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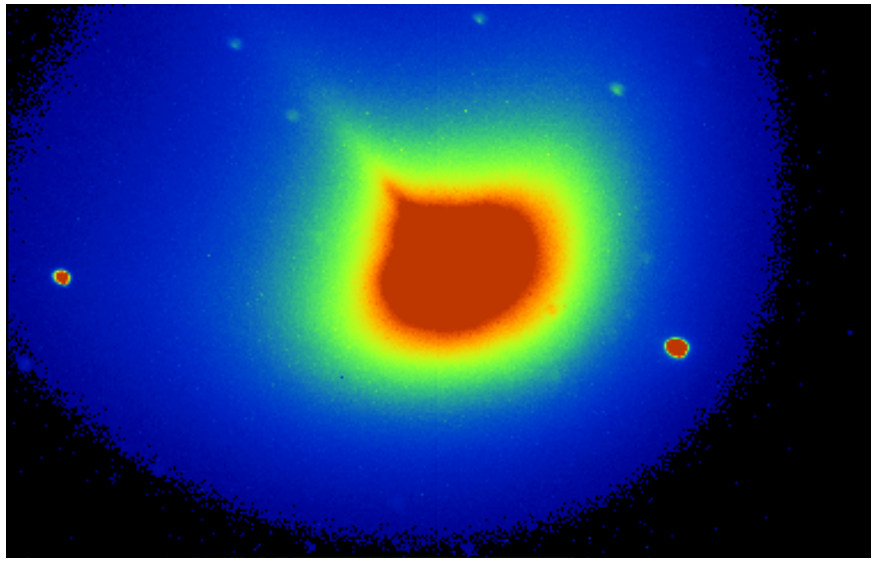
ORBIT
Hamilton Centre RASC
BOX 1223
Waterdown, ON
L0R 2H0

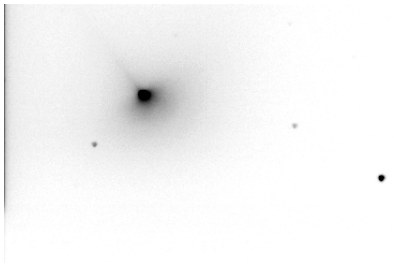
To:

ORBI

April
1996
Vol. 29,
Issue 4



Comet Hyakutake 1996 B2
These CCD images of the comet nucleus were taken March 27. NASA Ames Research Centre has these and other Hamilton Centre member images on file for international access.



The Official Publication of the Hamilton Centre of

Top Cover Image - False colour 30 second image
Bottom Cover Image - Negative 10 second image

TORIAL

Pump up the adrenaline! Comet Hyakutake 1996 B2 has been spectacular! We've done late-night observing, CCD imaging, astrophotography, and have played hosts and mentors to both the the Hamilton-Wenworth community and the world at large!

Congratulations to all members and friends for their efforts. We made the news an unprecedented 4 times in The Hamilton Spectator, and have had countless citings on radio and television and other press. And you can expect more in the coming days. To my knowledge, Roger Hill is the most intervewed member, followed by myself, and we should extend congratulations to some of our HAA friends including Doug Welch and Rob Roy. Centre member Charles Baetsen obtained reprint permission from Sky & Telescope, I produced some finder charts and comet notes printed in the Spectator, and several dozen members helped out from the 24th through the 29th on many projects. Bob Botts, Ev Butterworth, John Kezys, Hugh Gibson, Bert Rhebergen and countless others helped with the public, media and NASA projects. Wow! Old and new members have been really busy, even people who have not been to the Observatory in years have come out and contributed!

This month's issue is back down to more typical size, but is still four pages above average. As tribute to April issues of the past, Arrbit returns for this issue. The editor takes no responsiblility for content, lack of taste, offensive remarks, nor warranties against defects of any kind. Read at your own risk!

There are all kinds of exciting happenings this month - - I know you will want to read every page! — Colin A. Haig, Editor

CONTENTS: THIS FOOLISH MONTH

BUT SETIOUSLY FOLKS... MEMBERSHIP APPLICATION

Application for Membershipin the HAMILTON CENTRE of the ROYAL ASTRONOMICAL SOCIETY OF CANADA. Membership Year officially concludes September 30. We welcome people of all ages, skills, and interests in things Astronomical. Please make your cheque payable to: "RASC Hamilton Centre" and mail to the Treasurer c/o the address on the reverse. Associate membership is for those in other Astronomy Clubs. Please state the club. Full members receive The Observer's Handbook (approximately $20 value). Free 3 month Trial available - send no money!

MEMBERSHIP INFORMATION	
NAME:	
ADDRESS (1/2):	
ADDRESS (2/2):	
CITY:	
POSTAL CODE:	
DAY PHONE:	( )
EVE PHONE:	( )
E-MAIL:	

PAYMENT OPTIONS		
ADULT	**@ $49.00**	
ASSOCIATE	**@ $30.00**	
YOUTH (under 21)	**@ $35.50**	
VOLUNTARY DONATION:		
TOTAL:		
Circle one:	**NEW Member**	**RENEWAL**

WHAT'S HAPPENING!

Monthly Meetings are held by the Hamilton Centre at McMaster University Medical Centre Ewart Angus 1A6 8pm. Next meeting is **May 2** - Speaker to be announced

NAME	Phone	Email Address
Observatory	689-0266	http://ad-here.com/RASC/
Pizza Delivery	527-1111	
President: Roger Over aka Roger Hill	878-5185	roger@ad-here.com Fax: (905)878-3974
Secretary: Davy Crockett aka Dave Coulson	634-4436	
Treasurer: Johann Kissies aka John Kezys	648-5542	kezys@operatns.mohawkc.on.ca
Education:Mr. Martiano aka Carmen Martino	643-7283	
Observing: Rich Petroleum aka Rich Petrone	547-2589	petrone@ physun.physics.mcmaster.ca
Curator: Les Nagus aka Les Nagy	387-0690	lnagy@netaccess.on.ca
National: Mike Jiffypop aka Mike Jefferson	648-8919	
General: Charles Betsome aka Charles Baetsen	524-0148	charlesb@abelcomputers.com
Librarian/Recorder: Ray Dontbadgerme aka Ray Badgerow	692-4184	s296489@ liberty.mohawkc.on.ca
Editor: Callin Vague aka Colin Haig	577-5349	chaig@radgrp.com

FROM THE KEYBOARD OF THE PRESIDENT

Wow! I don't know about you, but this had to be one of the most astronomically packed months that I can remember. I knew it was going to be busy, but I really didn't have a clue just how. Between the Comet, the National Council, the Press, a Lunar eclipse (looks like it will be cloudy), and starting a new job, I have been kept hopping.

First, the comet. What can anyone say? It has been, so far, the most beautiful comet I have ever seen. Last month, I reminisced about Kohoutek, but I have run out of superlatives regarding Hyakutake. You may remember hearing about how the Hamilton Centre was going to help NASA keep tabs on the Comet with our brand new CCD camera. As it turns out, I was standing in the back of the room at the HAAs March meeting, when a reporter started asking Colin Haig and I some questions. We adjourned to the hall, to avoid overly disturbing the meeting, and we told the reporter all about the Hamilton Centres plans, and the HAAs, although I did interrupt the meeting to get someone from the HAA (Doug Welch) so that the reporter got his facts straight. Monday morning dawned, and I was in the shower getting ready for an interview, when Ann Tekatch called. Seems that the Comet was front page news in Hamilton! Many of you will have seen that article, and the good that it did for the Centre, and the HAA, was immense.

Area astronomers put comet live on Internet

Frankly, it was really nice to see a good-news story on the front page, and an astronomical one at that. To be perfectly honest, it was nice to see my name mentioned, too. One week later, I got a call from the Spectator again, asking how our plans were going, and what I thought of the Comet so far. Considering that this was one night after the busiest night at the Observatory that I can remember, I told him that no-one that I had talked to had seen a better one. I also reminded him that if the general public wanted to see the Comet, that the HAA was putting on a public observing session, and that the HAA was the best, bar none, at putting on this sort of event.

So what was the scene at the Observatory? Frankly, it was bedlam. I thought that we would have many members out, and some other folk, too. Some estimates of the number of people who dropped by were as high as 150 people. It was nice to see some old and valued friends there, too. Friends like Clive and Edna, Barry, Karen and Derek, were prominent among the revelers, and a large number of people dropped by whom I had never met. Twice the Police dropped by (the second time there were some timbits ready, courtesy of Mike Ricks and his wife). I did set my telescope up, and I had a fine view of the coma through it, but the best view was with just plain eyeballs. People were estimating tail lengths of more than 40 degrees. These reports were greeted with (in some cases, extreme) skepticism, but estimates from experienced observers in North America the same night have backed up these reports. All I can say is that they have better eyes than I do. If the reporters of long tail lengths thought that I was doubting them, all I can say is what I said at the time: "I can't see it go back that far", and that I am sorry if they feel that I slighted their observational abilities.

The evening of closest approach saw several of us gathered at the Observatory, hoping against hope for a break in the clouds so we could do some imaging and send it to NASA. Some holes did appear, and we did catch a glimpse of the Comet, but no for long enough to get some data. I drove home through a blinding snowstorm. I called it a night rather early (11:00 PM) as I had started work that day, and I was worn out. Since then, Colin Haig has sent some of the images captured through the CCD on down to NASA, so we did contribute. It would have been nice to do more, though. Ah well, all aboard for Hale-Bopp.

During the day, prior to the Observatory bedlam, I attended a National Council meeting. I was National Rep, as Mike Jefferson was unable to make it. Colin Haig and I drove to Toronto together. What a meeting. By now, a number of you will have heard the results, but let me say that I was able to cast the vote for Hamilton Centre that killed the Journal. The plans now are for Astronomy Canada (soon to be renamed to something more poetic) to start publishing in January. There were a couple of last ditch attempts to de-rail Astronomy Canada, but in the end, the motion passed, and the Journal as it now stands will pass as well. R.I.P. J.R.A.S.C. The other item of import was the bundling, starting in January as well, of SkyNews with membership in the R.A.S.C. This one was a little more difficult, and there was a great deal of very strong opposition to it. During the previous Board meeting, the Hamilton Centre Board had thrashed out this

PNEUMONIA PAGE

The Pneumonia Page is a place for extremely important information and extremely serious items, including viral infections.

New Galaxy Named for Centre Members: As many of you know, Johann Go-slow and Callin Vague discovered a galaxy in the 17" scope, at approximately 2:30am EST on March 28. This Galaxy has been named in honour of the co-discoverers. Henceforth, this Mag 10.5 edge-on spiral galaxy will be known as New Go-slow Callin 45-minutes-to-find-it, 65-degree-tilt. For brevity, it may just be refered to as NGC4565. Any similarity to the New General Catalogue item of the same designation is purely intentional.

Cinder Block discovered by past President: Former centre president Auric Goldfinger was recently spotted testing cinder blocks at the observatory. Unfortunately, his report is not available, but we hope that he will return and visit us again soon. Best wishes, Auric.

Trial Membership Program: The Hamilton Centre will be implementing the Trial Membership program, effective immediately! New members will be tried and found guilty of not joining sooner. As sentence, they will be subjected to three (3) months of ORBIT, our leading newsletter, three months of attendance at all of our functions, and is welcome to come out to the observatory at any time, under the supervision and guidance of established club wardens. There will be no financial penalty, except to encourage them to join at the end of their 3 month sentence.

Terry Dickinson television series: The former astronomer and noted media-hound is filming a new series with the CBC (Closing Broadcasting Corp). Terence Dickinson, or as he's called on the show, "Mister Night Eyes" and his pet basset hound "Tycho" embark on a real life/animation trip around the solar system on a magical jet propelled flying carpet named "Eureka". Terry, dressed in the style of a 12th century court astrologer (with pointed hat and flowing celestial robes) takes our viewers to the surfaces of every planet and moon in the solar system where he meets the mythical inhabitants and learns all about their unusual histories and customs. (The episode where Terry learns how to do the Venusian jig with it's 3 foot tall inhabitants has to be seen to be believed...We had no idea Terry was such a great dancer {Did you know Terry once trained with the National Ballet and actually appeared on stage at the OKeefe Centre in a christmas production of the NutCracker?})
We are also especially proud of the episode set on Io where Terry loses Tycho down one of the volcanoes and has to swim in the sulphur lakes to find him (We deeply regret the loss of Tycho's stunt dog Ruggles). - *from rasclist. -editoad*

Humble Servant Joe:

It has come to our attention that thou art not making the sacrifice properly. As the local (earthly) representative of the sky gods, it is my solemn, grave duty to tell ye, they ARE very displeased with you people around London.

In light of this grave fact, I am willing, as high priest, to perform this sacrifice on your behalf. However, it must be done in a precise way, that only I and my fellow high priests have been educated in. Therefore, the sky gods require you to deliver the sacrificial offering (aka Meade 16") unto us at the Leslie V. Powis sacrificial altar and Observatory (in Hamilton), for us to perform the prescribed ritual.

Your timeliness is of great importance. Failure to comply may mean the sky gods will exact even stronger vengence upon ye!

Joe (yes, its not his real name, or is it), writes back:

Alas, ye speaketh the truth! Throughout the daytime sucker holes did appear in the clouds only to be torn away from our sight!

We have consulted the sacred shrubbery and have found you to speak truth! We shall do as we say. In addition, to ensure success, we shall offer, bound and gagged, the owner of the said telescope stuffed inside the main tube. Just be sure to pull the pin on the Holy Hand Grenade taped to the side of the tube. May the heavens clear for us all!

As Cure-all for the Centre, I will keep you posted on future developments.
- Les-is-more Grand-Nagus

issue, and the feeling was that, as long as dues were not raised to cover the cost, that it be given a one year trial. Basically, getting the word out to 20,000 subscribers to SkyNews is too good an opportunity to pass up, and frankly, the RASC has no plans for a periodical catering to the more novice astronomer. The R.A.S.C. publishes a superb beginners handbook (courtesy of an extreme amount of great work by Leo Enright in Kingston), so it must believe that there is a market there, but it ignores them otherwise. Considering the large turnover of new members, this might be just the thing to help them stay. So, for those people who already subscribe to SkyNews, don't renew your subscription for next year. If you do end up getting two copies once or twice, give one to a neighbour, or pass it on to the Centre so that we can add it to our promotional literature. This was quite a meeting. As I said afterwards, (to paraphrase the Bard of Avon) "When some periodicals die, no comets are seen, but the Heavens themselves blaze forth on death of Journals!" It was, all in all, quite a meeting.

There was another item of note, astronomically, in March. The birth of a new list server. In the couple of days leading up to the last general meeting, I had had some discussions regarding starting a non-partisan list server (a list server is an Internet facility where you can e-mail to one address, and the mail is copied to a list of people). Modeled after the RASC listserver run by Dave Lane in Halifax, this one is for all people interested in Astronomy in Southern Ontario. This includes, but is not limited to, R.A.S.C. Centres, the H.A.A., the N.Y.A.A, the group in South Simcoe, and just plain, unaffiliated, but interested people. The whole point was to open lines of communication between the various groups, letting people in Toronto or London know about an observing session going on in Niagara Falls, say, or calls for observations of the Aurora, or, well, whatever. It seemed important to keep it non-partisan, and it will be, as long as it runs from my Internet server. To join, try sending a message to bigbang@ad-here.com, with the words "SUBSCRIBE bigbang" (without the quotes) in the body of the message. If this does not work, send me some email (see the address below) and ask to be subscribed. I will take of it. Although this was working fine during March, a gremlin struck at 00:01, April 1st (it wasn't a virus, just some software that was timed to turn off at the end of the month). I had to install some new software to get it back up and running, but this new stuff will need a little debugging. Ah, the joys of the computer industry!

I think I have said enough for this month. No doubt, you will find me droning on and on and on about a couple of these topics at the meeting, but hopefully in the discussions that have been known to occur at such times, we'll all learn something. Thanks.

Roger Hill
email: roger@ad-here.com
voice: (905)878-5185 fax: (905)878-3974

RASC National Council Meeting Results

National Council Meeting Summary - March 23, 1996

This is a brief synopsis of the happenings of the National Council meeting. Roger Hill and Colin Haig were in attendance from our Centre.

Approval was give to induct the Okanagan Centre
Messier Certificates and Membership Certificates were approved
Light Pollution - Request for $400 expenses to attend a conference
National Office Reorganization will include only part-time staff
Approval of a one-time retirement allowance for Rosemary Freeman's 24 years of service.
Publications Revitalizing - Journal and Bulletin will Cease
New publication to commence as soon as possible
Name for New Publication to be determined - something better than Astronomy Canada
SkyNews to be bundled for one year trial, no fee increases.
Negotiate membership processing and mailing contract with UofT Press.
Request by Vancouver Centre for Special Grant of $3300 funding deferred until the proposal requirements are met.

All major issues were discussed, and all major changes were approved., with the vast majority of the centres in favour of the changes. For more info, contact Roger, Colin or Mike Jefferson.

Chrismas have been busy learning how to listen actively at our monthly meetings. Observing Director Rich Petroleum has been busy observing his girlfriend, Meringue. Ray Dontbadgerme has found a new system for computing eph!@#$@@!merid#@$! positions of stuff. He is requesting that we approve a grant of $3.99 for a new abacus to aid his computations. Our Cure-all, Les-is-more, the Grand Nagus, has postulated the 933rd rule of acquisition: Convince people that you really want to help them by taking away parts of their telescope for fun and profit, and get them to load it in your car. Burlingtonian Davy Crocketson has been hunting coons near the site. Carmen Martiano (MISTER Martiano to you, paesan) is still trapped in the empty observatory dome at Swelledfeet High Skool. Martiano reports that stealing the giant mirror from the Gemini telescope was not such a great idea. It did not fit over his bathroom sink, but makes one jim-dandy solar-powered hot-dog cooker. - *Calling N. B. Vague, MessC, yur arrbit editoad. ribit.*

Cure-All's Coroner

This month, Les-is-more Grand-Nagus reports on recent developments in the Hammytown Centre's quest for better scopes, listerines, and other breath fresheners.

Our editoad, Calling Vague, has been in contact with our neighbours at the Long-gone Centre. The following is the text of their correspondence:

At 12:30 PM 3/21/96 EST, Joseph O'Neil (not? his real name) wrote:
Greetings all.
As many of you probally now as we do in London, the purchase of any astronomical item greatly angers the sky gods and causes clouds to desend upon us.
A plossl usually brings a week of cloud, a Nagler a whole month, and an entire new telescope - well, that explains the solid cloud we have had in London from October to now.
To appease the skies gods, we of the london [sp. -editoad] Centre will be holding a sacrficial bonfire and will sacrafice one 40 cm (16 inch) Mease telescope on Saturday afteroon at our Fingal observing site.
Please make note that this will happen at the exact same time Peter [Jedicke the owner] will be in Toronto at the National meeting.
Don't rush back Peter, and make sure you leave your backdoor unlocked.
We will let you all know if our sacrafice appeases the sky gods and brings us clear skies.

Later that day, Calling wrote:

RBITORIAL

GOTCHA again huh? Yep, no escaping black holes (nothing escapes not even Disney technical advisors) nor April's ARRBIT. Arr Billy, have you ever mounted a telescope? Well me hardies, shiver me timbers and watch for falling trees. It seems that Boobert Butts and Callin Vague wanna be Lumberjacks. They cut down trees, they eat their lunch, they go to the lavatory... Boob wishes he was a girlie, just like his dear mama. Oh, they are lumberjacks, and they're ok.

Meanwhile, Johann ("really, I'm over 18") Kissies and Charles (Prince of Wails*) Bet-some-money have been busy faking CCD images with Corel Draw, an ant colony, and a very small stamp pad. Huge Gibson was caught in Los Angeles in a car with a woman who said she was just changing his fuse. After the truth came out, we discovered Hugh always packs protection. Surge protection that is. Roger Over, our Imperial Leader, has indicated that his next objective is to turn young master Mike Jiffypop to the dark side of the Internet. And Evil-one Butterbuns continues to hide from cameras and camcorders, screaming "you can't take my soul! no! never". Quickdraw Macgaw found his way back to the PowWow Observatory after being lost in the woods for several years. Rumour has it that millionaire crime-fighter Bruce Welch (aka Machoman) recently discovered a can of purple fructose liquid. Brain Martian of the Central Bureau for Asinine Telegrams has issued a circular and a spherical and a tetrahedral declaring this liquid to be henceforth known as Welch's Grape Juice 1996 B2. This follows his holy-hyakutake machoman discovery of MUSTACHIOS (Massive Unexplained STellar Asinine Comet Hunks In Orbit around the Sun). Centre friends Ann T. Matter and Grunt Itsgone have continued to indicate they do exist, and are not just figments of someone's imagination. New members Jelly and

* See also: new daddy, father of crying infant, etc.

CONTENTS: THIS MONTH

NATIONAL COUNCIL MEETING - MAJOR ISSUES

From Doug George, 1st VP, National Council

The following major decisions were made at the March National Council Meeting (details will follow in Peter Jedike's official minutes):

1. Executive Secretary - Council approved a "Retirement Allowance" for our retiring Executive Secretary, Rosemary Freeman. Rosemary will be retiring at the end of her 24th year with the RASC.

2. National Office - the Executive Committee was directed to negotiate a detailed contract with University of Toronto Press for services in handling membership lists and Handbook mailing. Many Centre reps offered suggestions and pointed out difficulties during the discussion. Anne Marie Corrigan of UTP was present to help answer questions. If implemented, this proposal would allow for a reduction in salary costs at the National Office, and reduce the workload at the Centres. The actual decision on whether to proceed will take place at the General Assembly in Edmonton.

Please note that this proposal does NOT eliminate the position of Executive Secretary at National Office. It may have the effect of reducing the position to part-time, although this has not been decided. The issue of National Office operations will be dealt with fully at the General Assembly.

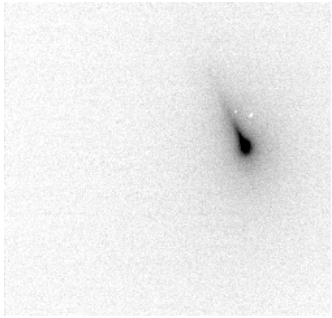
3. Astronomy Canada - Council approved proceeding with the new

publication, and allocated a budget. The name for the publication has not yet been decided. Our Journal Editor, David Turner, expressed the opinion that significant improvements over the prototype issue could be made and was optimistic that the final result would be widely accepted. He will be working closely with the Publications Revitalization Committee and Bulletin Editor Pat Kelly.

4. SkyNews - Council approved a one-year trial for including SkyNews with the Society's regular publications. This trial will begin with the first issue of 1997. The RASC will receive free 1/2 page advertising space in each issue.

BOB'S COMET UPDATE - THE SEQUEL

The astronomy world jumped into quick action as comet 1996 B-2, Comet Hyakutake, promised a spectacular showing in the few short weeks after its initial discovery. Visible to the backyard astronomer's telescopes since its discovery on January 20, by Japanese amateur Yugi Hyakutake, from a location in southern Japan. This comet was discovered using giant 25 x 150 pedestal mounted binoculars.

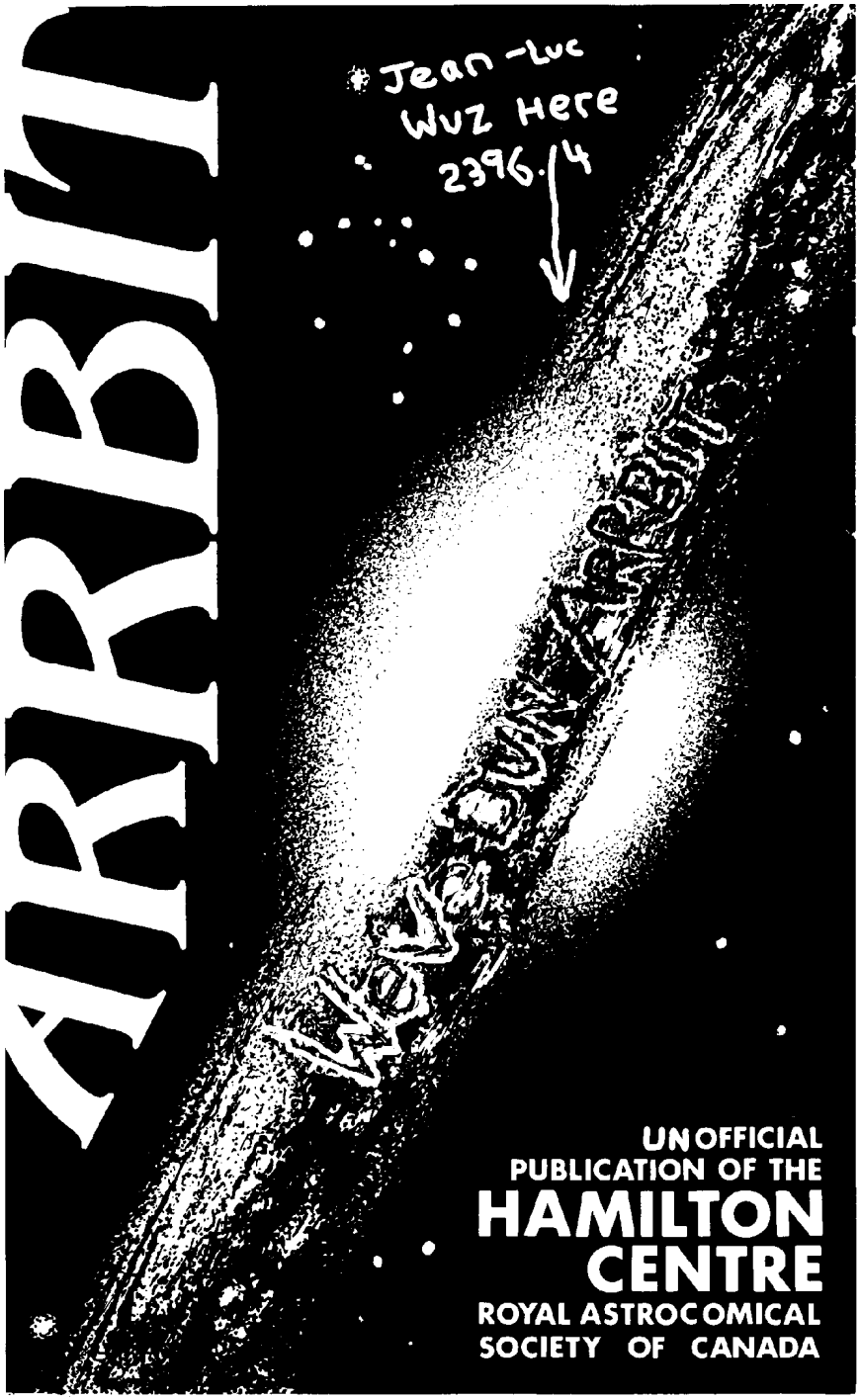


CCD Image by Colin Haig

1996 B-2 has been determined to have a period of between 10,000 to 20,000 by Brian Marsden of the Central Bureau for Astronomical Bulletins (CBAT). The inclination of the comet was a clue that it originated from the Oort Cloud, which is theorized to exist at the distance of 30,000 AU from the sun.

Many amateurs had followed the comet closely for the past several weeks and watched as is steadily increased in apparent size and magnitude. It was about 6th magnitude when I first observed it, when it was still in Libra. Climbing into Bootes, it soon became an easy naked eye object and then began its rapid transit of the night sky.

At closest approach, it was moving at almost a degree per hour. The movement relative to the background stars was easy to follow for those who arrived at the observatory on the night of March 23. The observatory parking lot was crammed, with the overflow causing somewhat of a traffic hazard on the 7th concession. An estimated 150 to 200 people came to the



"new" comet in the Oort sense, and that it was last near the sun 10 000-20 000 years ago. This may inspire further confidence in the r**-4 law, and since visual observations would seem more relevant than CCD observations in discussions of naked-eye visibility, one might expect the comet to become even brighter than predicted. It is important to note, however, that when the comet is closest to the earth (0.102 AU on Mar. 25.3 UT), that brightness is likely to be diffused over an area several degrees across. More typical tail development is likely to come later as the comet approaches the sun. The comet is unique in its close passage to the earth and subsequent small perihelion distance. If the brightness holds, it will be the intrinsically brightest comet to pass so close to the earth since 1556. The ephemeris uncertainty is still at least 1'.

1996 TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1996 04 01	03 13.58	+54 56.3	0.243	0.898	58.8	107.9	2.0
1996 04 03	03 09.73	+49 38.8	0.304	0.853	53.2	110.3	2.2
1996 04 05	03 07.24	+46 04.3	0.366	0.808	48.8	111.3	2.4
1996 04 07	03 05.25	+43 28.1	0.429	0.762	45.1	111.3	2.5
1996 04 09	03 03.41	+41 26.8	0.493	0.715	41.9	110.7	2.5
1996 04 11	03 01.57	+39 47.2	0.558	0.667	38.8	109.5	2.5
1996 04 13	02 59.61	+38 21.0	0.623	0.618	35.9	107.8	2.4
1996 04 15	02 57.46	+37 02.5	0.688	0.569	33.1	105.5	2.2
1996 04 17	02 55.04	+35 47.4	0.754	0.519	30.3	102.6	2.0
1996 04 19	02 52.30	+34 31.8	0.820	0.468	27.4	98.8	1.8
1996 04 21	02 49.18	+33 12.0	0.886	0.418	24.5	93.9	1.4
1996 04 23	02 45.62	+31 43.8	0.952	0.368	21.4	87.5	1.0
1996 04 25	02 41.57	+30 01.8	1.018	0.320	18.2	78.8	0.6
1996 04 27	02 37.08	+27 59.6	1.081	0.278	14.7	67.2	0.1

Provided the prediscovery measurements can be relied on to arcsecond accuracy, the ephemeris uncertainty around the comet's approach to the earth is at most a few tenths of a degree, the main source of error being in the orbital eccentricity, which is clearly very close to unity.

Accompanying text provided by:
Ron Baalke, JPL and Brian G. Marsden, CBAT
 M.P.E.C. 1996-C06

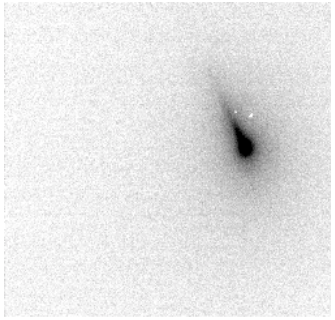
site to observe the comet on that night.

Reports of tail length varied greatly, with some claiming a staggering 40 degree length. Magnitude estimates also varied. I haven't seen the official light curve as of yet, but, many placed the coma at near zero magnitude.

Whatever the magnitude or tail length, the comet was easily the most impressive object in the sky next to the moon on that night, which was nearly first quarter. For those who stayed until after moonset, the comet appeared even more impressive, until the sky became spongy at around 4 AM.

Those who chose to look into the eyepiece of a telescope were treated to a rare sight. The coma displayed a bow wave in the form of a fan, at the leading edge of the comet, with a brilliant, long spike exiting towards the tail. It is a strong possibility that the long spike was part of the comet that began to break up. Later Hubble photographs confirmed the break-up, but it is not clear at this point if that caused the above phenomenon.

On a whim, I brought out my Project Star diffraction grating, (courtesy of Dr. Doug Welch) and held it up to the eyepiece of the 17" scope in the Chilly building. The spectrum appeared to be composed of mostly blue and green, with very little red and yellow. This leads one to assume that the spectrum was due to ionized gasses rather than reflected sunlight which should have a continuous spectrum.



CCD Image by Hugh Gibson

The night of closest approach found half the continent socked in with foul weather. The Centre had managed a connection to a public outreach program with NASA, called SOFIA, through the efforts of Colin Haig and Roger Hill. Images from IRTF and many other sources will be posted to a "virtual star party" on the Internet called the "Night of the Comet," sponsored by NASA's Ames Research Center, Mountain View, CA, NASA's Stratospheric Observatory For Infrared Astronomy (SOFIA) program, and its K-12 Internet Initiative. This home page allows anyone with access to a computer and a modem to post and observe Hyakutake images, track the progress of the comet, converse with NASA experts, learn about astronomy and participate in experiments.

"Although the project is just getting started, the initial response has been tremendous," said SOFIA project educator Bob Hillenbrand. "Virtually every state is covered, plus Puerto Rico, and observers are participating

from every part of the globe, including Taiwan, Australia, Africa, Russia, South America and Europe."
"Night of the Comet" can be accessed via the Internet at URL:
http://www.comet.arc.nasa.gov/comet/
Those who were at the site on the night of the 25th, were treated to an on-line star party with the astronomers at NASA, who were fielding questions from around the world, including our group at the observatory. A 35 degree tail was confirmed by the experts from NASA on the night of the 25th. We also inquired about the blue/green emission lines from the nucleus. It turns out that the spectrum of the comet is one of the projects that NASA had scheduled for this comet, and were caused by Carbon and Carbon Monoxide.

Another spectroscopic program, by Michael A' Hearn of the University of Maryland, will map the comet's emission in the light of the diatomic carbon (C2) molecule. Optical light from C2 is one of the strongest emissions in ccmets, but astronomers have not yet been able to tell where the C2 is coming from. (C2, itself, is probably not present in the nucleus. The C2 is likely produced by the breakdown of a more complex carbon-bearing molecule in the nucleus.) By simultaneously observing both the ultraviolet and visible emissions from C2, the team hopes to gain insight into the origin of this important cometary molecule.

The tail increased in length as the nights wore on, some speculating more than 60 degrees in total. When the tail crossed Ursa Major, it seemed to fade to nothing and resume again. A question of the magnetic field of the comet came up.

On April 2nd, as Hyakutake hurtles away from Earth and on toward the Sun, John Brandt of the University of Colorado, and co-investigators, will use the WFPC 2 to observe Hyakutake's near-nuclear region to reveal the shape of the plasma and presumably the magnetic field. The comet captures the magnetic field out of the solar wind, a stream of subatomic particles from the Sun. Near the nucleus, the field should wrap around in a hairpin configuration, and also should show a pileup region on the sunward side of the nucleus. The region to be probed by the Hubble images will be the most detailed look at the near-nucleus plasma since the spacecraft flybys of comets Halley and Giacobini-Zinner in 1985-86.

The crowds have died down now but the comet is still a spectacular sight. Doug Welch and I visited the observatory on the night of April 1, when the comet was already in Perseus. Not visible from any of the permanently mounted scopes, we hauled the 6” Dob out to the road. The comet is still an easy naked eye object. I must stress that even now, it is still far more impressive than any comet I have ever seen in the past, even through a 24” telescope.

The comet is no longer as bright, and therefore offered a less clear spectrum as it did a week previous. We swung the scope around to Sirius and Betelgeuse which both displayed some beautiful sharp lines.
On April 3rd and 4th a team of scientists, lead by Dr. Michael Combi of the University of Michigan's Space Physics Research Laboratory, will use three of Hubble's instruments, as well as coordinated ground-based telescope observations, to study water photochemistry on the comet, which is important for interpreting a variety of observations of comets.

The investigation is designed to make measurements simultaneously of hydrogen, hydroxyl, and oxygen in the coma (or atmosphere) of comet Hyakutake. (Hydroxyl radicals are made up of a one hydrogen and one oxygen atom). These are the most abundant constituents in the comet's coma, being produced when ultraviolet light from the Sun breaks apart the water molecules that are evaporated from the comet's nucleus. A water molecule is made up of two hydrogen atoms and one oxygen atom.

The key part is the measurement of the expansion speeds of the hydrogen atoms, which takes special advantage of Hubble's GHRS. Images of the hydrogen coma will also be made using the WFPC 2. The FOS will be used to detect hydroxyl. Ground-based observations will be made during the same time period to measure visible red light emissions of hydrogen and oxygen. Speeds can be measured using the same Doppler principle which enables police radar to measure a car's speed.

[The following is from CBAT by way of Bob -Ed.]

COMET C/1996 B2 (HYAKUTAKE)
In adopting, originally on IAUC 6304, the magnitude formula (5.5 + 5 log Delta + 10 log r) for this comet, we were well aware that CCD observations were then running up to 2 mag fainter and visual estimates up to 1 mag brighter than this. This is still the case (see MPC 26606-26608, IAUC 6328), which mainly serves to confirm that the choice of the term 10 log r (r**-4 variation) was not unreasonable. The following general orbit, from MPC 26724 and utilizing observations through Feb. 27, shows a 5-sigma departure from a parabolic solution, some worry about this determination arising from the use of the isolated Jan. 1 prediscovery observations:
Epoch = 1996 Apr. 27.0 TT T = 1996 May 1.4025 TT
Peri. = 130.1925 e = 0.999846 Node = 188.0514 2000.0
q = 0.230123 AU Incl. = 124.9016

Nevertheless, the adjustment necessary to obtain the "original" barycentric orbit is quite large for this comet. The indications are thus that this is NOT a