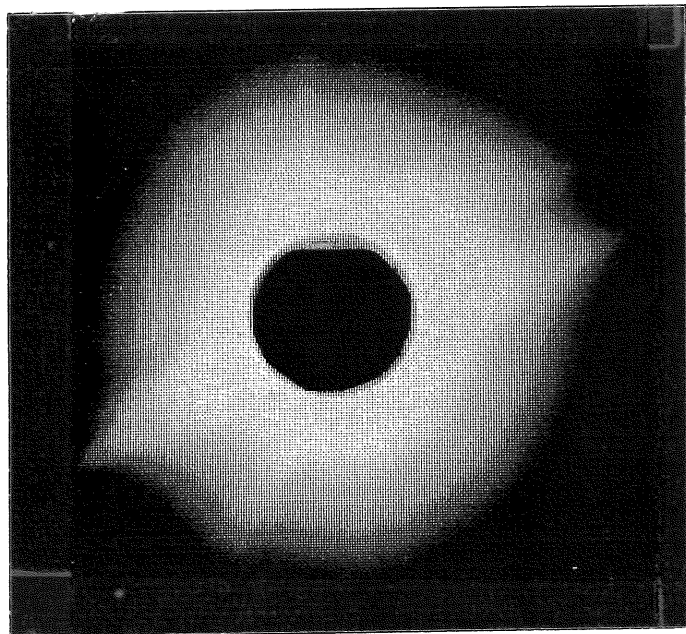


THE DAVID DUNLAP DOINGS

September 27, 1991

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TOTAL ECLIPSE

JULY 1991

See story on p. 16

COMINGS AND GOINGS

Jozsef Vinko arrived on September 17 from Hungary to spend six weeks working in the department. He teaches at Jozsef Attila University in Szeged, and is working on his PhD at Konkoly Observatory in Budapest. His interests are in Cepheid variables and close binary stars.

John Percy attended the 1991 IAU General Assembly in Buenos Aires. He was elected President of IAU Commission 27 (Variable Stars), Vice-President of IAU Commission 46 (The Teaching of Astronomy), and a member of the Organizing Committee of the Working Group on Be Stars. He gave a paper on "Astronomy Activities for a Senior High School Physics Course", and was co-author of a poster paper on multilongitude, multiwavelength observations of Be stars.

John Percy spoke to the RASC Toronto Centre on September 20 on the topic of "The Search for Extraterrestrial Life". Reluctantly, he is once again Vice-President of the Toronto Centre, responsible for arranging for speakers (Rachel Webster having resigned in preparation for her departure for Melbourne). Anyone interested in taking on this interesting and enjoyable position should see John Percy.

Bob Garrison attended the IAU meeting, held from 23 July through 1 August in Buenos Aires, Argentina, where he presented 5 papers. One was given in Spanish at a pre-IAU session for Argentine educators. Immediately following the IAU, he traveled to Chile for an observing run with the University of Toronto 60cm telescope on Las Campanas. This was his first shakedown run with the new CCD for the classification spectrograph.

Marlene Cummins attended the Special Libraries Assoc. annual conference in San Antonio, TX, June 8-13. Part of Marlene's duties as chair of the Physics-Astronomy-Math Division was to plan the division programme for this conference. This conference marks the end of her term as chair.

NEW STUDENTS

We welcome eight new graduate students to the department:

James Brown from McMaster
 Paul Finnie from Queens
 Dan Hudon from STScI
 Esmail Mawjee from Glasgow
 John Purcell from Dublin
 Randall Pyke from U of T Mathematics
 Paul Wiegert from Simon Fraser
 Piotr Zembrowski from Warsaw.

CONGRATULATIONS

To Susan Tarr, who was married to Peter Timmins on August 23. We wish you a long and happy life together!

To Peter Wizinowich on his appointment as optical engineer/manager at the Keck Observatory. (See Letters section.)

To Kim Innanen on the naming of minor planet 3497 as Innanen. The citation reads "Named in honor of the Finnish-Canadian astronomer Kimmo Innanen, well-known specialist in celestial mechanics and galactic dynamics. With Seppo Mikkola he predicted the existence of the 'Mars Trojans', the first of which was recently discovered." (Mikkola had a minor planet named after him at the same time.)

To John Percy on becoming president of Commission 27 (Variable Stars) and vice-president of Commission 46 (Teaching of Astronomy) of the IAU.

To Ernie Seaquist and Archie Ridder, who join the University's 25-Year Club this fall.

To Frank Hawker, who completed 40 years on the DDO staff this past summer.

POTPOURRI

Erindale Campus begins its 25th anniversary year celebrations this month. There will be a variety of events, many of them open to the public. In recognition of the anniversary, we will try to schedule a Wednesday staff meeting and colloquium at Erindale later in the year.

In the last year or two, the University has developed a new interest in teaching effectiveness and the quality of the undergraduate experience. As part of this trend, the Department of Astronomy is planning a workshop for teaching assistants later in the fall. Other teaching development activities are also being planned. [In fairness, it should be remembered that the Department has organized a number of such events over the years, and both faculty and graduate students are involved in a wide range of educational activities involving schoolchildren and the general public.]

A draft of the long awaited Light Pollution Control By-Law was approved in principle by the Richmond Hill Town Council at their meeting on 1991 July 9. It has been sent to the Toronto Chapter of the Illumination Engineering Society for their comments and to all municipalities in Metro Toronto region for information. The University must obtain authorizing legislation from the Province before the By-Law can be passed by the Town. We hope that this will happen sometime in late-Winter or Spring 1992.

Michael Bietenholz continues on his bicycle odyssey through Europe and Asia. Beginning in Scotland last spring, he headed southward, arriving in Bonn in June, in time to finish off a paper with Phil Kronberg at the Max-Planck-Institut für Radioastronomie. After a pause in Switzerland, he continues to Turkey and beyond. A phone call from Greece to Phil confirmed that all has gone well thus far, except for a minor collision with a local driver, from which Michael and his bicycle escaped with only minor injuries. Next stage will be Turkey, and the Iranian

REVISIONIST'S CORNER

Chris Purton sends us a newspaper cutting ápropos last July's solar eclipse. The reporter describes the scene at a total solar eclipse: "All the birds react strangely, and there's a very eerie light just before total eclipse. If it's during the day, there's a sudden chill...."

WINTER IN RIO

Ray Carlberg

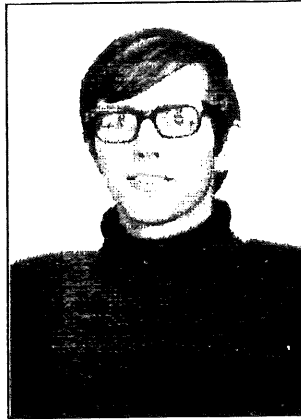
Winter Cosmology meetings are a great favourite for a number of reasons, including those hinted at by locations such as Aspen, Colorado and Les Arcs, France. To take advantage of the Buenos Aires IAU General Assembly a group in Rio de Janeiro organized a Cosmology Workshop this past July, primarily for students and researchers in Brazil to be brought up to date on recent developments in Cosmology. The other lecturers, besides myself, were Dick Bond (CITA), Colin Norman (STScI), George Djowkowski (Caltech), Bruce Partridge (Haverford) and Gustavo Bruzual (Venezuela). The audience was mainly drawn from research groups in Brazil and Argentina, who carry on the full range of modern astronomy research, although handicapped by lack of travel for themselves and visitors. Their telescope is said to be sited in a spectacular and somewhat spooky jungle situation, considerably darker than DDO, but with somewhat fewer photometric nights. Although jaguars have been spotted in the vicinity it is probably no more dangerous than driving on the DVP.

Of course this was winter in Rio, and shortly after my arrival the rains began and did not cease until we were nearly through the week of the meeting. Then the sun emerged, and through restrictions of air travel timetabling, it turned out that we all had 3 or 4 days of spare time. Rio is a spectacular city in any sense. We happened to be staying in Ipanema, which is the wealthiest part of Rio, relatively free of package tour crowds, and only a low level of the impressive, one might say awesome, street crime that one hears about in Rio (entire busloads of commuters held at gunpoint for their money and valuables!). The beach was half a block away, so the routine quickly became: breakfast at 9, the beach around 10:30, lunch from 1:30 to 3 or 4, a walk, tour of a sight, shopping, jogging, reading, followed by an excellent, cheap dinner around 10pm or so, eventually retiring to bed. Jogging could carry on almost indefinitely, simply to take in the beautiful setting running along the oceanfront, with the unusual Precambrian volcanic formations that provide the bedrock of the city. As the night settled in, what initially appeared to be primeval jungle on the mountainsides began to twinkle with hundreds of small cooking fires of the infamous favelas. The view on the beach may well be unique on this planet. The swimsuits are pretty much as advertised in the travel brochures. However, you will be pleased to know that we spent many hours discussing Cold Dark Matter, the state of economic and scientific life in Brazil, Canada, Australia and the USA, and analyzing the collapse of the Gemini large telescope project.

At the end of the week I returned happy and healthy to Canada, Dick and Colin went on to the Buenos Aires IAU, featuring a fire which burned down the meeting hall on the last day.

THE WAY WE WERE....

Readers will recall that in our last issue we introduced a new horror section comprising portraits of well-known figures who once were graduate students in our department. Charles Dyer was featured in last May's issue, and, encouraged by no word of a libel suit, we this month present Peter Martin as he appeared on the departmental mug-sheet c1970.



GASA Gossip

Mike Fieldus

I think that this will be a fairly lengthy column, for two reasons. First of all, it has been a long time since the last issue of the Doings, and I have taken the time to write down something every couple of weeks as the mood takes me. Secondly, since it has been so long since the last gossip column (as I missed the last issue), a lot has happened around the department that you may be interested in. So, the first order of business is to apologize for not writing a column last issue. Sometimes I am just too busy to write anything, sometimes I am out of town when the call for papers goes out, and sometimes I just don't feel like writing anything. I don't remember which applies in this instance, as it was so long ago, but I am pretty sure one of the above three reasons has me covered.

We had a very interesting, (if somewhat depressing) CASCA meeting early in the summer. The meeting was cleverly located one floor up from the graduate pub at York University, making the after-hours activities very easy to initiate. We celebrated Jaymie Matthews' birthday at a local restaurant (the Olive Garden), where it would be best if you did not mention you are an astronomer if you visit it in the next few years, and we toured some of the finer establishments of the downtown core on the last evening. I learned a very important lesson about not missing the banquet at these general meetings, for if you do, the next morning you might unwittingly sit down beside someone who ostracized themselves the night before by ordering out for pizza. The highlight of the meeting had to be the induction ceremony into the Tycho Brahe Society for Dimitar, Grant Hill from Western, and myself. Finally, after bugging Bob Hill about it for so many years, Toronto now boasts its own chapter of this esteemed society. I guess Bob just didn't enjoy his membership while at Western. Oh ya, most of the scientific sessions at the meeting were interesting as well.

I was hoping to avoid telling you about the GASA softball team this summer, but I have been pressured by the team to include a brief report. In marked contrast to our usual dominance in intramural league play, this year we were hopelessly out-classed by just about every team we met. We did give the CNIB team a run for their money, but even they managed to beat us. I blame most of our difficulties on Mike Merrifield, who foolishly tried to catch a line drive with his eye in our first practice of the year, and fractured his skull in two places. Fortunately no (obvious) permanent damage was done, but thereafter nobody on our team wanted to pitch (especially to Ed pitch

pitch to your own team). The only bright part of the season was the end. This was the bright part for two reasons, first the obvious one that we didn't have to play any more, and secondly, our captain, Aaron Sigut, was away for the last two games, enabling us to register two of our three wins of the season. At least we went out on a high note. I would say just wait until next year, but after this experience I can wait without any trouble.

The summer picnic was held, as usual, in the summer, although somewhat later than usual. It was an affair in the classical mould, with baseball, hotdogs, hamburgers, volleyball, and rockets. We all watched with awe (and some glee) as Karl's model of the space shuttle proved to be quite aerodynamic, and sailed off into the woods behind the main building. Once again the students avoided a DA-DDO volleyball confrontation (as is the official GASA policy until such time as the DDO types explain in some detail the meaning of the term "DDO rules"). Beer was provided by Mike Jewison and myself, who brewed up special batches for the event. This aspect of the picnic was a complete success, thanks to the efforts of Shen who made sure none of the liquid went to waste (thank goodness Jim was away, or we would have run out before the food arrived!). We learned, once again, that astronomers are not softball players (no need to emphasize this point to Mike Merrifield), but they do have a lot of fun when they try to play (unless, of course, they actually care about the outcome).

So, now the end of the summer has rolled around, and we are back at the old tasks like teaching that are necessary to pay the Toronto rents. We have a host of new students, very few of whom I have met so far since I have been observing again. I will introduce them all to you next issue once we are sure that they have all arrived, as our initial list of 4 new people seems to have been a rather conservative guess on the part of the department (by a factor of two).

With the end of summer, we have the annual labour problems in Canada. This year included the postal workers, the civil servants (who actually went on strike last year, but it took until this September for anyone to notice), and, in Toronto, the TTC workers. The latter strike was the most annoying for me, as it occurred in the middle of an observing run. Traffic in the city was orders of magnitude worse than usual (try and imagine that!). In the worst incident, I observed all night, and hit the road home about 6:15am, which is usually early enough to just miss the morning rush hour. Not so this time, as I ran into bumper to bumper traffic on the DVP at Highway 7, and it continued all the way to Bloor street. That is roughly 20 kilometers. The worst part was around Lawrence Avenue, when I realized I had to go to the bathroom. The whole journey, which takes 25 minutes at 3:00 am, lasted over 2 hours and I was one tired puppy when I got home (I solved the bathroom problem in some bushes near Eglinton, since the traffic wasn't moving anyway).

Finally, volleyball is now starting for the season. Omar (the lobster, I remind you), is the captain this year, and is trying to shame people into playing by claiming it will help if you are really a little out of shape and over weight, using me as an example! This from a man who eats mayonnaise sandwiches with cups of coffee coloured cream. We are trying to put two teams in this year as the sport has become overly popular in the department, but we are limited by the size of the league, so our "elite" team is on the waiting list. So for the time being we are back with 14 men to play the 4 available positions for them, and 2 women for the remaining positions (so they get to play ALL the time. Talk about unfair). I will tell you about our amazing success in pre-season play next month.

LETTERS

Dear Don,

Chris Corbally passed on your request for brief reports for the next issue of DDD. First of all it was great to see yourself and other U. of T. folks last November when I visited Toronto. Since then I have continued to work on developing an adaptive optics system for the MMT. We have a complete system together now on which we performed some initial tests last June on the MMT. We can operate the system in closed loop at about 50 Hz. Our most interesting result from the last run was to obtain stable interference fringes between a pair of MMT telescopes by controlling their relative piston and overall tilt with our adaptive mirror. Twelve second exposures with fringe contrasts as high as 0.66 and fringe separations of <0.1 arcseconds were obtained. We hope to get the neural network, which we have successfully trained on the instrument, working on a star during our next MMT run later this month.

Even though I've really been enjoying my time at Steward Observatory, I'm afraid the lure of paradise has proven too strong (no I won't be moving back to Toronto). I have accepted a position as the optical engineer/manager at the Keck Observatory in Hawaii and will be starting work in Waimea on Sept. 30. I thought it might be fun to help put together the two largest telescopes in the world. My new email will be pwizinowich@keck.hawaii.edu. The mailing address is c/o CARA, P.O. Box 220, Kamuela, HI 96743.

Aloha and best wishes for the coming Canadian winter.

Peter Wizinowich

Don,

Carol and I are pleased to announce the birth of our second child: Laura Michelle Welch (9lb 1oz), born 7:25pm EDT September 11 at McMaster University Medical Centre in Hamilton. Laura is a sister for Robbie. Laura and Carol are both doing fine!

Doug (Welch)

p.s. I assume that you have heard that our pulsation meeting in Victoria next summer has been granted IAU Colloquium status — we are IAU 139. Needless to say, we expect a good turnout from the TO crowd!

Hi Don,

I sit here sipping on an ice cold carrot juice, grateful that the weird foods that I tend to eat are readily available down here - grateful 'cause I still don't like to spend much time in the kitchen. Outside the normal marine layer is doing its thing - it's totally overcast and cool. However, the sun was out once this week and that seems to be the limit lately. The other night we had an excellent light and sound show and it actually rained in my area. Apparently this was some storm up from Mexico. The lightning wasn't quite as clear as that from a similar storm last year - this

At the moment my life has 3 areas of focus. First is work, which is going quite well. I'm learning about QSO's at high z and got my name on an ApJ letter and numerous poster papers. I am either the only one or one of a select few here who has done much (any) work on stars. I sometimes lament how much I have forgotten. The people I work with are all really nice and have been very helpful. In connection with my job I get to do public relations. So far I have been a science fair judge and an astronomer at a job fair (of the 60 occupations represented only 3 were in science). I also got to do some school assemblies about the eclipse (some of the public schools down here are year round). That was interesting since I needed a translator. The bulk of my audience was Spanish speaking. One thing I wish they had here was a better slide collection.

I am the leader of the Bug Walks at the Chula Vista Nature Interpretive Center. As far as we know we were the first in the country to offer such walks. (Someone told me that they had seen an ad in the paper for something similar in North County. Perhaps the chap I talked to at the local insect fair (where I was exhibiting in support of dragonflies) decided to take me up on my suggestion.) While the director at the center was sceptical when the idea was first proposed to him, the walks have proved immensely popular. I have gotten a number of repeat customers and have had good turnouts (the first two walks this year drew over 30 people each - at my request we have been trying to cut back a bit to keep the groups more manageable). I have even done two walks by request. Last year after the third walk I was awarded the "Best New Idea of the Year" certificate. Everybody seems to enjoy themselves. The only real problems I have had have been with the city of Chula Vista. They cleared one of my best areas to put in a parking lot last year (fortunately after the last walk). This year with all the rains the plants around the parking lot were doing really well and were full of good subjects. The city then sent a crew in to clean up the area. Needless to say, this area is now just bare ground. For some reason they only cut the vegetation down. It's too bad they didn't clean up the trash instead. Fortunately they only mowed around the lot and left the rest so things weren't as bad as they could have been. Some other year.... The editors of the Bayfront Conservancy Trust keep asking me for Bug Walk articles and I've given them 5 so far. I usually write them the night before they are due - if I don't they get revised umpteen dozen times so this actually is an efficient method for me to write.

The other area of activity is in massage/Reiki/Jin Shin. Since I came down here I have been taking courses at the Pacific College of Oriental Medicine. During the first trimester, I took 120 hours of classes - sufficient for a massage technician's licence if I wanted one. Since then I have taken some additional massage courses and some courses in oriental medicine and acupuncture. If I recall correctly I have about 275 hours so far. 500 hours is required for the next massage level and 1000 hours for the holistic health practitioner. Anyway, I work on a number of people down here giving between 4 and 10 massages per month. It's a nice way to pass the time, meet people, see how the other half lives and all that sort of stuff. School ended the other day. There is always an immense feeling of freedom - I only took one course this past trimester but there is still this feeling. It's only one night a week but it feels like 10 or 12.

I miss the thunderstorms, the intensity of the seasonal changes and all the dragonflies of Ontario. I am continually impressed with the massive recycling efforts going on down here. Even the university has put in bins for office paper. Plastics get recycled. The deposit on cans and bottles assures their collection by someone so you don't see a lot of these in the litter piles or

conservative east. (The university waters its trees and shrubs daily yet it has no mulch on the ground so the excess just evaporates or runs off. New development still uses the old style flush toilets. It seems that the watersaving ones that have been around for years in the east are just being discovered out here! My hot water heater is at the farthest point from the kitchen and the bathroom - it is actually outside!)

It is different down here, better in some ways worse in others. The university cancelled all raises this year because of a budgetary shortfall. Last year's raises awarded in May were postponed until the start of this year.

All is well. I added a low table to my apartment as well as a slide projector. These go well with the 2 lamps, ghetto blaster, pillows and futon that I got last year. With a few extra steps to reorient myself, I have enough room to do a Tai Chi set. Several of my friends have come down to visit. I hope that Shen and Lee will make it this August.

That just about covers it. I have a bunch of weird but loveable friends and I really like it down here.

Best wishes,
Ron (Lyons)
UC San Diego

Dear Phil,

It is my pleasure to inform you that KT is going to marry on the 22nd of June 1991, the summer solstice. My bride is a mathematician currently working on Korean telecommunication network at the Electronic Telecommunication Research Institute near the Chungnam National University. Keep up the good job and hope all well with you.

With very best regards....

Sincerely Yours,
Kwang-Tae Kim

Dear Dr. Fernie,

Here's a submission for the DDO Doings which contains a bit more information than the one I sent last month.

I successfully defended my Ph.D. thesis, on numerical models of turbulent cooling flows, in November. I've lived in Virginia for the last 1 1/2 years while my husband did a postdoc. We've recently moved to Long Island where my husband has an editorial position at Phys.Rev.B. I'm working in Manhattan for Science Applications International Corp., a company which does contract work for various US government departments, among others. No e-mail address though. It's a long commute so I'll be catching up on my reading.

Hope all is well with everyone,

A NEW CCD SPECTROGRAPH FOR UTSO-CHILE

Bob Garrison

Astronomers using the classification spectrograph at the University of Toronto Southern Observatory on Las Campanas in Chile are no longer limited to photographic detectors. With the help of an NSERC major equipment grant, a new low-noise, glycol-cooled PM512 CCD from Photometrics has been installed on a modified version of the spectrograph. Its performance is meeting our expectations for a sensitive, stable, digital detector which fits the classification spectrograph on the 60cm telescope, and is capable of reaching 11-12th mag stars with relatively high signal-to-noise ratio.

It wasn't until the advent of this new, lightweight version of the cooling system that it was possible to adapt to the new CCD technology without building a completely new spectrograph. With lots of money, we could have built a new spectrograph and switched to CCDs a lot sooner, but the financial constraints being what they are, we had to wait until the technology provided a way out of the weight problem. Normal CCD's with liquid nitrogen dewars are heavier than the spectrograph itself! The new CCD with cooling weighs in at less than 1kg, so does not cause excessive flexure in the system, yet the dark current is still low.

The grant was received in April 1990 and the CCD was ordered in May. It was supposed to be delivered in September, 1990, mounted and tested during October-November, and installed by me at Las Campanas during an early December run, but due to some difficulties in Photometrics' supply of CCDs, it did not arrive at DDO until early December, so I had to fall back on photographic programs for that run. Such schedules rarely go as smoothly as planned, but all's well that ends well, and this did.

The spectrograph was modified by Karl Kamper and Archie Ridder, the CCD was tested at DDO by Karl in January, and the system was installed at Las Campanas by Ian Shelton in late February. After some initial problems, the first spectra were obtained by Ian Shelton on the first of March 1991, and the first scientific results were obtained during March by Lauren Drissen of Space Telescope Science Institute in a joint program with Tony Moffat (University of Montreal). Their goal was to monitor a few lines in selected Wolf-Rayet stars over long periods of time, a program well suited to a telescope like the UTSO 60cm.

I finally got a chance to test and use the new CCD spectrograph during August 1991. The grating tilts, camera focus, and camera tilt had to be determined carefully for other central-wavelength settings. It was painstaking work, especially when the temperature in the dome went down to -3C one night. Even with 8 layers of clothing, I was cold and dreamed of warm rooms like those at normal observatories. That was unusual, however, and by the last night of the run, the temperature had returned to a more normal 14C.

With the original second-order blue gratings, the wavelength coverage is roughly 450A and 900A, with 0.85A/pixel and 1.7A/pixel respectively. A new first-order grating has just been sent down. It should give 2000A coverage with 4A/pixel for faint work. Another first-order grating will be finished within a month. It should give about 750A coverage with 1.5A/pixel.

Several tests were made to determine the best procedures for MK classification work. The idea is to develop, for working with digital detectors, standardization techniques which will allow translation of the MK Process to the digital dialect without compromising the level of discrimination and reliability that has been achieved over the years using the best photographic techniques. Digital techniques are wonderful, and potentially far superior, but there are several pitfalls which can trap (and have been trapping) unwary, careless observers who believe uncritically in the inherent purity of digital data. Black hardware and software boxes can and do hide a multitude of sins.

The tests were successful and the spectrograph is ready for routine use. There are still a few minor optical peculiarities to be sorted out, but no serious problems. We'll still keep some photographic supplies around as backup in case of serious computer or CCD failures, but I see 1991 as marking the end of the era of photographic spectroscopy at UTSO.

PERSEID METEORS

Ian Shelton

This was the year for watching the Perseid meteor shower... new moon, warm summer weather, maximum to occur in the early morning hours. Well, at least in theory, this was the year to watch.

Based upon reports from four widely spaced observing sights, the Perseids didn't live up to expectations. Yes, indeed, there were shower meteors. But nothing like the 80 ZHR (zenith hourly rate) predicted. On the night of August 12/13th there were no reports of trees being leveled, fireballs blazing, or even trails ending in a terminal flash or two. Just a trickle of generally faint shooting stars.

Our GASA president participated in a small expedition to the wilds of Ontario, setting up base camp in Algonquin Park. From her observing platform stationed in the middle of Lake Tom Thompson, she and her trusty guide came to the conclusion that the shower was somewhat underwhelming, in spite of clear, dark skies.

A second group from the Astronomy department made nightly treks to the Uxbridge area north of Toronto, where the city sky-glow was considered acceptably diminished to watch unfettered. Here the weather wasn't quite perfect, with low clouds on average blocking 50% of the sky. Where clear, though, the sky was transparent down to at least sixth magnitude. Yet even so, typically only seven meteors were seen per individual per hour (not all Perseids), which translates into something like 30 +/-10 ZHR.

These observations were similar to those reported from our third vantage point, one on the outskirts of the town of Sudbury. A former employee with the Astronomy department noted that prevailing winds were carrying efflux from the "Sudbury Superstack" directly over the observing site, so it wasn't possible to make a precise determining of the ZHR.

And from our fourth group of observers located out in the Maritimes, again, the report was of a somewhat disappointing display. No accurate counts were collected, but they have viewed

Now that reports have come in from all around the globe, it would appear that the Perseids did put on a good showing this year, but that the peak was very intense and very short lived, occurring during the daylight hours of August 12th and therefore not visible from North America.

All said, even if the Perseids were felt to have been a bit less than spectacular, this was a good year in terms of participation, with many individuals having made the effort to take in one of summer's simplest of pleasures: sitting out beneath the stars.

WITH THE IAU TRAVELLING TELESCOPE IN MALAYSIA - SUMMER 1990

Dieter Brueckner

I arrived in Singapore at about 10am on Thursday, 24 May, after a trip lasting over 24 hours, and that had taken me halfway around the world and within 3 degrees of the equator. Although exhausting, the trip had not been without its highlights - beautiful sunrise over the Atlantic, classic flightpath to the Orient over the Balkans, Istanbul, Lebanon, Saudi Arabia, the Arabian Sea, midnight stop and shop in Bombay, view of nighttime monsoon lightning flashes from the darkened cockpit of our 747, breakfast in the company of towering tropical cumulo-nimbus clouds over the Straits of Malacca - the romantic in me was fully satisfied.

After freshening up, I directed my attention to the problem of extracting the Travelling Telescope from Air Canada, and ensuring its safe onward passage to Kuala Lumpur, its initial stop in Malaysia. I telephoned Osman Suradi, the agent who had been entrusted by our Malaysian hosts to ensure the smooth passage of the telescope through Singapore. He picked me up from the terminal by taxi and took me back to his office in the airport's cargo area, from where he determined that the telescope had in fact not arrived on my flight, and that nobody knew where it was. Shortly before departure from Toronto I had confirmed that the container holding the telescope and all its accessory cases had indeed been loaded on board the aircraft, and now we were mystified. What could have happened?

Air Canada's Singapore cargo office agreed to put a trace on the container, and after hanging about the airport for a while in the hope of an early result, I left on the SIA/MAS shuttle for Kuala Lumpur, a short 35 minute hop, minus the telescope. There I was warmly welcomed by Mazlan Othman, director of the XVIIth IAU/ICTP School for Young Astronomers, venue for the Travelling Telescope's first foray. Naturally, I was feeling rather apprehensive about what to do without the telescope, but Mazlan seemed to take it all in stride, and did not seem to be unduly worried.

On the morning after, we drove the 40km to the Malaysian National University at Bangi, where I had the morning to sort myself out, and to start thinking about how best to introduce and use the telescope. In the afternoon I phoned Singapore, but to no avail - the telescope had still not been traced. In the meantime Mazlan introduced me to Dr. Rudin Salinger, Canadian-born director of the University's educational media centre. He suggested that we produce an instructional video recording that would show the proper way of setting up the Travelling Telescope, a project that turned out to give me some of the greatest satisfaction of my trip because I felt I was doing something really useful for which I had exactly the right qualifications.

That evening in Kuala Lumpur I phoned John Percy in Toronto to find out if he could do anything from his end. Luckily it was still Friday morning in Toronto, and so it was possible to still make appropriate phone calls before the weekend broke in. John himself was also under some pressure as he was about to depart for Europe himself, but he reassured me that he would do what he could, and that he would try to leave word with me on his progress. Two nights later Maire Percy called to let me know that the telescope had been bumped at Heathrow to make way for a backlog of other cargo, but that there was a good chance that the telescope would arrive in Singapore Tuesday, two days hence. Luckily, Bob Garrison had warned me before departure time to be prepared for trouble even with assured cargo space reservations, and so the non-arrival of the telescope turned out not to be the shock it might otherwise have been.

By good fortune, it turned out that the Malaysian National University already owned an underutilized 8-inch Meade, and this was made available to me to act as a stand-in for the Travelling Telescope. Although not as well equipped as the IAU's Celestron (its equatorial wedge, for example, was not fitted with the fine adjustment controls required for precision alignment), its almost identical design enhanced its usefulness for interim training. I demonstrated it in class, and in the evenings we took it back to our residence in Kuala Lumpur, where the keeners used it after supper to learn how to set it up as accurately as possible, and to try their hand at finding various objects in the sky. The weather was not entirely ideal - muggy tropical skies that had the bad habit of only starting to clear around midnight. Still, we tried our hand with the moon, Jupiter, and some of the famous clusters and nebulae of the Southern sky - omega Cen, NGC 6231, M6, M7, M8.

The Travelling Telescope did arrive in Singapore on Tuesday, 29 May, as Maire Percy had hoped, was shipped on by air to Kuala Lumpur, where its arrival was confirmed on the following day. Now came what was perhaps the most frustrating period of my stay - the daily hope that I would finally have the telescope in my hands so I could actually start training students so they would be sufficiently conversant in its use by the time I was scheduled to leave the following week. The extraction of the instrument from customs turned out to be agonizingly slow, as the necessary paperwork worked its way through the usual system of university administrators, brokers, airline agents, and customs officials. In the meantime, I introduced the telescope's instruments as best I could by means of overheads and verbal instructions, and in the evenings we continued to use the University's Meade for visual observations.

By Friday, the telescope had still not cleared its bureaucratic hurdles, and with that fact, the opportunity of introducing it before we moved south to the Malaysian Maritime Academy (ALAM) in the vicinity of Melako also evaporated. The telescope was now set to be picked up from the Kuala Lumpur Airport on Saturday morning, and, with that purpose in mind, Prof. Baharudin Yatim of the Physics Department of the Malaysian National University (UKM) and I drove out to arrange the final clearance, and to meet the van that had been despatched to drive the telescope back to the University. This was a critical moment, as it was at this time only that we would find out if the telescope would clear customs without duties or the financial guarantees that might be required to back our assertion that the telescope was only on a temporary visit and would be re-exported. We finally saw the telescope sitting in the handling agent's warehouse, but still had to wait for final clearance through various offices. After sitting around for several hours, we made a fatal error that deprived us the use of the telescope for yet another day: we decided

We returned to the residence in Kuala Lumpur where the members of the School were getting ready to depart for the Maritime Academy and the next stage of the programme. Phone calls to the University established that the driver of the van that had picked up the telescope had gone home for the weekend and was unavailable. While the bus carrying most of the School's participants carried on to the Maritime Academy, some of us stopped off at the University to see if we could locate the telescope. We did - in the University Vehicle parking lot, locked up in the parked van that had picked it up from the airport, and the driver gone for the weekend! Not expecting that anything further could be done until Monday morning, we set out for the Maritime Academy as well.

The next morning found a most pleasant surprise: Just as we were about to leave for a day at the beach, Prof. Baharudin drove up in the notorious van, and to everybody's pleasure, delivered the telescope into our hands. Somehow, he had managed to get the keys to the van, and had had the kindness to take it on himself to drive it down to us. I could finally get down to the business of training as many people as possible, so that I could leave in place a sufficiently solid foundation to allow the telescope to be profitably used after I left.

I spent the few nights that were left until my departure giving crash courses in precision aligning the telescope, and in the use of its major instruments, the 35mm camera (a Canon F), the Optec photometer, the mini-spectrograph, and the cold camera. Here I received much support from the students who had already learned to set up the Meade back in Kuala Lumpur, and from David Allen from the AAO in Australia, who looked after the supervision of the Meade, which we were also using, and generously shared his experience with all of us. During the day, I set up the telescope on the sun, and several students took photos which they then developed in the darkroom I had set up in the kitchenette of my room. Some successful solar photos were produced in this initial stage, and I felt the students who took them were very pleased with these concrete results of their labours. One thing we did find out was how awkward it can be to use a telescope at the equator that was designed by people with mid-latitude mindsets. Although we had built a wedge that would allow us to align all the way down to 0 deg, we ran into difficulty when we were pointing the telescope north of the equator: the camera came so close to the tripod that it was extremely difficult to get a comfortable view through the viewfinder. I imagine that with time and experience observing procedures can be developed that will ameliorate some of these inconveniences. Aligning the telescope on the opposite pole, and suitable viewfinder attachments are two examples that come to mind.

Unfortunately, we continued to be plagued by trouble. After operating smoothly for a couple of days, the Travelling Telescope's drive began to act up, operating only intermittently, and then not driving at all. The noises it was making suggested a mechanical problem at first, but I could find no obvious evidence for this. Prof. Baharudin suggested the problem was electronic, and centred in the drive control circuit located in the paddle. He seemed to think this was not unusual, and agreed to follow this up at the University's electronics shop, and with a local Celestron distributor. The other mishap occurred with the regulated power supply that is used to charge the large deep-cycle battery that powers the telescope and all its accessories. On our first charging attempt, we suddenly noticed black smoke billowing from the charging unit, and discovered that one of the large capacitors in the power supply had blown. This too did not perturb Prof. Baharudin, who seemed to regard this as a normal occurrence. I had to leave both

how they might have been caused. The suggestion was made that the tropical temperatures might have been responsible - I recorded a temperature of 54C in the sun - but I can't help wondering whether in the case of the power supply we overlooked some important design consideration in making the system 220v-compatible. This part of the story will have to be filled in by others.

I do not know to what use the telescope was put after I left, or what sort of results were obtained with it. I am therefore unable to make an overall assessment of the telescope's trip. I can, however, report two ways in which I felt the telescope had a positive and substantial impact. Two students attending the School had been assigned specific agendas relating to small telescopes. One had been asked to explore ways of developing the potential of the Malaysian National University's (UKM) 8-inch Meade; the other student, from Bandung Observatory in Indonesia, had the task of making recommendations to his institution for the purchase of a small telescope. Both were thus keenly interested in the Travelling Telescope and its capabilities, and spent much time with me, helping not only to set up and dismantle the telescopes (both the UKM Meade and the IAU's C-8), but also poring over the manuals and literature I had taken with me, and making copies of all my notes and overheads.

The other major impact my presence with the Travelling Telescope had was the production of the instructional video that I have already mentioned above. For this we used UKM's Meade, and filmed each stage of the setting-up procedure, with suitable closeups where appropriate. The production of this video had the additional benefit of also training the two technicians of the Physics Department who had responsibility for the telescope, and who acted as the stars (in the cinematic sense) of the video. This activity was a real pleasure, as the technicians showed great interest and keenness in picking up the finer points of setting up that I was able to communicate to them. According to Prof. Baharudin, a major area of need at UKM was the development of better training and opportunity for technical staff, and it seems to me that this may be an additional way in which the Travelling Telescope may be effectively used.

I conclude with two suggestions for further consideration. One is the possibility of issuing an ATA Carnet for the telescope in order to facilitate its passage through customs. This would require the posting of a bond with the Canadian Chamber of Commerce, for which funds matching the telescope's value would have to be found, but it would relieve the host country of any similar financial onus. On its Malaysian trip, the major holdup turned out to be the airline (Air Canada) and not customs, but we did not know until the telescope had cleared customs in Kuala Lumpur whether the telescope's Malaysian hosts would have to come up with a \$10,000 bond. Because no other arrangement had been made (no funds, no time), our Malaysian hosts, on the advice of Malaysian customs, had been reluctantly prepared to post such a bond. In the event, it was not needed, but this outcome was by no means certain.

The other suggestion I have is that either the person travelling with the telescope, or somebody connected with the school or programme to which it is being sent, be somebody with experience and motive for the work that is to be done with it. This would mean a faculty member with specific agenda to energize and focus the telescope's use for the entire duration of its stay in a host country. I feel this aspect of the telescope's Malaysian trip was not well prepared for or coordinated, and, at least for the duration of my 10-day stay, although general interest in the telescope was high, no clear focus for its use emerged. In addition, I believe if the telescope is to be used for serious research, it must remain in one location for a much longer period

SUMMER VACATION

Paul Hendry and Omar Lopez-Cruz

Omar:

Last time I went upstairs to the student's lounge, I saw some of the past issues of the DDO Doings and I could recognize some names of former students at the DA, some of them are quite famous among some of the present students in our department. I saw the November 1987 issue and I was surprised to find Mike Fieldus' celebrated column, the GASA GOSSIP (as soon as I arrived to the DA in 1989, I was the subject of his always sharp and jovial comments). There were a lot of things to talk about, like Bob and Laura living in sin (whatever that means). As you might know from the same source, nowadays they are happily married and they are both working somewhere in Louisiana. While I was skimming through I discovered that some students used to write about their summer holidays, this fact encouraged me to write something for you and let you know about my last trip to my hometown.

It all began about a year ago when some people became interested about the total eclipse (The Eclipse of the century for the Mexicans) of the sun on July 11, 1991. Ed Zukowski came to me and said I am buying a car so we can drive to La Paz, Baja California Sur and see the eclipse there. He invited on my behalf some other people to join this expedition. A week before the date of departure Ed discovered that he had bought a piece of junk as a car and he is not able to make it. I was not very happy with this incident because you don't know what it is like to deal with Ed, he is the type of guy that likes to plan everything ahead of time, working all the details no matter how insignificant they are. Every morning, there was Ed coming to my office and asking me: Did you get the letter from the Governor? Did you get unleaded gas? Did you get potable water? etc. And then he was not coming, leaving me with his friends that at that time I hardly knew about. Well, Mexicans leave all the things for the last minute. I had to fix the situation so I convinced my landlady to come down to Baja. She was very excited with the idea. So she took her mother's car and drove with Pierre Gravel, Paul Hendry and Ed.

We left on different dates. I was driving with three friends of mine in a very comfortable Volvo. We had some troubles when we crossed the border to U.S. in Windsor Ont. because it was a little bit of trouble to see two Japanese (Mari and Yukino) one Canadian (Ian) and myself going to Mexico to see an eclipse, So the officers asked a lot of questions. We left Windsor for Detroit, we didn't stay there for a long time. We've seen downtown and we have decided that it's better to get out of there as soon as possible. Is not a very exciting place, anyhow.

After two days of driving we have crossed the midwest, and let me tell you it is flat, very flat. Arrived to Amarillo, Texas and the fun began, we began to see some canyons and some other geological formations that made driving a little more exciting. On the third Day we arrived in New Mexico where we visited the caverns in Carlsbad. It is the fourth day after sleeping in a very nice place up in the mountains (Cloudcrof), and we are heading for Alamo Gordo and White Sands, exciting places. The only thing that is never missing is the heat – this part of New Mexico is very hot. On the fifth day we were in the plains of Saint Augustine, the home of the VLA, we arrived to the visitor's center. They have an automatic show there, you just have to press buttons and the show begins, is nice and very informative, it explains all the wonders of radio astronomy. But I like the real action so I would like to see the control room. I remember that Dale Frail

are just a few meters from the main building, something has to be done! So I went inside and talked to the receptionist and explained to her that I am a student of astronomy at the U of T, etc. etc... Then she called the telescope operator to explain the situation. He kindly allowed us to visit the control room, it is as interesting as the warm room of the 2m telescope at DDO. But much larger. The operator explained to us that the radio astronomers don't have to go there to perform the observations, the only thing that they have to do is send the list of objects that they want to observe from Socorro or elsewhere. On the sixth day, we stayed at the Meteor Crater RV park. We are now in Arizona, we get up and go to visit the big crater (it was formed about 22 000 years ago), from the distance it looks like a giant ant's hole, it was very exciting to see this place because you always see pictures of it in every introductory textbook of astronomy. We are heading for Kitt Peak on the 4th of July. On our way we stopped in Tucson to give Dr. Chris Corbally S.J. (Ph.D. Toronto, 1983) a visit and ask him for information regarding Kitt Peak and the latest news from the New Technology Vatican Telescope that is going to be built atop Mount Graham. At that time he said to me that everything was going fine with the Vat Tel. But in one of the latest issues of Now Magazine (Toronto), I read that they have found out that the summit of Mount Graham is a sacred place for the Indians of that region. This is new obstacle for the Vat. Tel. I wonder if the Indian's spirits might be interested in astronomy, so the astronomers could try new ways of collaboration.

It is the seventh day, we are in Tijuana trying some tacos and getting Mexican pesos. On the eighth day we are crossing the astonishing land of Baja California (I ask the reader to excuse me for my chauvinism). Baja California is a land of legend. It is an indomitable land that was forged by the fire of the volcano and the waters of the Pacific Ocean. We stopped in Bahia Concepcion to enjoy the sea, the water is cool, the sun is shining, the beer is excellent; what else do you want? At this point our group consists of three cars: one with Ed's friends (four), Briar's (my landlady) car and Ian's. We are 12 people.

Finally home sweet home, My mother gave dinner to all of us: some tamales, frijoles, soup, beer etc. Some people are staying in my place the rest are going to stay at some local friends' places. John Dubinski and family arrived on the 9th of July, we are 16 people now. We went to a Fiesta Mexicana ("Mexican Night" for the tourists) and we saw Paul Hendry polluting the clear water of the Sea of Cortez because he didn't know that tequila is such a dangerous stuff.

Paul:

In mid-June, Edwin Zukowski asked me whether I would like to drive down to see the eclipse with Pierre and him in his car. I said that I would think about it, and the next day I said yes. It wasn't even two days later that Ed found out that his car, which he might not have bought if it weren't for the eclipse, was in very bad shape and would not survive the journey. This, and a neverending series of near-complete disasters (ending with Omar's hornet sting) were the hallmark of our (Paul, Ed, Pierre, Briar) trip down to see the eclipse. After about a week of frantically exploring various alternatives that we had, including renting a car (\$\$\$!!), and borrowing a car from neighbors, parents, uncles, cousins, and graduate supervisors, things were looking more and more bleak until I got a call from Briar (Omar's landlady) and then things were finally settled about a week before we left, that we would all drive down in Omar's landlady's mother's Tercel hatchback.

We left one day later than Omar, and so had to take a more direct route. On the first night, we decided that we would drive non-stop through the night. However, we found ourselves exhausted by 3:30am, so we stayed at a hotel. The next night, we camped somewhere in the state of Kansas. It was getting dark, so we pitched our tents under a bright light so that we would be able to see what we were doing. When we tried to get to sleep, we found that not only did the light shine straight into our eyes, but it attracted insects that buzzed against the sides of the tents. Then a high wind blew away the insects, but almost blew the tents away too. After a spectacular display of lightning, it began to rain rather heavily, and everything was soaked in the morning. On the next night, we camped in Colorado. The tents were still damp from the previous night's rain, and it got quite cold during the night (high altitude). We all woke up very early in the morning shivering. On another night, we camped in the desert, and found that it was too hot to go to sleep at first. We could never win.

The sights that we saw on the way down included Monument Valley, Barringer Meteor Crater, Walnut Canyon, and Oak Creek Canyon. On July 4th, we arrived in San Diego and decided to go to Sea World. We were shocked by the price of admission (almost 27 U.S. dollars per person) but decided to go in anyway. After seeing the sights and viewing a fireworks display (complete with quotations from vice-president Quail about Desert Storm) we got stuck for an hour and a half in a traffic jam trying to get back to our motel. At the motel, the three carloads of people met and we discussed our plans for the next day. We decided to buy jerry cans, and even considered having the catalytic converters in our cars closed off so that we could use leaded gas, because Astronomy magazine said that there would be a gas shortage.

Crossing the Mexican border was very easy. The border guards simply waved us through! After buying pesos in Tijuana, the car containing Omar promptly disappeared, and we spent many hours looking for them and waiting at toll booths in the hopes that they were actually behind us. Finally, we found them at the Astronomical Institute in Ensenada, where Omar sold us some T-shirts for \$25000 (pesos) each. Then we went to sample the local cuisine, and were finally on the road by 6:00pm.

The road down the Baja peninsula was rather narrow. But other than that, conditions were no worse than some of the mountain roads we drove on in the U.S. It was definitely not the highway from hell that Astronomy magazine had made it out to be. Nevertheless, after driving a few kilometres, it became terribly apparent that we were going to have trouble keeping up with Ian's driving. He would gear down and accelerate through every turn. We sometimes had to drive twice the posted speed limit to keep from falling even further behind. Everybody that we met on the road would remark about when or where we had passed them. Some were very astonished to have three cars with Ontario plates pass them one after the other.

The first night in Mexico, we wanted to camp on the beach on the Pacific coast. After driving on a very rough dirt road for about an hour (again desperately trying to keep up with Ian) we arrived in pitch black darkness at the stoney shore near an oyster camp. Then most of us drove all the way back to the main road to stay in a motel. The next day we continued to drive down the peninsula, stopping at all of the interesting places, with Omar as our tour guide imitating the tour guides he saw in Santa Fe. We stayed at a motel in Omar's old home town, Santa Rosalia. The next day, we were still driving down the peninsula, and finally arrived in La Paz.

We spent two days in and around La Paz looking at sunsets, shopping, going to LaPaz Lapa and La Concha, and eating the wonderful food prepared by Omar's mother. It must be noted that in Toronto, Briar is Omar's landlady, but in La Paz, roles were reversed since Briar stayed at Omar's house. On July 9th, we met with the Dubinski's and their friends. On the day before the eclipse, we drove to Cabo San Lucas at the southernmost point of Baja, where Ian, Mari, Yukino, and myself went on a boat trip around the cape.

Omar:

July 11, 1991 we are in La Rivera. This town is by the Gulf of California. We are a few kilometers off from the centerline of the path of totality I am very excited, I didn't sleep. Somehow I get the fear that it is going to be cloudy. Last night was marvelous, we all went to the beach and saw the sky of Baja displaying all it's wonders. I go to the beach by sunrise, John Dubinski joins me for a morning swim, the water is just perfect. It is a little bit cloudy in the south-east. As the sun gets higher they disappear. I go back to the house were we all are staying, we all began to fold our sleeping bags. Everybody is getting their films and cameras. Then I just feel like something is burning on the upper part of my left eyelid, it is a wasp and it just has stung me. In a normal situation this is not a reason to worry about. But I remember that 14 years ago I suffered an allergic reaction. It was bad - I fainted when I arrived at the hospital. I am beginning to feel that that my whole face and part of my neck are swelling. The reaction is getting worse I ask a friend of mine to take me to the hospital, I arrive they act immediately, antihistamines is what I need and I need them now. I am beginning to have problems breathing. They try all ways to stop the hyperactivity of my crazy antibodies. I begin to recover the drugs are working now. An hour has passed I feel better and the eclipse is about to begin.

I run to the beach to join the rest of the group, it is about 10:25 (local time) the partial phase has begun. Paul is already in position he is ready with his camera attached to a small Celestron telescope. I ask Ed to install the Questar that I have borrowed from the DA. We are going to be witness of something very special, the sun shows six groups of spots that lie nearly on a straight line. The lunar disc has begun to cover the solar one, the excitement is beginning to get bigger. At approximately 11:45 when the moon has covered about two thirds of the solar surface we began to see the planets. "Venus, Venus! there, can you see it?" That's what I am shouting. We are reaching the climax, then we saw Jupiter, Mars and Mercury making their debut to the daytime sky, I can also see Sirius. Oh! I will never forget these moments. The illumination has decreased dramatically, the temperature has decreased too, now it is a very comfortable temperature. Then the diamond ring and a few seconds later totality. We are like chickens that have lost their heads running from one place to another, taking pictures, shouting ... It is such an impressive, incredible, astonishing view the sun is a black disk surrounded by a majestic blue-white corona. (See Paul's picture on cover.) During the 6.8 minutes of totality as the temperature decreases we've seen some clouds in the process of formation. It is dark around the zenith but the horizon is red like a sunset. The diamond ring again and the total phase has ended. My words are not enough to describe everyone else impressions but it has been marvelous.

Now we are trying to enjoy the beach for a few more minutes until the partial phase ends. It is beginning to get hot again, everything is coming back to normal. I am lying on the sand I have no strength to go swimming. I just know that we have driven 8000 km to see this and it

faces. We have seen the eclipse in one of the best places, we have not missed any second of it. I am sure we have seen the mother of all eclipses.

Paul:

On the night before the eclipse, we arrived at the cottage of the grandmother of the friend of Omar's sister, where we spent the night resting on our sleeping bags out in the open. We didn't get much sleep due to the high level of anticipation we had for the eclipse tomorrow. It was a clear morning.

While we were rolling up our sleeping bags, Omar (who was right beside me) got stung by a hornet or a wasp and was rushed to hospital. The rest of us drove out to the beach, and after a bit of travelling back and forth (since we did not have our guide with us) we eventually found the entrance to the beach and parked the cars there, because we could not drive on the sand. We found there a group of about 40 to 50 Japanese with a wide variety of different cameras, lenses, binoculars, and tripods, which were blocking the entrance. Omar's sister drove up in her 4WD (without Omar) and argued with them for a while about blocking the road off. They then went back to the hospital, after finding out exactly where we intended to set up. We walked almost a kilometre up the beach to a place where there was nobody else for several hundred metres in either direction.

I picked out a nice place from which to view the eclipse. It was on a rise behind the beach where I could get an unobstructed view all around me. I managed to get my photographic equipment set up only two minutes before first contact. You might not believe it, but first contact is actually one of the most exciting parts of a total solar eclipse. It signifies that the total eclipse is on its way. At this point there was a lot of shouting heard all along the beach, but mostly from Ed. There was a long line up at the Questar.

After a few minutes, as the partial phases progressed, the excitement wore off slightly, and some of us went for short swims in the gulf (not me since I was photographing), and looking through welder's glass from time to time. The line up at the Questar dwindled.

Once the Sun was about 65% eclipsed, it was getting noticeably darker, and we had to take our sunglasses off. We noticed that people's shadows were looking funny. The shadow of a palm tree just off of the beach contained many images of the crescent Sun. A few minutes before second contact, I could hear Omar screaming that he could see Venus. Everybody seemed to be pointing towards Venus, but then started to all point in different directions, at which I was most disoriented.

Then about half a minute or so before second contact, we could see the shadow of the moon approaching. First, the clouds above the mountains went dark. Then, the mountain peaks went dark, and I could see the diffuse edge of the Moon's shadow quickly sweep down the mountain side and across the foothills. In my location (on a slight hill), I had a better view of this than the people on the beach. We could then see the edge of the shadow moving across the sky. When the edge of the shadow crossed the Sun, totality began, and the shadow continued to move. At this point, the Sun completely changed its appearance. You could look directly at the Sun, and see a bright red prominence on the lower part and the corona all around with streamers to the left and right. Later on during the eclipse, the Moon uncovered another bright prominence at the top of

The “oooh”ing and “aaah”ing a minute or two before and for a minute or two after second contact was quite extreme. Especially Omar, but also Edwin, seemed on the verge of mental collapse. I could hear shouting from a long way along the beach, since I myself did not make much noise as I wanted to hear what was happening.

The exclamations subsided somewhat until about 30 seconds before third contact. Then there was a noticeable brightening of the inner corona on the top of the Sun. Then the chromosphere was visible and a few short seconds later the photosphere burst through, as again the edge of the Moon’s shadow appeared to move across the Sun in the sky. It is not possible to view the diamond ring effect through welder’s glass. You need to look at it with your naked eye, or even through a telescope. None of us suffered any eye damage, although Ed saw spots for a few minutes. We then watched the shadow move on to mainland Mexico.

Obviously photographs or video cannot recreate the eclipse experience, since it is an event that occurs in real time all around you, not just in one direction.

During the partial phases after totality, the cloud cover increased until about 15 minutes before fourth contact, when we could no longer see the Sun. At this point we started to leave. The moment of fourth contact was seen by some of us through a gap in the clouds.

To All New Master’s Students: A Few Absolutely True Words of Warning

Jean-Louis Trudel

Do not be afraid. Last year’s statistics do suggest that one third of you will be gone by next September and another third by the following January. But then, the statistics also suggest that you’re 17% female.

Still, I will confidently predict, based on last year’s observations that 75% of those trying to finish a master’s degree in one year will show signs of the concomitant stress. This stress will be manifested by such strange phenomena as the inadvertent shattering of glass doors, office chair races in the corridors, overwhelming urges to tap the alarm bell near the stairway door, manic chuckling spasms in the middle of the worknight, or imperious requests that your classmates ring you up at home to wake you in time for the next morning’s course.

You will also be plagued by an unexplained malady that will get worse as you go through the year. A mysterious compulsion will seize you at the oddest times and force you to close your eyes and lay your head, or even your whole body, on the nearest horizontal surface. You will lose consciousness, but do not worry: this is called sleep, and you will be allowed to give way to it at least ten hours every week. There is no known cure, but a diploma always helps. Tenure helps even more, though the sad cases of Doctors Yee and Mochnacki indicate it is no panacea and will not necessarily provide you with more time to sleep.

You may also wish to stay abreast of the most recent news in your field of interest. This you will be able to do handsomely... if there isn’t a strike of library technicians, if you do not prefer using the Ap.J. as a pillow at three o’clock in the morning, if there isn’t a postal strike, if somebody from CITA is not photocopying the paper you want to read...

If you last till the summer, you will be invited to take part in the department's traditional softball games. This is a good idea, if you don't mind being hit by the throws of Mike "Fireball" Fieldus or trampled on by the heavier, more energetic team members when you try to catch a fly-ball. Volleyball is also an option, but you've got to remember not to play near Professor Mochnacki if you wear glasses.

So, now that you know what's awaiting you, welcome to the University of Toronto Department of Astronomy. If you're not already regretting you came, you'll never regret you did.

ASTRONOMY COLLOQUIA

(All colloquia are Wed, 3:10 pm, unless specified otherwise)

| | | | |
|--------|------------------|----------------|---|
| Oct 2 | R. Buchler | U. Florida | Stellar Arrhythmias *** (4:00 PM)*** |
| Oct 9 | J. Wrobel | NRAO-VLA | Radio Sources in Nearby E/S0 Galaxies |
| Oct 16 | J. Dubinski | U. Toronto/CfA | Cold Dark Matter Halos |
| Oct 23 | E. Ellingson | DAO | Evolution of Quasars in Galaxy Clusters |
| Oct 30 | N. Murray | Caltech | |
| Nov 6 | | | |
| Nov 13 | R. Narayan | Harvard | Gravitational Lensing |
| Nov 20 | D. Sinachopoulos | Obs. Belgium | Close Visual Binary Photometry |
| Nov 27 | | | |
| Nov 29 | S. van den Bergh | DAO | Stellar Pop. in M31 & M32 (**Friday**) |
| Dec 4 | P. Nicholson | Cornell | (date tentative) |
| Dec 11 | | | |

The Graduate Star Formation Workshop in Montréal: A Report

Jean-Louis Trudel

Well, in June, I drove to Edmonton and back with a friend in a small Hyundai Pony which only agreed to start, after those cold June nights when the temperature dips below 288 K, if the choke was yanked a few times. The 3500 or so kilometers each way were covered in something like two days and a half, but that trip was nothing compared to the fun of driving V'ger† down to Montréal for the Graduate Star Formation Workshop, on a highway even more boring than Saskatchewan or Manitoba, through mind-numbing heat and drenching rain. It all started on a Tuesday in August...

When we left the Department, it was 11:30. When we left Toronto, it was about 12:30. The population of V'ger included seven humans, at least five languages, and a dozen or so sticky donuts. By the time we reached the Québec border, the donut population had been sadly decimated, almost everybody had slept an hour or two in the stifling afternoon heat—except the driver, of course... I think... As V'ger met the Québec road conditions with a bout of rattling and aperiodic vertical motion, the navigator Pierre Gravel sighed blissfully at leaving Ontario and returning to his blessed homeland.

Rush hour on the infamous Métropolitain afforded everybody a good opportunity to enjoy Montréal's beautiful smog and look at the sights—and also the many cars parked—well, almost—on the expressway. Eventually, we reached the residences of the Université de Montréal, the passengers were driven to their various accommodations for the next days, the van was parked in a side street since the university parking office was closed for the night, and it was time for a well-deserved sleep.

Next morning, anxious to get the van away from the unsafe and unsupervised city streets, I rose early, extracted the necessary permits from the parking authorities, and left the van in the shade of the trees lining one side of a university parking lot. It was time to get down to some serious donut-munching... workshoping, that is.

On Wednesday, August 14, talks were presented by Richard Henricksen of Queen's, Bill Latter of CITA, Gary Fuller of the CfA, Jean-Pierre Arcoragi, and Daniel Nadeau, the last two from the Université de Montréal. Henricksen presented an elaborate introduction to the use of wavelet analysis in the study of large-scale structures, whereas Bill Latter followed with a more accessible overview of chemistry in star-forming regions. Gary Fuller then explained the observational approach to the study of cores of molecular clouds. Jean-Pierre Arcoragi discussed the results of his group's hydrodynamical simulations of star formation, while Daniel Nadeau wound up the day's proceedings with a comparison of the technology of infrared detectors, especially the HgCdTe type used at the CFHT and the newer InSb type. Next, everybody adjourned for the workshop beer session...

Thursday, the scale of objects shifted downwards from the molecular clouds of the previous day to that of HII regions and young stellar objects. Gilles Joncas of Laval started it off with a quite didactic introduction to HII regions and massive star formation. Luc Binette of CITA followed with a description of the ionization structure in HII regions. Ana Gomez de Castro from McMaster and the IUE Observatory launched the afternoon session with an exciting talk which purported to determine the correct magnetohydrodynamical model for explaining the properties of young stellar objects, with supporting evidence fresh from the CFHT. George Mitchell from St. Mary's presented millimetric and submillimetric observations of young stellar objects, while Nancy Evans from York talked about the discovery of Cepheid binaries using ultraviolet observations. The Ian Bonnell gang from the Université de Montréal concluded the day with a video of their hydrodynamical simulations of star formation. Later the same evening, a feast of gargantuan proportions was offered to the participants in a Greek restaurant just off Saint-Denis, with the wine bottles brought in by the case-full...

Friday, Pierre Bastien from the Université de Montréal delivered an excellent talk on polarimetry and its uses in the study of young stellar objects to an audience still groggy from the night's excesses. By the time François Ménard from Grenoble completed his description of Monte Carlo radiative transfer models of circumstellar disks, it was time for lunch. Afterwards, Ralph Pudritz from McMaster was his usual spellbinding self as he explained the inner workings of various bipolar outflow models, especially those relying on hydromagnetic theory. Mike Fich from the University of Waterloo proved to be almost as interesting as he reviewed the data for the initial mass function, and the evidence for bimodal star formation. Finally, Alex Raga from CITA and the University of Manchester brought the workshop to a close with his talk on hydrodynamical

It had been a most valuable workshop for the participants and the proceedings are eagerly awaited—as well as the reimbursements for expenses incurred.

This mood of satisfaction and contentment did not outlast my discovery, next morning, that the precincts of the Université de Montréal had been violated by parties unknown who had smashed in the side window of V'ger... In the following hours, I told the grisly story to the campus police, informed Doctor Seaquist of the damage, and repeated the tale for a grizzled veteran of the Montréal police. The trip back to Toronto, through storms and downpours was draining, though V'ger was travelling at such speed that the heat generated as it reentered the smog in Toronto's gravitational well burned away all drops of water before they could enter the gaping window. The rain had slightly cleared the downtown streets though, and so it was that V'ger landed back in its accustomed spot in the murk beneath the McLennan Laboratories late Saturday, bringing safely back its load of tired grad students...

† For the Star Trek-illiterate, V'ger is the designation of a broken-down space probe in the first movie—and also an appropriate and time-honoured nickname for the Department's Voyager Plymouth van...

LIBRARY NEWS

In the scratch your head category.....

A year ago we received an invoice for v.11 of a small journal. Since we had already paid for v.10 we sent off a letter asking for the status of THAT volume. A YEAR later, to the week, we received a response telling us that it should be delivered early 1991 and sorry for the delay! We can blame the recent postal strike for a lot of things but I don't think this qualifies!

PAPERS SUBMITTED

PREPRINTS BY FACULTY AND STUDENTS RECEIVED IN THE ASTRONOMY LIBRARY

May 23 to September 23, 1991

Bietenholz, M.F.; Frail, D.A.; Hankins, T.H., *Does the Vela pulsar have "wisps"?* NRAO, David Dunlap Observatory, University of Toronto, 91-0536 5-June-1991.

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Fernie, J.D., *A new approach to the cepheid period-luminosity law: delta Scuti stars as small cepheids* David Dunlap Observatory, University of Toronto, 91-0848 12-Sep-1991.

Frail, D.A.; et al., *HI absorption measurements toward 15 pulsars and the radial distribution of diffuse ionized gas in the galaxy* NRAO, David Dunlap Observatory, University of Toronto, 91-0537 5-June-1991.

Fullerton, A.W.; Gies, D.R.; Bolton, C.T., *Propagating absorption enhancements in the wind of the extreme Of supergiant HD 151804* Bartol Research Inst. David Dunlap Observatory, University of Toronto, 91-0821 9-Sept-1991.

Prinja, R.K.; Bolton, C.T.; Fieldus, M.S.; et al., *Time series observations of O stars: I. IUE observations of variability in the stellar wind of zeta Puppis* U College London David Dunlap