



# THE DAVID DUNLAP DOINGS

Vol. 25, No. 4

September 30, 1992

*Dedicated 19 June 1992 to*  
**HELEN SAWYER HOGG**  
*in appreciation of  
her major contributions  
to the study of*  
**GLOBULAR CLUSTERS**  
*and of her long  
and distinguished service to  
The University of Toronto*

*Plaque presented to Helen Hogg on the occasion of naming the UTSO telescope after her.  
Another such plaque is now on the telescope itself.*

It is with deep regret that we report to our outside readers the passing of Michael Fieldus, long the nonchalant, laconic author of our GASA Gossip column. For reasons unknown, Mike took his own life last July 4. An excellent student, he was within months of completing his PhD and already had an NSERC postdoctoral fellowship awaiting him, but we shall remember him particularly for his leadership, friendliness, good humour, and all-round humanity. The immense impact his death had on our department was a reminder of those often quoted — but I hope never trivialized — words of the sixteenth century English poet and cleric, John Donne:

No man is an Iland, intire of it selfe; every man is a peece of the  
Continent, a part of the maine; if a Clod bee washed away by the Sea,  
Europe is the lesse, as well as if a Promontorie were, as well as if a  
Mannor of thy friends or of thine owne were; any mans death  
diminishes me, because I am involved in Mankinde; And therefore never  
send to know for whom the bell tolls; It tolls for thee.

— *Devotions XVII*

Sandra Scott has kindly compiled the following collection of excerpts from Mike's columns. Thereafter the Doings will retire the GASA Gossip column for a while out of respect for Mike.

- Don Fernie

#### THE BEST OF GASA GOSSIP BY MIKE FIELDUS

In the October 1986 issue of the Doings Mike Fieldus was introduced as one of the new Master's students. In the very next issue he had taken over the writing duties for the Gasa Gossip Column. For the following five years he provided readers with a personal inside look at our department. Here are some of the best excerpts from "Gasa Gossip".

\* \* \* \*

I just got back from an observing trip to DAO. I had a marvelous time, they really have a great operation going out there, I was very impressed (for what that is worth). One of the most impressive aspects was the foresight shown by some unknown staff member. On the wall of the coude room in the 48" telescope is a memo to all observers, saying something like "This is Victoria, it rains a lot here. Quite often rain showers blow in from an unexpected direction. Keep a constant eye on the sky. THERE IS NO EXCUSE FOR LETTING THE TELESCOPE GET RAINED ON!". Scrawled on top of this memo in large black letters are the words "Mochnacki, take note".

I suppose it is time to end off now. I was going to write a lot more, but Omar just came into the room to answer a phone call. Omar is the sort of person who truly understands how remote the person on the other end of the phone line is, and that if that person is going to

understand you at all, you had better speak very loudly ( the Louis Noreau effect). In the rare event that Omar receives a long distance call from Mexico, most of us just leave the building. Needless to say I can no longer concentrate, so I am going to retire to the GSU and contemplate some more beer.

Late one night, after the clouds had ended my observations with the 74 inch, I noticed on my way back to the main building that the twin's were still open. I knew Jean-Louis had told me he could observe through much harsher conditions than I could, but I was shocked to see he could still work when we could not even see stars with the 74 inch! I entered the main building, only to see JL sitting in the kitchen, reading and eating his lunch! My offhand comment about us having to close up the 74 because of the sudden rain got him moving faster than I had ever seen him move before, or since! Needless to say I was not too popular when he discovered it was only cloudy.

And finally, to Paul Hendry: NOBODY remembers how many bytes the text portion of their master's thesis was.

And now, as promised, all the latest gossip from around the department. Last issue, as I recall, I was going to reveal (in lurid detail) all the new romanic activities of our graduate students. Within minutes of that issue hitting the newstand, I was confronted by Laura Carriere, who, in no uncertain terms, told me what would happen if I even mentioned her and Bob Hill. So that topic (as exciting as it was) is out.

I was also going to tell you all about Lee and Esther, but the policy of this column is not to mention Lee, ever. (That is the only sure way of bugging him). So that is out as well.

Through my network of sources, I have discovered that one of our female graduate students has been seen, outside the department, in the company of Dieter! No, really! They have been seen together on more than one occasion (three times, actually). I very much doubt anything will come of it, however.

Baseball season is in full swing on Campus at the moment. After a rather inauspicious beginning against a team from the competitive division (we are in the "hopeless" division), where we learned a valuable lesson about practices (don't play against teams that have them), we have proceeded to go undefeated to this point in the regular season. Ed, our sometimes pitcher, is the first to bid for a nohitter in our league (which is not a good thing when you consider he is pitching to his own team), but we wisely pulled him in the third inning. Tom Bolton plays regularly, and complains bitterly that our field has no fence to hit the ball over, allowing the outfielders to play as deep as they like on him (he has been able to hit it over their heads on occasion, none the less).

One last point. There are a lot of people around who still exclusively use the VAX, and are not wise to the ways of UNIX yet. This is a small problem in the case that a person forgets to log off one of the UNIX machines. Should you come across an active terminal and do not

know how to log that person off, the simple command `rm -r *` should look after it for you.

### NEW STUDENTS

We welcome five new graduate students to the department. They are

- Michael Allen, from McMaster University,
- Charles Kerton, from Dalhousie University,
- Joachim Stadel, transferring from U of T's physics department,
- Natalia Taranenko, from Ukraine by way of Acadia University,
- James Wadsley, from Monash University in Australia.

### THE HELEN SAWYER HOGG TELESCOPE

Last June 19 was indeed a festive day at DDO. The President was there; the Dean was there; David and Moffat Dunlap were there; Don Morton from HIA was there; people from as far as Halifax and Saskatoon were there. The place was packed. Messages of goodwill poured in from across the world. Speeches were made, bouquets presented, champagne toasts drunk.

The grand event marked the naming of the University of Toronto's 0.6m telescope in Chile after Helen Sawyer Hogg, *grande dame* of Canadian astronomy. Helen, of course, was there, responding delightfully to speeches in her honour and the presentation of a plaque, a duplicate of which is now affixed to the Chile telescope. Later, in the library, David Dunlap, grandson of her after whom the Observatory is named, proposed a charming toast, which was responded to by David Hogg, Helen's older son. Many pictures were taken and a grand scrapbook of the memorabilia surrounding the day is in preparation; it will be accompanied by a video of events.

Now 87, Helen has given up her DDO office and is kept busy at home dealing with archivists instead, but she reminded the assembly that she wasn't yet prepared to hand in her DDO keys. Like General Douglas MacArthur, she shall return!

- Don Fernie

### COMINGS AND GOINGS

Tom and Susan Bolton attended the Royal Society of Canada meeting in Ottawa May 19-22, where it was announced that Tom has been elected Secretary of the Mathematics and Physical Sciences Division of Academy III of the Society. Tom later attended the Academy's Council meeting in Ottawa on September 18.

Marlene Cummins attended the Special Libraries Association annual conference in San Francisco, June 6-12. At that meeting a new (ex-officio) officer of the Physics-Astronomy-Math Division Executive Board was created (Policies and Procedures Manual Officer), and Marlene was appointed to fill it. Marlene has also been appointed as the librarian representative on the

American Astronomical Society's Publications Board. This is also a new position, created in June, and has a three-year term.

John Percy attended the joint meeting of the American Astronomical Society and the American Association of Variable Star Observers in Columbus, Ohio, in June. At the AAVSO meeting, he presented a paper on "Photoelectric and Visual Observations of the Be/X-ray Binary X Persei", and at the AAS meeting, he presented a different version of this paper "The Recent Phase Change in X Persei" with a group of multi-wavelength collaborators. At the end of June, he attended the CASCA annual meeting, in Halifax, and presented papers on "Long-Term Photometric Monitoring of Bright, Active Be Stars" (with University of Toronto Mentorship Program student Allen Attard - and astronomy summer student, and now a first-year physics/astronomy student at Erindale) and on "The Royal Canadian Institute Youth Science Academy" (with RCI YSA president and astronomy summer student Sara Seager).

Then on to Victoria for IAU Colloquium #139 ("New Perspectives on Stellar Pulsations and Pulsating Variable Stars"), attended by many present and past members of the department (including Doug Welch, Chair of the SOC). The paper this time was "Long-Term Brightness Variations in Pulsating Stars".

And finally, to Orono, Maine, to give a talk on "Hands-On Astrophysics: Variable Stars in the Math/Science Lab", at the Summer Meeting of the American Association of Physics Teachers.

John was also at the workshop on high-latitude supergiants held at CfA in late-May, as were Don Fernie, Bob Garrison, and Omar Lopez-Cruz. Don and Bob presented invited review papers, and all had poster papers.

Bob, Don, and Jean-Louis Trudel attended IAU Colloquium 136 on stellar photometry held in Dublin August 3-8. During the preceding week Don attended a workshop on robotic observatories in Kilkenny, Ireland, and prior to that had joined John Percy at IAU Colloquium 139 in Victoria.

Bob Garrison presented three papers at the June CASCA meeting and another at the June AAS meeting. Earlier, in May, he had been observing in Chile where he also visited the gold mine El Indio (see story elsewhere in this issue.)

Alex Fullerton (PhD 1990) was visitor and guest observer at DDO September 5-11.

Phil Kronberg passes on news of Michael Bietenholz, who continues his mountain bike odyssey around the world. He has now navigated Iran, Pakistan, India, Burma, Thailand, Maylasia, and Indonesia. When last heard from he was in Australia and had just cycled from Darwin to Alice Springs.

Old hands will remember Anson Moorhouse, who was a technician and official photographer at DDO 1964-72. Anson dropped by for a visit June 5. He is now an engineer and sales representative for an x-ray equipment company based in Etobicoke.

An unexpected visitor to DDO on June 25 was Jean Laidlow Teisher and her husband, from Albuquerque, New Mexico. Dr Chant, it turned out, was Mrs Teisher's uncle by marriage.

Peter Cottrell, University of Canterbury, NZ, visited the department for a few days at the end of July. He gave an overview talk on "Astronomy in New Zealand", including his own work on spectroscopic and photometric studies of yellow pulsating variable stars.

And finally, a lunchtime conversation revealed that Howard Yee spent part of his summer hiking and climbing at latitude 72° in Greenland. When asked if he had encountered polar bears he said no, but it is a legal requirement there that hikers carry a rifle in case they do. And had they found the rifle useful? Oh yes, they had; it had been instrumental in saving lives when Howard and a companion found themselves caught and sinking in quicksand. But you'll have to ask Howard for details.

#### LETTERS TO THE EDITOR

Aug. 17, 1992

Good Day:

The Nebraska State Penitentiary is a maximum security prison housing 780+ men. Our inmate population enjoy reading all types of Newspapers & Newsletters. Nebraskas economy at this time is extremely poor, which means that we are unable to purchase an adequate amount of materials for our inmate population.

We would appreciate receiving a complementary subscription to your Newspaper/Newsletter.

Your donations are a great help in the rehabilitation of the men.

Thank you for your time and consideration.

Sincerely,

Jo Gray  
Librarian

#### REVISIONIST'S CORNER

The June 8, 1992 issue of *Computing Canada* in a special front-page report announces that "Holmdel is one of AT&T Bell Labs major research centres.... Sixty years ago for example, radio astrology was invented here."

**BOB WELL-RECEIVED IN ADDIS ABABA**

Our reputation reaches the strangest places in the strangest ways: I recently received a letter from Addis Ababa, Ethiopia. The correspondent was in the Public Relations Section of the Water Supply and Sewerage Authority and was inquiring about the connection between science and religion - you know the type. He is writing a paper [for the sewerage authority?] attempting to show the causes of the supposed conflict between religion and science, using Silk, Hoyle and the Holy Bible [great combo!]. In the letter, he goes on to say that we can see from day-to-day achievements that science is answering the questions of religion. "For instance, Hubble Telescope has beamed living Angels early last year." [NEWS TO US!!]

At the end of the letter, the writer said: "...I think you would not mind if I tell you how I came across your address. One bright morning I bought some sugar from the nearby shop rolled with a piece of paper. I then poured the sugar into my cup and took a glance at the piece of paper, as I usually do. To your [sic] astonishment, I found it to be something of interest. I thank my lucky star because I have been introduced with the addresses of three very important scientists..." [It must have been the Toronto Sun!!]

- Bob Garrison

**POTPOURRI**

Our congratulations to Rick Crowe (PhD 1984), who has been awarded tenure and promoted to Associate Professor of Physics and Astronomy at the University of Hawaii as of July 1.

John Percy reports that Dick Bond and Simon Lilly gave a fascinating presentation on "The Big Bang" on Sunday afternoon, September 13, at the Ontario Science Centre, featuring, among other things, a VERY large model of the expanding universe. John reminds us that a good way to keep up with science in Canada (and to partake of free coffee and cookies) is to attend the free Sunday afternoon lectures to the Royal Canadian Institute at 3.15pm in the Medical Sciences Auditorium. The opening lecture this year (October 18) is "International Space Science on IML-1" by Canadian astronaut Roberta Bondar. But get there early - the room will be packed!

A memo from the U of T Faculty Association reports that "Professor Stefan Mochnacki has been elected by acclamation to represent the [Astronomy, Physics] constituency on UTFA Council. The term of this seat expires on June 30, 1995."

**LIBRARY NEWS**

Some of you may have noticed that there is a new database of serials in the library. We are pleased to be able to tell you that now the Observatory Publications are included in that database. Searching by title keywords will make the Observatory Publications much more accessible. In addition, the data structure allows for temporary or permanent notes such as when the annual index is published, exactly where at DDO I put the thing, or the current e-mail address.

With this addition, only the regular, circulating monographs, theses, and atlases (all pre-1989) are not online. The latter will be done sometime in the future but there are no plans to add the former.

We are also making slow but steady progress on making a proper catalogue for the slide collection, which was moved to the library several months ago. When we finally determine what is there, we will be able to start buying more!

Speaking of audio-visuals, we have started a collection of tapes to be used with the department's new teaching VCR.

Suggestions or comments about these or any of our services are encouraged.

- Marlene Cummins astlibr@vela

**MINING THE GOLD IN CHILE**

by Bob Garrison

My trip to Chile in May was harrowing, but worth it, because I had an adventure, learned something new, and was awed by the experience. Did you know that there is a Canadian-owned mine in Chile and that it is the richest gold mine in the world, in terms of ore quality? There is. It is called "El Indio" and is located up the Elqui Valley from Cerro Tololo InterAmerican Observatory.

It all started in Toronto on a Sunday evening in May. Unfortunately, Canadian Airlines has abandoned its oh-so-nice nonstop flight from Toronto to Santiago; they now fly all the way east to Sao Paulo, Brazil, arriving early in the morning. That adds seven hours to the trip, including a 2-hour wait in a Brazilian transit lounge and a change of planes to a VARIG Airlines flight. To make a long story short, I won't be using Canadian Airlines again; my loyalty doesn't extend that far.

After arriving in Santiago in mid-afternoon and working for several hours with Antonio Urrutia, our Chilean lawyer, I took the overnight bus to La Serena, arriving at 0730. Traveling two overnights in a row, with about 2-3 hours of good sleep each night, is not my idea of fun. I guess I'm not as young as I used to be! Nevertheless, a sense of adventure still turns me on. So, after a quick shower and a rushed trip to the El Indio Headquarters in La Serena, I was driven east up the Elqui Valley, past Tololo and past Rivadavia to the junction where the Elqui Valley Road continues to Argentina and the El Indio road turns north. The scenery is



incredibly beautiful. Imagine a valley at about 3000 m with snow-covered, rugged mountains towering over it on all sides, with all the colors of good mining country - purple, orange, green.

Upon arrival at the mine, I was surprised to find that it is a clean, modern, high-tech operation, with comfortable dormitories for the workers (about 1500 total, with about 400 on duty at any one time). There is even a cinema. It is a virtual city at 3600m - well organized and busy. I obviously wasn't prepared for the size and level of sophistication.

After the initial greetings, I was outfitted with coveralls, heavy socks, gum boots, helmet, jacket, goggles and a gas mask and ended up looking like something straight out of a science-fiction movie. The equipment was not just a sham; I was glad to have it in the mine, where it is cold and wet. There are tunnels after tunnels - 50km of roads INSIDE the mountain. I'm very thankful that my guide had a map in his head. If anything had happened to him, however, I might never have seen daylight again.

I saw huge machines, some of which are remotely controlled, working in the mine and doing the tunneling. One huge tunneling payload - long, low, and heavy - was being operated by a controller with 2 joysticks, like some gigantic sci-fi computer game, from a distance of 20 meters or so. It was fast-moving and VERY effective. In addition, there is a computer-controlled central command post, with all kinds of monitors and alarms. I was taken through the foundry where the ore is crushed, washed, centrifuged, and cooked to produce ore enriched by at least a factor of ten before being shipped abroad. The gas mask was essential in the foundry. El Indio produces gold, silver, and copper, mainly, with arsenic as a byproduct. Apparently, it coexists with the gold.

It was one of the times in my life when I have been overwhelmed by the complexity of our civilization and impressed by human achievement in the face of difficult tasks - like extracting 5 to 10 grams of gold from a ton of ore taken from the INSIDE of a mountain. All this so that we can have some gold plating for an IR mirror, or so that I can have a gold filling in my tooth!

This is all part of a plan to get support for a new telescope venture in Chile. I'm not sure if it will be successful, but the adventure of the chase has been interesting, in any case.

### TAPPING THE GOLD MINE

by John Percy

Did you know that the US National Science Foundation has a budget of several hundred million dollars for science and math education? Canada has nothing to compare, aside from the scholarship programs of NSERC.

Janet Mattei and I have just received a \$US 304,000 grant from the NSF for a project called "Hands-On Astrophysics", to use variable star astronomy to develop analytical and research skills in high school (and eventually university) science and math labs. [Janet is Director of the American Association of Variable Star Observers, and I am Past President.] In this project, students will use a database of existing observations, and will make new observations from slides, from the sky, and eventually with "micro-observatories" - small, automated telescopes presently being developed by a group at Center for Astrophysics.

**UTSO NEWS**  
by Bob Garrison

John Pimentel has just finished building a new console and control system for the Helen Sawyer Hogg 60-cm telescope. It will allow true digital control of the operation, with the potential of operating from Casa Canadiense (the house on site). A new, compact, hand paddle will replace the 3 old heavy ones. The console box itself is about one-quarter the size of the old console and produces a fraction of the heat. It is a beautiful piece of work.

An autoguider, funded by an NSERC Equipment grant, is under construction in the shops. These developments will remove several sources of excessive heat from the dome: the old console now and the observer soon.

A long-awaited attempt to get e-mail to the mountain seems a few steps closer. In anticipation, we have connected the house and dome by ethernet and are running a connection to Carnegie's one-meter telescope dome. The communication from the mountain to La Serena is by microwave relay and that is the biggest problem. From La Serena, a connection will be made through the Tololo Internet link via NASA satellite. Don't hold your breath; it may take a while to solve all the problems.

**PRECISION PHOTOMETRY FROM DOWNTOWN TORONTO**

In early August, summer student Kathy Hayhoe and I took part in a multi-longitude photometric "campaign" on the Be star 25 Cygni. The purpose was to confirm the suspected 0.21-day period in this star. These short-term variations in Be stars have been ascribed, by different people, to pulsation or rotation; a 0.2-day period is too short to be due to rotation. Multi-longitude observations are used to provide a longer and more complete time base, and help to rule out 1 cycle/day "alias" periods in the power spectrum of the data. The problem with 25 Cyg is that the photometric amplitude is less than 0.02 mag and, since the campaign lasted only a week, we needed at least a night or two of good data within that time.

As it turned out, Kathy got three consecutive nights of "photometric" skies, and the 0.2-day period was evident on each night (with the usual small amplitude). So don't think that you can't do good photometry from downtown Toronto. And don't start lining up for observing time. The telescope is primarily used for teaching during the academic year!

- John Percy

**PREPRINTS BY FACULTY AND STUDENTS RECEIVED IN THE LIBRARY**  
May 26 to September 22, 1992

Carlberg, R. Merging and fast galaxy evolution. 5-Aug-1992. Preprint 92-1125

Eales, S.A.; Rawlings, S. Infrared spectroscopy of radiogalaxies at  $2 < z < 4$ : evidence that some high-redshift radiogalaxies may be protogalaxies. 18-Aug-1992. Preprint 92-1187

Eales, S.A.; Rawlings, S. Infrared spectroscopy of 11 radiogalaxies at  $2 < z < 4$ : evidence that some high-redshift radiogalaxies may be protogalaxies. 20-Jul-1992. Preprint 92-1093

Garrison, R.F. The interstellar reddening correction. 22-Sep-1992. Preprint 92-1370

Kaiser, N.; Squires, G. Mapping the dark matter with weak gravitational lensing. 2-Jun-1992. Preprint 92-0879

Lesch, H.; Reich, W. The origin of monoenergetic electrons in the arc of the galactic center. 9-Jul-1992. Preprint 92-1041

Lopez-Cruz, O.; Garrison, R.F. A spectroscopic study of high galactic latitude F supergiant stars. 11-Aug-1992. Preprint 92-1143

Percy, J.R.; Attard, A. Photoelectric monitoring of bright Be stars. II. 1989,1990,1991. 4-Aug-1992. Preprint 92-1120

Percy, J.R. Photoelectric and visual observations of X Persei. 19-Jun-1992. Preprint 92-0987

Shelton, I.K. Supernova 1987A: photometry of the discovery and pre-discovery plates. 6-Aug-1992. Preprint 92-1130

Shelton, I.K. UBVRI photometry of SN1987A: the first 156 days from Cerro Las Campanas. 6-Aug-1992. Preprint 92-1128

Shelton, I.K.; Lapasset, E. UBV photometry of SN1987A: earliest photoelectric observations. 6-Aug-1992. Preprint 92-1129

Yee, H.K.C.; Filippenko, A.V.; Tang, D. A high-resolution gravitational lens survey. 16-Sep-1992. Preprint 92-1355

Yee, H.K.C.; De Robertis, M.M. Ly alpha and C IV narrow-band imaging of the gravitational lens 2237+030. 8-Sep-1992. Preprint 92-1272

#### TRANSPARENCIES MADE OPAQUE

With the start of the G2000 and colloquium season again, Jean-Louis Trudel provides this timely reminder regarding overhead transparencies. It is the work of Rolf G. Winter, College of William and Mary, and appeared in the letters section of the April 1991 issue of *Physics Today*.

> Write to within 1 mm of the edge so that it is easy to let either the screen or the projector cut off some material. The audience will pay more attention if it is forced to guess.

> Use pale, transparent colors. Pale green is particularly good; it can seldom be read from beyond the second row.

> Color that is used consistently makes things too easy to follow and causes somnolence. Change color erratically within each equation. The audience may be inspired to credit you with lines of reasoning that never occurred to you.

> Data points in graphs must be indistinguishable from flyspecks. You can then decide on the spot, so to speak, whether to claim agreement or disagreement with theory. Such decisions should be made after one senses the mood of the audience.

> Before the talk, project your transparencies in a room similar to the one that will be used. If anything can be deciphered with the aid of opera glasses from the middle of the room, write smaller.

> Plan the time for each transparency. A useful formula is

$$\frac{4 (\pi) \text{ seconds}}{\exp(\text{number of equations on transparency})}$$

> If you are offered the insult of being scheduled in a small room, have the projector placed low so that it must be angled upward toward the screen. The importance of your talk is then made manifest by the keystone-shaped illuminated region, and some of the area will necessarily be out of focus.

> Obscure. You may try to stand so as to block the view of the screen, but there will usually be some who can see. It is more effective to stand very close to the projector and intercept about a third of the light with your shoulder. Point to things directly on the transparency with as blunt an instrument as is available. Your finger can be effective, but a blackboard eraser is superior.

> Make it clear that you are a perpetually jet-setting speaker who doesn't think that the present audience is worth much preparation. Your transparencies should be smudged and scratched, and some should be out of order. Emphasize that they have been written at 30 000 feet. "Let's see what's on the next one" is always a useful insult. Mumble something about having used this stuff for the principal talk at the Belgrade summary of the Tokyo Conference, and about having been too busy to sort it out since.

> Bring a very large stack of transparencies, on any subject, that you do not show during the talk itself. If anyone asks a question at the end, further impertinence can be headed off by showing 17 of them.