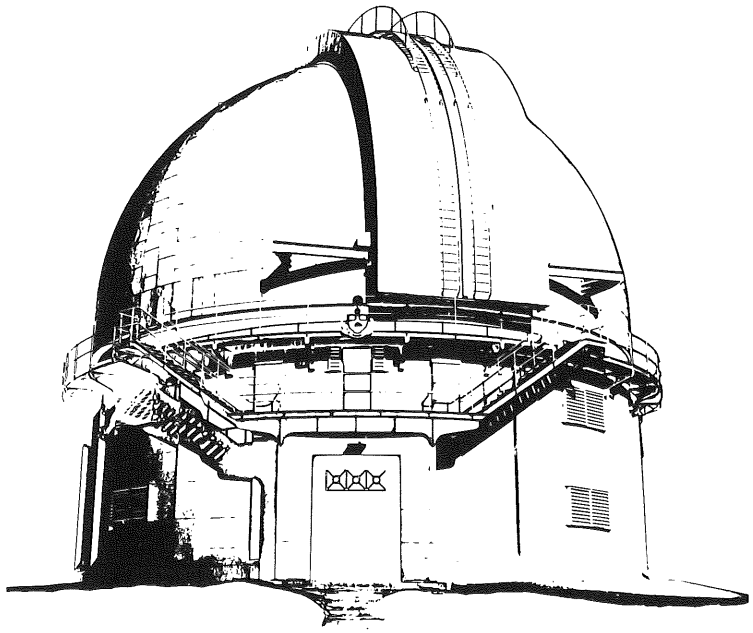

THE DAVID DUNLAP DOINGS

Vol. 27, No. 1

1994 February 21

CHRISTMAS COUNTDOWN 1993
Some of the Usual Suspects

FINDING CHART
for The Usual Suspects

1. Yvonne Fernie
2. James Taylor
3. Shenton Chew
4. Sławek Rucinski
5. Ian Shelton
6. John Pimentel
7. Dave Earlam
8. Archie Ridder
9. Paul Wiegert
10. Piotr Zembrowski
11. Bill Clarke
12. Sandra Scott
13. John Percy
14. James Wadsley
15. Ray Carlberg
16. Amy Carlberg
17. Daniela Pesce
18. Pierre Gravel
19. Stefan Mochnacki
20. Teresa Kroeker
21. Florence Unwin
22. Felipe Barrientos
23. Phil Kronberg
24. Lena Palma
25. John Harper
26. Linda Taillon
27. Albert Hartviksen
28. Goetz Golla
29. Paul Hendry
30. Maurice Clement
31. Marlene Cummins
32. Rosemary Diamond
33. Brian Beattie
34. Thomas Callegari
35. Jason Harlow
36. Mike Jewison

FROM THE EDITOR

When I took this job, I hoped to use the *Doings* to stimulate discussion and debate. I planned a story for this issue on the plot by Professional Engineers to take over the practice of Natural Science as we know it, but I discovered I needed more time to focus my thoughts, when I sat down to write it. Instead, I've written a rant on one of my favourite subjects, Faculty Final Exams. In addition, there's some thought provoking material in GASA Gossip along with the usual fluff.

Due to a variety of editorial and production problems caused by an unfavourable alignment of the planets (That's my story, and I'm sticking to it.), there was long delay between the editorial deadline for the last issue of the *Doings* and its appearance. As a result, we omitted a contribution from John Percy because it was no longer timely. Sorry John. We also apologize to the other contributors for the long delay in publication. We didn't intend to provide such a timely target for the *Droppings*. I don't think I'll make that mistake again.

In the last issue I forgot to note that the cover article was written by Bob Garrison. I hope this was obvious to most of our readers. I also should have noted that Brian Beattie prepared the illustrations for Bob's article.

Tom Bolton

LETTERS

Dear Sir:

As a regular reader of the Doings, I was recently alarmed to find myself misquoted in the December issue under the heading of POTPOURRI. Therein, certain negative comments regarding Alex Fullerton's abilities as a theoretician were mistakenly attributed to me. I have always had the greatest respect for A.F. as a person, a student, and a scientist. Nothing would please me more than to welcome him into the fold of theorists and I am confident that in this new capacity he would be as successful as most.

Yours sincerely,

Maurice Clement

I'm sorry if I've misquoted a regular *reader, but my correspondent, A.F., stands by his report. He also says that he found your remark amusing, not disrespectful, and he fully agrees with it.* Ed.

The following e-mail message was sent to Marlene Cummins and passed along to us.

Dear Librarian,

I have been receiving the DDO Doings for the past 20 years by regular mail, and this time your department spent $2.17 on stamps to mail it to me. I enjoy hearing from DDO, but I am embarrassed that it costs you that much. Perhaps it is now time to consider sending it by e-mail, in postscript or TEXformat?

My address is davoust@obs-mip.fr

Sincerely,

Emmanuel Davoust (M.Sc. 1972)

This is under active consideration, but I've not had time to master all of the software required to do it. Since we have to produce hard copies for some of our subscribers, it is more convenient, for the time being, to send hard copies to everyone. Ed.

CONGRATULATIONS

Scott Tremaine reports that Peter Martin has been awarded the 1994 Carlyle S. Beals Award of the Canadian Astronomical Society. Way to go Peter.

Congratulations to Ray and Joanna Carlberg on the birth of their second child, a son, Thomas Vincent Carlberg, just after the deadline for the last issue of the *Doings*. Bad planning that. Ray submitted the following report on the event and its aftermath in early December.

Thomas Vincent Carlberg, or Tommy for the time being, arrived at 12:07pm November 19, weighing in at 3520 grams (7lb 12 oz for traditionalists). The birth went easily and smoothly so mother and child were home the following evening. Tommy's current interests are mainly eating and sleeping, although he seems to be trying to communicate with a teddy bear that sits by his change pad. Our daughter, Amy, at 3 1/2 is delighted with Tommy and has given Joanna a few pointers on breast feeding, and has had to be firm with us a couple of times about the use of the playroom for play, not for putting Tommy to sleep in.

Congratulations to Dr. Peter Ip, who successfully defended his Ph.D. thesis in December.

ALUMNI NEWS

Phil Kronberg reports that Martine Simard-Normandin has been appointed Adjunct Professor at the Ecole Polytechnique in Montreal. Martine (Ph.D. 1979, supervised by Kronberg) is employed by Northern Telecom and Bell Northern Research in Ottawa.

COMINGS AND GOINGS

The Carlberg family has gone to Seattle for term 2 of Ray's sabbatical (or research leave as it is now known). They left on January 1 and will return on April 30. Besides the NASA parallel computing project which takes Ray there, the family has considerable interest in working on various projects in the mountains.

Christine Clement is on sabbatical this term, staying at the department of Astronomy, in order to reduce observations made at Las Campanas for the study of evolution of horizontal branch stars (RR Lyrae variables). The observations were made over an interval of 18 years: 1972 to 1990.

Sławek Rucinski has just returned from the Center for Extreme Ultraviolet Astrophysics. He reports: I reduced spectra of AB Doradus obtained for me in November 1993. There were 7 days of observing resulting in an exposure of about 140,000 seconds. I obtained very nice spectra which now must be analyzed. The main problem: line identifications! There are many "hot" lines (10^6 – 10^7 K) which do not appear in the solar spectrum even during flares, let alone spectra obtained in our "cool" laboratories. And the plasma emission codes do not have all lines; in fact a logical sum of all theoretical lists still leaves many unexplained lines.

Stephen White and I were "shotgun married" by the EUVE time allocation committee as two PI's wanting to do the same target. He and Jeremy Lim proposed to do the rotational modulation of emission, while Osmi Vilhu and I proposed to do the detailed modeling of the lower corona. Fortunately for us, AB Dor did not flare even once (normally it does so every day or so, but it seems to be in the minimum of its dynamo cycle). The rotational modulation also seems to be minimal. Understandably, Stephen is a bit disappointed that the star was not nicer to him.

Marlene Cummins attended two meetings of the Coalition for Public Information; a formation/strategy meeting in November and an official inaugural meeting on January 19. Her report appears elsewhere in this issue.

Marlene also attended the meeting of the AAS Publications Board in Washington on December 3, 1993. She is the library representative on that body.

Bob Garrison observed at Las Campanas during Christmas, as usual, including the 24th and 25th, when most other telescopes are closed for the holidays. Christmas Eve, in particular, was photometric with about three hours of half-second seeing. What a waste! The two week run was 100% usable, and photometric on all but two nights. It seems that El Nino has been vanquished, at least for the time being, because we have had exceptional weather for several months.

Bob Garrison attended the meeting of the American Astronomical Society in Washington, D.C., 11-15 January. He reports: The highlight of the meeting was the presentation of the images showing the results of the repairs on the Hubble Space Telescope. They are spectacular! My hands-down favorite of all was the image of η Carinae showing the bipolar outflow billowing out, and clearly 90 degrees from where it had been thought to be before, from the fuzzy Hubble data. That was probably the most challenging image of all, scientifically. A close second was the expanding shell of Supernova Shelton 1987A, which showed much more detail than the corrected one from the fuzzy Hubble. The rest were really pretty pictures, but there wasn't an awful lot of new science in them, at least not readily apparent. Now that the fix has been shown to be successful, the competition for time will be fierce.

James Brown, Dan Hudon, and Omar Lopez-Cruz attended the Fifth Canary Islands Winter School in December.

Natalia Taranenko withdrew from the Ph.D. program and returned home to the Ukraine just before Christmas.

POTPOURRI

John Percy reports that Ian Short gave an excellent talk to the RASC Toronto Centre January 28 on "The Mysteries of Cool Stars".

Visitors to the Observatory during the past couple of months may have noticed an unusual amount of clutter at the north end of the second floor hallway. This was the first sign of a major rearrangement of office space that is now well underway. When everything is done, we hope that different activities will be grouped more logically and located in more appropriate spaces. Briefly, the technical staff that now have desks in Room 208 are moving into Room 209 (Catalogue Room/Dark Room) and the Catalogue Room is being moved into Room 208 (new Catalogue Room), but the move is actually much more complicated than this.

Because we need more room for Palomar Sky Survey II and Facilities and Services is concerned that the weight of the Sky Survey exceeds the load bearing capacity of the second floor (never mind that it hasn't fallen through the floor in the 25+ years its been there), the Sky Survey plates and films are being moved to the basement, where they will be located in the PDS room. The Observatory workstation, perseus, has been moved to Room 208 to make room for the sky survey in the PDS room. As I'm writing this, teams of men are carrying sky survey plates down the stairs. The first cabinets have already been taken apart and moved. In the process, we've uncovered dust and debris left over from the sprinkler installation more than 10 years ago and mummified organic remains of uncertain origin.

Once this move has been completed, we plan a major clean-up/out of the storage areas, which have become full to the overflowing since our last clean-out about 15 years ago. We plan to trash a lot of antique equipment and unidentified "garbage". If you have anything "stored" in the domes, the coal bin or another nook or cranny, you should either remove it, or make sure that the Associate Director knows what belongs to you.

GASA GOSSIP

by James P. Brown

I don't know why but business here at the Gossip has been slow these past couple of months. Ever since I moved to my new office on the 13th floor I've been excluded from that all important gossip loop on the 14th floor. Be that as it may I shall renew my vigilance and attempt wherever possible to gather and/or fabricate gossip about my fellow grad students.

Congratulations are in order for Dr. Peter Ip who successfully defended his Ph.D. thesis in December. When asked earlier this year what he planned to do now, he replied "Go to the AAS meeting and look for a job." Some members of the department have suggested that in such a depressed job market he should start his own McDonald's franchise for out of work cosmologists. But, I say you gotta believe in your dream, no matter how unrealistic it may be.

The big coming and going last December was the Fifth Canary Islands Winter School attended by yours truly, Dan Hudon and Omar Lopez-Cruz. Since most of you were here in Toronto, freezing, I won't mention the weather. I could spend pages droning on about how wonderful the experience was, but that would take too long and I'm too lazy to write about it. So, here is the condensed version of the trip:

Plane flight	: good, stewardesses not friendly, stay away from Iberia
Lectures	: some good, some bad
Hotel	: nice room, cold pool
Island	: absolutely stunning
Food	: good but salty, stay away from those patatoes
Weather	: warm but cool in the evening, bring a jacket
Night Life	: dead except on weekends, doesn't start till 1:00am, head south
People	: friendly
Participants	: made some new friends, nice people
Health	: everyone except me got sick

I suggest that if you want to know more, talk to one of the participants.

During my absence the department held its annual Christmas Countdown. The details I got were very sketchy. This year's organizer, Paul Wiegert, is quoted as saying "It went well." When the issue was pursued further he replied "It went very well." Way to go Paul. I did manage to get a copy of this year's *Droppings*. I was the unknowing target of a few jokes but all in all a very fine effort by this year's "anonymous" editorial staff. If you feel that a joke was particularly offensive to you, please feel free to drop me a note, and for a small fee I'll gladly tell you the guilty party.

Congratulations to the cleaning staff who moved my boots this winter and actually mopped up the thick enormous layer of road salt that had built up underneath. Let's all hope that this reform in cleaning policy means that they'll start sweeping under our desks and tables.

In the going, going, gone category: Natalia Taranenko. For some reason last December she packed up her things and left the program. She seemed like such a happy sort; it certainly surprised me to see her leave. Since she left only a brief note upon her departure, her reasons for leaving so abruptly are not clear to me.

Whatever the reason, her departure signals an alarming trend in the department. Since I have been here, several students have left the program in what I can only describe as unusual circumstances. I do not mean that they all just packed up and left, I mean that it appears to me that the department made little effort to keep them. It has always been my belief that wherever a few are openly discontent, more are secretly so. When we, as a department, allow competent students to leave for no apparent reason, we foster a further sense of mistrust between students and faculty. It's not our business to pry into the personal decisions made by students in this department. If a student chooses to leave that's their choice. However, if they have chosen to leave because of what they felt was an intolerable situation, which they feel has been ignored, then we have a duty to address that situation lest it happen again.

COALITION FOR PUBLIC INFORMATION

by Marlene Cummins

On January 19 I attended the inaugural meeting of "The Coalition for Public Information". This Ontario based group is concerned that the emerging electronic highway (the convergence of telecommunications systems such as telephone, cable and computer networks to provide a vast array of business and individual services) not be entirely coopted by business and commercial concerns to the detriment of the broader public interest. Their goal is to ensure that the highway remains open and accessible to everyone and that its use remains consistent with social values such as freedom of expression and right to privacy.

The means to achieve these goals will include public education, consultation and debate, and advocacy of principles to major players such as government regulators, telephone and cable companies.

One of the speakers at the meeting provided a comparison between the broadcast model (closed architecture, little user input, one way communication) which leads to consumerism, passivity, and mediocrity, and the Internet model (open architecture and interactivity) which leads to democracy, quality, and activism. Certainly all aspects of the Internet model will not be suitable to the new systems, (*e.g.,* managerial methods) but the growing use and popularity of the Internet is putting pressure to bear in ways that will be beneficial.

R.I.P. THE I^{2}S: 1980 – 1994

by Phil Kronberg

On a fittingly dreary and cold afternoon in January 1994, the International Imaging Systems (I^{2}S) image processor along with its Mitsubishi Colour Monitor and trackball controller made its final exit from the Astronomy Department, bound for a scrap dealer. Like a coffin, it wasn't very light, so needed a team (from the radio astronomy group) to convey it to the Physics loading dock. Pall bearers were Tracy Clarke, Phil Kronberg, Gang Li and Marcin Sawicki.

Some of our readers will remember the AIPS cage when it was set up behind a curtain in the alcove of RM 1405 (which now houses more modern forms of image display devices (X-Terminals). When the I^{2}S was originally acquired (assisted by an NSERC Equipment grant to Phil Kronberg, Ernie Seaquist and Barry Madore), it formed a key part of what was one of the most powerful imaging processing stations outside NRAO for producing images from the then freshly inaugurated VLA (October 10th, 1980).

The I^{2}S had a UNIBUS interface to the Physics/Astronomy VAX 11/780, then later VAX 8600. The third component was an FPS 120-B Array Processor, co-purchased in 1981 by Chris Chapman in Geophysics and Phil Kronberg. The array processor and the VAXes have preceded the I^{2}S to the junkyard. For several years beginning in the late 1970's, the NRAO's "AIPS" suite of image processing and display programs more or less required this trio of hardware components (VAX + I^{2}S + AP) to operate effectively. Some will remember several "regular" visitors who came here as guest data reducers to post-process their VLA observations.

DAN'S UNIVERSE

by Dan Hudon

I sometimes wonder if Walt Whitman can come in from the cold.

He's been out there for more than one hundred years, looking up "in perfect silence at the stars." He's been out there since he heard "the learned astronomer" lecturing with charts and diagrams, showing proofs and figures arranged in columns before him. Unaccountably, Whitman says, he became tired and sick and left the lecture hall with dizzying head and wandered off into the night. And there he remains.

The poem is a sobering account of science failing to meet the public and it has bothered me since I first encountered it in an undergraduate textbook several years ago. It begs the question whether a naive, child-like sense of wonder about the night sky, uncomplicated by symbols and equations is more satisfying than a scientific description of observational phenomena. If the science is suitably elegant, I think, then the experiences could be equal.

I'm not sure why the poem bothers me so much. Perhaps it's because it seems that Whitman was forced out of the lecture hall, forced out by a dull, mechanical and inadequate description of the Universe. Perhaps it is because he feels that astronomers have lost the romantic view of the heavens. Perhaps, on the other hand, he was reluctant to indulge his imagination in the language of science. Perhaps, to paraphrase Charles Lamb, it is a case of being puzzled by time and space and not wanting to be troubled by them. Or perhaps it bothers me to think that Whitman may have been right to get up and leave.

But I remember when I first learned about Newtonian gravity. When I was told in the lecture hall, and understood, that Newton's Universal Law of Gravitation was indeed universal and could be applied to any bodies in the Universe, from the well-known apples on a tree to distant double stars, my mind took a leap that was equal or greater to any that it has taken on many, many nights of gazing at the heavens. It's the sort of elegance that kept me from following Whitman out the door.

A lot has happened since he wrote the poem. Astronomy is different. We have larger telescopes, better sites, more precise images. We have relativity, quantum mechanics and an expanding universe. We have elementary particles, unified forces and accurate measurements of constants (well, some of them). We have inflation, dark matter and other unknowns. We have orbiting satellites, inter-planetary probes and comet rendezvous. We have IRAS and IUE, ROSAT and COBE.

And we have the Hubble Space Telescope — repaired, refurbished, ready at last to properly begin its task of educating the imagination. So now we have learned astronomers getting excited about its images, wondering about its potentials, smiling.

Maybe this is enough. Maybe this is enough to bring Walt in from the cold.

CAMPUS CRIME WATCH

by Dick Tracy

Stolen! The desk belonging to James Brown was reported missing on December 22, 1993. The victim claims that upon his return from the Canary Islands he discovered that his desk, chair, books, papers, *etc., etc,...*, were missing from his office in room 1318. After searching the most likely places where thieves would dump a 100 pound desk after ransacking it, such as the men's/women's bathrooms, the 16th floor domes and the 15th floor lecture rooms, he discovered his lost belongings neatly arranged in a supply room on the 15th floor. He left the desk there until his return in early January 1994. He then persuaded a fellow student to assist in the desk's return to its rightful place. The victim suspects many members of the department may have been responsible for the "prank" and has sworn vengeance against those who would wrong him. The victim reports that nothing was missing but is quoted as saying "That thing was a bitch to haul down those stairs!"

Campus Police are in a doughnut shop right now thinking about how one goes about solving a crime. A usually unreliable source claims that the leading suspect is the GASA deskperson that rearranged all of the student desks overnight about 15 years ago.

THE BEST(?) OF THE TEA MESSAGE

While the Tea Meister (a.k.a. Dan Hudon) was absent in December, his place was taken by the T Monster (a.k.a James Wadsley). The best one of his messages follows. Actually its the only one of his messages, but I believe it deserves its place in this space.

Reality

The world being as it was, the staple of their conversation was the subject of reality.

Through casual examination, each had determined the nature of the universe. Aergosum knew that everything he saw only existed whilst he was looking at it and was subject to destruction and recreation every time he blinked. Furthermore, everyone he saw was a souless construct that merely mimicked his unique humanity. Plato, on the other hand, knew that all was an expression of fundamental truth. Arriving at his own name had been a process of elimination and then gradual acceptance that he was yet another facet of the eternal Plato.

Despite the apparent differences between their philosophies, they both enjoyed a key implication as to their own personal natures. Aergosum was obviously creator of the universe, or at least the one he saw, and so it should be subject to his will. Plato, being the essence of the philosopher, was the source of truth and thus the universe was subject to his will or at least a reflection of his intellect.

They would spend hours sitting in the Future Bakery, sipping cafes au lait or munching cabbages wrapped in rice and mushrooms and expounding upon the contradictory nature of reality. The problem occurred because each allowed that the other had some sort of independent existence (What are friends for?). A sense of humility also seemed to dictate that neither individually nor combined were they responsible for all of reality, about which neither pretended a complete understanding. This implied the existence of other beings and it was one of their hobbies to examine the reality as it flowed past and trawl for such beings.

Another hobby, to which they both subscribed but did not divulge to the other, was attempting to discern at which point each of their realities had the upper hand. It seemed to each of them that some personal weakness or unknown quality of the universe was preventing him from establishing a truly original reality or putting his own indelible stamp upon it for him to read.

Perhaps, they would independently theorize, they unconsciously believed in a common reality, as did all true beings, and that it was this communal reality in which they lived. They both found this disquieting.

It was this disquiet which led them, in the midst of a slice of Grand Marnier mousse, to decide to work jointly towards a deliberate modification of reality. They chose their goal:-the deletion of that odd little man in the corner, whom they both considered a manifestation of the more bizarre aspects of their minds and who could not possibly follow an independent existence.

After weeks of bodily purification through a diet of nothing but beer and chickpeas and rigorous mental preparation, the two were ready. They were pleased to note that the odd little man had put in an appearance at the Bakery, just on cue, for their first attempt. They began to concentrate, systematically cleansing their minds of the little man. They began to notice the rest of reality taking on a shadowy, unreal quality as their concentration increased. As their mental concert reached its crescendo, they were gratified to see reality flow apart into a swirl of fantastic colours due to their lack of mental and philosophical support for any concept other than the non- existence of the little man. Aergosum grinned as his fingers unravelled as a tapestry being unmade. Plato exulted as the impure and materialistic concept of body ceased to have meaning for him.

The odd little man quietly watched the two evaporate to nothingness from his habitual place in the corner.

No-one else noticed, naturally.

Tea and Cookies in the astro lounge at 3:30pm:
For those of you who still exist ...

And, of course, the best(?) of the Meister's recent messages:

The Big Bang

After months of anticipation and thousands of postcards, the result of the contest to rename 'The Big Bang' was revealed at last week's AAS meeting in Washington. The winning entry, sure to launch the winning contestant into an exciting year of interviews with know-nothings in the media is: The Big Bang. Astute readers will note the striking similarity between the new name, 'The Big Bang', and the old name, 'The Big Bang'.

However, the contest organizers, apparently unwilling to admit the contest was a Big Bust (or a Big Bamboozle in order to get a bunch of funky postcards from around the world for their drab office doors) have asked that the new, improved, more durable, cling-free, ultra-fast, batteries-not-included name (*i.e.,* 'The Big Bang') be pronounced differently from the washed-up, odious, embarrassment-to-astronomy, politically-incorrect old name (i.e. 'The Big Bang') in order to differentiate them. They suggest that the emphasis be placed on the first word of the new name with the latter two words spoken softly, under the breath even (- like this, '**THE** big bang'), to show your listener that you don't really take the name seriously. An alternative pronunciation is to place the tongue in between the teeth and say the first word normally but to say the latter two words silently, like this: "The ", where the trailing space is optional. They further suggest that those who emphasize either of the two latter words (*i.e.,* 'Big' or 'Bang') in their discourse will be subject to a stern look.

Tea and Cookies in the Astro-Lounge at 3:30pm.
Note the new time and place.

REVISIONIST'S CORNER

A second year undergraduate view of binary stars ...

The inner Lagrangian point is at the center of mass of the two stars. For the evolution of binary stars, this is the only point where a planet could possibly [be]. Other points in the system are stable only for small bodies.

Sigh. I taught this student ... – Stefan

EDITOR'S CORNER

ABOLISH FACULTY FINAL EXAMINATIONS

Can anyone tell me why *Faculty* Final Exams are necessary? Doesn't the University trust their faculty to conduct examinations? What academic purpose is served by requiring students to write exams in conditions that are often much inferior to those in which they attend classes and write term tests?

I have been alternately perplexed and angered by Faculty Finals ever since I've been on the faculty. There may have been some justification for Faculty Finals when a student's final marks was determined solely by their final exams, but this hasn't been the case for at least 25 years. So what's the justification now? Can't the faculty be trusted to conduct fair and honest examinations? If not, why are they trusted to conduct term tests? When I was a student at the University of Illinois and the University of Michigan, professors invigilated their own final exams with help from colleagues and graduate students as required. Does the University of Toronto have higher academic standards than these universities? I suspect not. If we do, is it because we have Faculty Finals? OK, convince me.

Do the Chief Invigilators hired by the Faculty do a better job than faculty invigilating exams in normal classrooms would do? I doubt it. I've invigilated exams where the Chief Invigilator has condoned behaviour in the exam room that was contrary to Faculty rules or clearly detrimental to students writing the exam. On one occasion, the Chief Invigilator allowed students to leave the exam room and return without supervision.

Many (most?) Faculty Finals are held in large halls (*e.g.*, gymnasia, the hockey rink) that were not designed to be used as classrooms. I assume that this is done to minimize the number of Chief Invigilators that must be hired. These halls are often poorly lighted (glare), noisy, drafty, too cold or too hot. These conditions probably don't have much effect on healthy, well-prepared student, but they can make it much more difficult for a tired, unhealthy or unusually nervous student to do their best. Adverse conditions can make it much more difficult for these student to concentrate. Conditions would be more equal for all students if all final exams were held in normal classrooms.

I'm sure every faculty member has horror stories about adverse conditions during final exams. I have several. For example, there was the accounting student that showed up for an exam in the hockey arena with a calculator that beeped every time he hit a key. By the time the several hundred other students in the arena got used to the disruption this created, the exam was over. On another occasion, my students had an exam in the drill hall on the same day that the University chose to use an air hammer to break up the driveway three feet from the outside wall! The students might as well have written the exam next to the drums during a rock concert.

In December, my Astronomy 422F students encountered another exam hall from Hell. Their exam was held in the Upper Gym of the Benson Building, which has very live acoustics. Our side of the room, at least, was very drafty and cold. A Psychology class of approximately 200 students was the only other class in the room. The start of the exam was delayed by more than 10 minutes while the Psych invigilator shouted extremely complex oral directions for his exam. During the exam, he piled papers in the back of the room for the students to pick up after the exam. Ninety percent of his students finished early, so in the last 90 minutes of the exam 90% of them walked an average 2.5 lengths of the gym as they came to the front to turn in their exams, went to the back to pick up their essays, and marched back to the front to leave through the only open door. There was a constant drum beat of footsteps on the hollow gym floor. Was this fair to the students that were still writing? I don't think so.

It would be interesting to learn the marginal costs of Faculty Final Exams. What does it cost to repair, replace and store the tables and chairs used in the large halls? How much does it cost to set up and take down the special exam rooms? How much does it cost to hire chief invigilators? Many thousands of dollars, I'll bet; all of which could be saved, at no cost to academic standards, if faculty and TA's invigilated exams in regular classrooms. Are the effects of any other budget cut so benign?

Tom Bolton

PAPERS SUBMITTED

PREPRINTS BY FACULTY AND STUDENTS RECEIVED IN THE ASTRONOMY LIBRARY
November 15, 1993 to January 31, 1994

Ivison, R.J.; Seaquist, E.R., *The latest spectral peregrinations of RX Puppis* David Dunlap Observatory, University of Toronto, 94-0147 18-Jan-1994.

Kim, S.-H.; Martin, P.G.; Hendry, P.D., *The size distribution of interstellar dust particles as determined from extinction* David Dunlap Observatory, University of Toronto, 93-1923 16-Nov-1993.

Percy, J.R., *Education in astronomy: an international perspective* David Dunlap Observatory, University of Toronto, 93-1991 25-Nov-1993.