more like a faint disk with little brightening near its outside edges.

NGC 253: Last but not the least in splendor. This is probably the easiest spiral galaxy to observe other than M31. It is located 7.5 degrees south of Beta-Ceti. It is easily found in binoculars and is beautiful in an 8" or larger scope (having a mottled appearance).

So on the next clear night, be adventuresome and go off the beaten track. Enjoy the new scenery.

Charles W. Baetsen (524-0148)

What We Did On Our Summer Vacation/Star Party

Sixteen members travelled to the wilds of Silent Lake Provincial Park south of Bancroft for a weekend of clear skies (well, actually, about two hours of clear skies), rock collecting and good times!

Friday night teased us with tempting little breaks in the clouds. Saturday night, after a minor cloudburst, the skies unexpectedly cleared for about an hour and we scurried to our observing site for a breathtaking view of the summer sky. The rest of the night saw variable clouds with shorter clear breaks and some determined observers stayed out until 3 or 4 a.m. to catch glimpses of the Milky Way between the clouds.

Saturday afternoon we all took advantage of Bancroft's reputation as the mineral capital of Canada and visited three mineral collecting sites: the York River sodalite occurrence, the MacDonald feldspar mine and the CN rock dump. Specimens of sodalite, albite, feldspar, quartz, smokey quartz, biotite, pyrite and hackmanite were collected near some of the prettiest scenery the area has to offer.

Sunday, some of the gang went canoeing and Richard Petrone had an opportunity to observe SL9 up close! (SL9 the canoe, not the Jupiter-impacting comet.)

The weekend wasn't without its mishaps. Charles Baetsen rediscovered the law of gravity: a mass of organic compounds accelerates towards Earth

when its support suddenly collapses. (That'll teach you, Charles, to trust a Biway lawn chair!) Jimmy Butterworth gave us all an impromptu lesson in how NOT to wax your legs: with a citronella candle! Fortunately, only his shoes were a casualty. Robbie Welch got started on what we can only hope will NOT be a future career in stand up comedy. (What's a Butterworth, Mrs. Tekatch? Oh, about \$1.99 a pound....argghh....) Bob Botts brought a blender. We're not entirely sure why. There was no hydro available for him to demonstrate. (Astronomy with a blender?!)

HAA Jupiter Crash Party Crashes

On Saturday, July 16th., the weather looked promising so we hastily organized a trip to Mountsberg to watch as Comet SL9 began slamming into Jupiter.

Members began arriving around 8:30 p.m. Soon Bill and I were joined by Patricia Marsh and family, Colin Broughton and his son, Colin (Colin² Broughton?), Walter & Audrey McGaw and Ev Butterworth. We waited patiently for the "20 mile wide band of clouds" to pass overhead as the Mount Hope weather office assured us it would ... and we waited ... and we waited... and waited. As Colin Broughton remarked, the band of clouds may have been only 20 miles wide, but Mount Hope didn't say how LONG it was. Disappointed, we left.

The rest of the week taunted us with short breaks in the cloud cover while we sweated through one of the hottest weeks of the summer. Not wanting to repeat the Mountsberg experience, Bill and I decided to set up our telescope, a 7" f9 refractor, in the backyard and see if

anything of the impacts was visible on Jupiter. Monday, after the clouds parted at 10:30 p.m. we could see no impact sites on Jupiter, only a smudge on the southwestern limb we assumed was a dimming effect on Jupiter's limb. Tuesday night, we were treated to a sight I'll never forget. Just after setting up the telescope at dusk, even at low power (62x), two distinct, large spots were visible in Jupiter's southern hemisphere. It was truly an awesome thing to see! (Of course, we reacted as seasoned, experienced astronomers should: we went nuts!!!!)



The two spots visible were impact sites caused by fragments G & L. When we first viewed them, they were newly formed and they clearly exhibited semi-circular bands offset from crisp, dark spots. Our drawings from that night look rather

comical because the semi-circular bands resemble eyebrows and the whole effect is like a cartoon face on Jupiter.

These impact sites and the ones that followed later that week were easily visible in a 4" refractor and I suspect even the smallest "department store" telescope would be able to show them. I urge anyone who hasn't yet seen these remarkable markings on Jupiter to do so as soon as possible before Jupiter is lost in the sun's glare. So, dust off that old telescope and observe Jupiter!

Ann Tekatch



I too did a quick drawing on the same evening, from my personal remote observing site, Mt. HST, elevation - 300 km. ~ed.

Greek in the Round

This month's tale was decided upon when my 11 year old daughter did a school project back in June/94. She talked about the Constellations and their Origins, relating some of the history and starlore. Her favourite story was that of Delphinus, the Dolphin. With the new HAA season opening, I've chosen Delphinus, the reassuring dolphin to help us out. To find Delphinus in the sky, find the Summer Triangle, Vega-Deneb-Altair. Draw an imaginary line from Deneb to Altair, and look just to the left of the Summer Triangle, closer to Altair. There you will see a small diamond shape, with a tail...Delphinus!

The Dolphin is referred to very often in the ancient myths because it formed attachments to man and because it would gather in schools when music would be played on the beach. The quintessential marine symbol, the dolphin appears in very ancient myths as mediator and peacemaker among both gods and men. These qualities were attributed to the dolphin because it almost always appeared after the passage of storms.

This is the story of Arion, son of Poseidon and the nymph Oneaea. He was a famous musician (writing the music of the Dionysian rites) and poet. As a young man, he had a protector, Periander, and with his help, he convinced the king of Corinth to give him a ship with which to travel to Taenarus in Sicily, where he'd been invited to participate in a music competition. He not only won first prize, but his new admirers lavished him with gifts that made him a very wealthy man. So wealthy in fact, that the sailors and captain of the ship decided to kill him for the riches. He knew his death was certain and so asked to die as a bard (Celtic Minstrel). His wish was granted.

He dressed in a tunic of gold and purple cloth, with jewellery around his arms; a lyre in his left hand and an ivory plectrum in the right, he went to the prow of the ship where he sang his last sweet passionate song to the sea. When he finished his song he threw himself overboard and the ship rapidly sailed away.

His music had been heard beneath the sea and a school of dolphins came to the surface, gathered him up and riding on one was carried back to Corinth. The dolphin ran aground and died, despite all Arion's attempts to push it out into open sea. Delighted with the return of his protegee, Periander erected a monument in honour of the saviour Dolphin. The swiftness of the dolphins had him returned before the sailors, and when they told the King that Arion had stayed in Sicily because he'd enjoyed himself so much, Arion appeared in their presence and the sailors were all crucified in front of the monument.

Ev Butterworth

What's Your I.O.

Are you ready to test your knowledge with mine this month? First, the answers to last month's trivia.

- 1) A star is a self-luminous body; a normal star is a globe of hot gas radiating at a furious rate. A planet has no light of its own, and is a relatively small body moving round a star. It is fair to say our Sun (SOL) is a typical star, while the Earth is a typical planet.
- 2) A satellite is really a 'secondary body' moving round a planet. Our Earth has only one natural satellite, the Moon (LUNA)
- 3) Mercury, Venus, the Earth, Mars, Jupiter, Saturn, Uranus, Pluto, Neptune. (I agree that this is a catch. Pluto is normally the

outermost planet, but its eccentric orbit brings it closer in than Neptune when it is near perihelion. Perihelion is due in 1989, and not until 1999 will Pluto regain its title of 'the outermost planet'.)

4) (b) is correct. Therefore when a comet is moving outward from the Sun, it travels tail-first.

5) Ole Romer in 1675.

6) Biela's Comet used to have a period of 6.6 years. At the return of 1845 it split in two. The twins returned in 1852, but have never been seen since, and the comet has certainly disintegrated. For some years meteors (the Bielids) were seen coming from the position where the comet ought to have been, but the shower has now become so feeble that it cannot usually be identified.

OK! Here you are. I know you can do it! See you next month.

1) Who was the last great astronomer of ancient times, after whom the Ptolemaic System was named?

2) What is meant by an equatorial mounting for a telescope?

3) What is the approximate distance between the Sun and the Earth?

4) To the nearest day, how long does the Moon take to complete one journey around the Earth, or more precisely, round the centre of gravity of the Earth-moon system?

5) In which Leicestershire village did a meteorite fall on Christmas Eve 1965?

6) A thalassoid is a) a light-floored walled plain on the far side of the Moon, b) a mathematical inequality in the Moon's motion, c) an armadillo-like creature found in the region of Cape Canaveral, d) an Arabian astrologer, e) the secondary mirror of a Cassegrain reflector.

IO

Keeper of the Flame

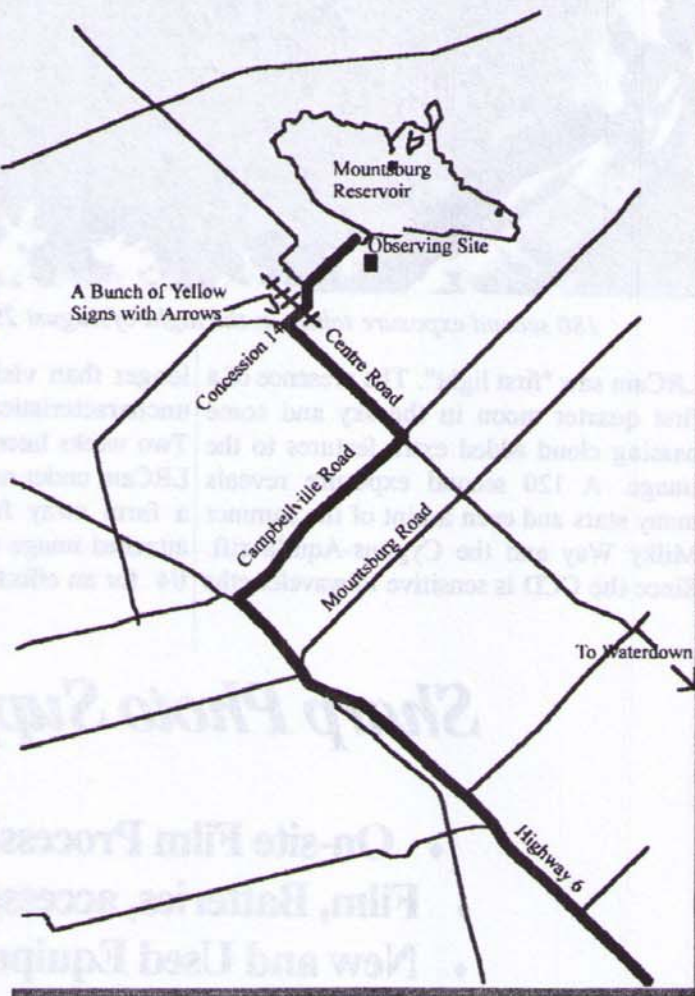
Jupiter Co-ordinator

Important Information for Mountsberg Conservation Area

Since the Mountsberg site seems to serve our observing needs admirably, I phoned the Halton Region Conservation Authority offices to inquire about a slightly more formal arrangement. They have no objection to us using the site provided that we notify them in advance so that their personnel will be aware that we have permission to use the site at night. If you expect to go observing there on a weeknight, please phone (905) 336-1158 (Carol Patterson) by 3 pm the day before to request use of SE picnic area. Alternatively, they may be FAXed at (905) 336-7014.

If the weather forecast looks promising for a weekend night, please phone to request permission by 3 pm on Friday even if you don't end up going up there. Obviously, if a small group is going up, only one person need call.

The folks responsible for keeping Mountsberg in good condition have been very helpful and I encourage everyone to do them the courtesy of contacting them when you plan to use the site.



How to get to Mountsberg Conservation Area

wonderful time and experience had by all.

Looking ahead to September and the new year, Comet Borelly will travel though Orion at magnitude 8.5. It will just north of the Orion Nebula on the 14th and just south of the Horsehead Nebula on the 17th. Also there is a Harvest Moon this month on the 19th. It is called this because traditionally farmers used its light to harvest crops.

Mercury & Venus: are not easily visible for northern latitudes.

Mars: is in Gemini and will rise about mid-night (standard time). It is beginning to brighten as it slowly catches up to Earth.

Jupiter: is in Libra, low the southwest at sunset and sets about 2 hours later. This is your last chance to see the magnificent comet impact sites from Comet Shoemaker/Levy-9. The major impacts can easily be seen in any small telescope. Don't miss them as we don't know for sure how long they'll be around.

Saturn: is in Aquarius and will be visible for most of the night. It will have reached opposition on September the first, but the month will provide an excellent viewing window. The rings are nearly edge on and the moons are becoming more easily visible. Don't miss this planet, the most beautiful of all.

Don't forget about Mountsberg Dam Observing Site. Take the opportunity to see it for yourself. It is quite dark and has lovely open skies. Phone any Council member for details or anyone else you know who has been there.

"Watch the Skies"

Ev Butterworth - Observing Director - 632-0163

Upward Skybound

Welcome to the new season of Hamilton Amateur Astronomer's. I hope you had a safe and happy summer. Good Holidays and how about that STARFEST!!! Friday night afforded us a near perfect night of seeing and transparency. Saturday was almost as good. A fabulous weekend. To all those who were there, you know how great it was, and for all of those who missed it, come next year. It really is a

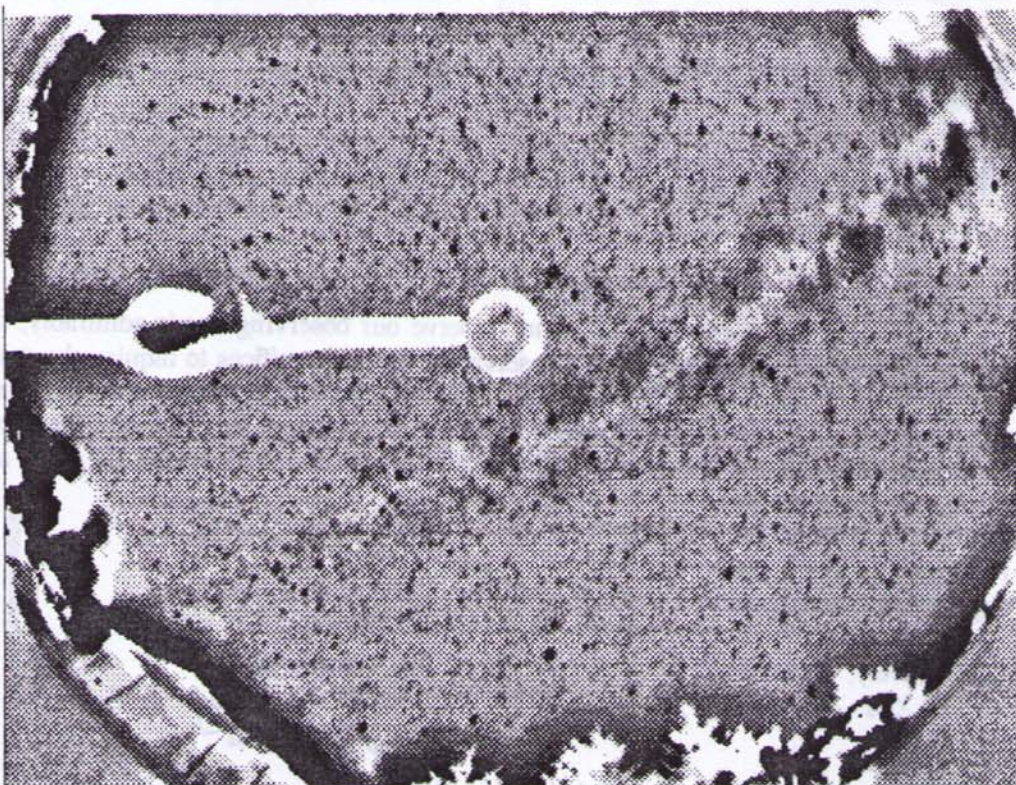
LRCam: The Low Resolution Camera!

The Department of Physics and Astronomy at McMaster acquired a SBIG ST-6 camera for the purposes of introducing graduate students to the practical aspects of CCD observing before they went observing on bigger telescopes. We have been attempting to set up a permanent home for our telescope on campus, so far without success. In view of the large amount of setup time required by a portable CCD/telescope system, I decided to build an all-sky camera that would use the ST-6 as the imager. This would allow students to concentrate on data acquisition and focus problems, not aligning finders and eyepieces.

The basic idea was spotted in Sky & Telescope years ago. The camera is positioned above a convex reflector which demagnifies the sky. (Incidentally, if anyone knows the reference for the article, I would love to have it!) I bought my reflector from K&E Hubcaps on Main East for \$15. They had several, all with at least one dent in them.

The widest angle camera lens at my disposal was a 28mm f/2.8. Even with this, the CCD chip - which is much smaller than 35mm film - had a clear radial field of only 15 degrees. The hubcap was about 225 mm across, so the lens and CCD had to be positioned almost a 100 cm above the hubcap. Fortunately, this was far enough away that the lens could focus on the virtual image of the sky (which is slightly behind the hubcap). I built a simple 2x4 spar set at 45 degrees on a plywood surface painted black. This means that there is only one direction on which stars are blocked, although it is not the most stable arrangement possible.

On the night of 1994 August 15/16,



180 second exposure taken on the night of August 29 with the LRCam

LRCam saw "first light". The presence of a first quarter moon in the sky and some passing cloud added extra features to the image. A 120 second exposure reveals many stars and even a hint of the summer Milky Way and the Cygnus-Aquila rift. Since the CCD is sensitive to wavelengths

longer than visible, very cool stars look uncharacteristically bright in the image. Two weeks later I was able to test out the LRCam under more ideal conditions, from a farm away from the city lights. The attached image was acquired that night at f/4 for an effective aperture of less than 1

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mm! Before printing the image, I subtracted a 15x15 median filtered version of the image to remove the sky brightness change, but to leave the stars.

LRCam is clearly well-suited to imaging aurora and bright meteors. I managed to get the entire system operating off 12V batteries so that it may be used under really dark skies!

Doug Welch

Jupiter Watch

This summer has seen a great deal of action with people busy doing drawing of Jupiter.

Back when Richard ran a workshop for the RASC, I didn't quite picture myself as becoming so involved in this project but something grabbed me and I think I'm glad it did.

I had no previous skills at drawing anything, let alone what I saw through an eyepiece and though I knew that others

found
valuable

in the experience, the value always seemed lost on me.

The drawings have been a great experience for me and I think for others as well, and to date there have been quite a few others. I have even managed to get non-astronomical types to do some drawings, their attempts being no worse than most that I have done. The thing to remember is that it is not the skill of the individual that counts, it is the skill of the whole group and their dedication to it.

Prior to the impacts of comet Shoemaker-Levy 9 with the planet, few would have predicted that there was going to be such a great visual display; in fact, most were guarded in their optimism of what one might expect to see in a backyard scope.

The impacts are so huge and dramatic, that the finer details that we have been recording over the past months seem almost a waste of time, but prior to the impacts, we were expecting to see so much less, if nothing at all.

I am not sure how many drawings we as a group have turned in to Richard, but I fear that we may have overburdened

him with the task of reducing all of the data to strip charts. But, don't let that stop you. Although Jupiter is settling into the muck earlier each night, there is still time to get some drawings done before it sets before twilight begins.

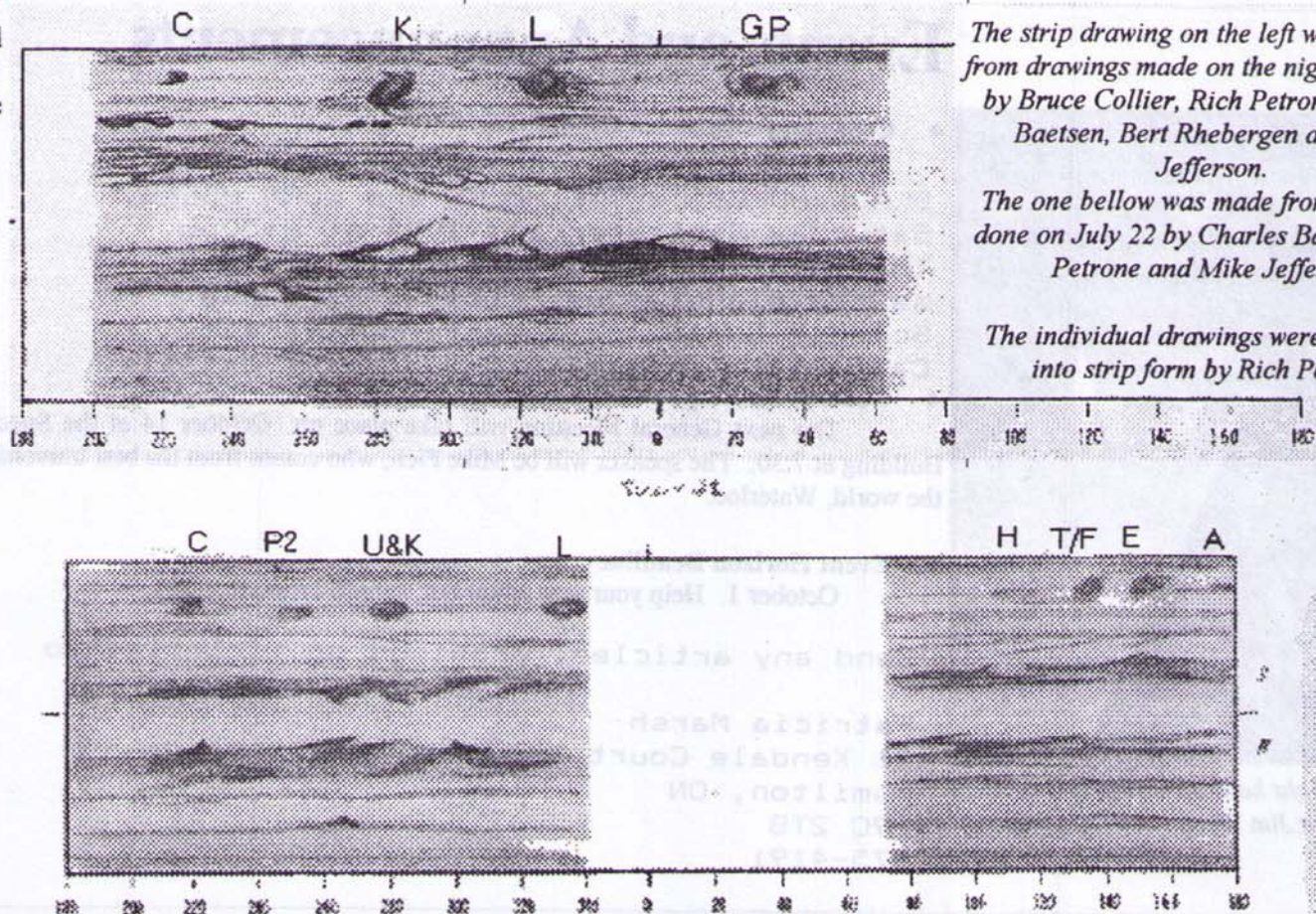
Data sheets are available from many members. You can get one from Ann Tekatch, Trish Marsh, Charles Baetsen, Ev Butterworth, Richard Petrone or myself and make a few photocopies.

Get a few drawings done on your own or come out with the group. You can hand over your data to Richard or any of the people on the executive, just don't wait too long.

When Jupiter returns again we will all be looking forward to checking up on any impact sites, if indeed there are any left. Some think that it is possible that, the impact sites may become a new belt on the planet. Only time will tell.

If you haven't seen the impact sites yet, you don't know what you are missing.

Haabib....



The strip drawing on the left was compiled from drawings made on the night of July 20 by Bruce Collier, Rich Petrone, Charles Baetsen, Bert Rhebergen and Mike Jefferson.

The one below was made from drawings done on July 22 by Charles Baetsen, Rich Petrone and Mike Jefferson.

The individual drawings were combined into strip form by Rich Petrone.

Not Just Your Average Club

It's rare when you find a club to join that gives you great pleasure and finds you many new acquaintances. It is more rare when these acquaintances become good friends full of support and good will. I have personally experienced such a rapport with members of the Hamilton Amateur Astronomers, especially in the last few months. Talk about a bunch of stargazers going above and beyond the call of duty.

I would like to thank the club for sending me a beautiful flower arrangement after the birth of our youngest member, Cole Marsh. I was thrilled to receive cards from members I have just recently met. Most of all, thanks to the support group.
-the bar-b-q was magnificent!
-when's the next movie night?

Passionately Yours,
Patricia Marsh



SL9 ~ Before Impact
(Our illustrious chair poses with son Robbie in "SL9")

Events and Announcements

♦ Cosmology Discussion Group

The Cosmology Group will discuss BLACK HOLES, WHITE HOLES and WORM HOLES, Saturday September 17, 1994 at 8:00pm. The location has been tentatively set as the planetarium, room B149, Burke Science Building, McMaster University. Call Bill Tekatch, 575-5433, for details.

♦ General Meeting

The next General Meeting will take place on October 14 at the Spectator Building at 7:30. The speaker will be Mike Fich, who comes from the best university in the world, Waterloo.

♦ Event Horizon Deadline

October 1. Help your new editor out; submit articles!

Send any articles, drawings or scribbles to

Patricia Marsh
21 Kendale Court
Hamilton, ON
L9C 2T8
575-4191



Barb Wight hard at work grinding a mirror at Jim Winger's ATM group.