

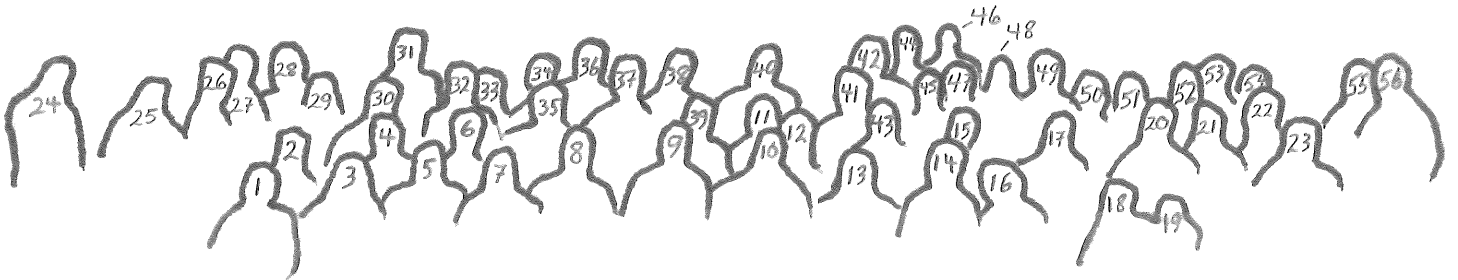
THE ^{DAVID} DUNLAP DOINGS

Vol. 24, No. 1 January 31, 1991



Christmas Countdown 1990
photo: Karl Kamper

FINDING CHART FOR COVER PHOTOGRAPH



- | | | |
|-----------------------|----------------------|-----------------------|
| 1. Mao Zhang | 20. Mike Fieldus | 39. Marlene Cummins |
| 2. Francis Dubinski | 21. Shen Chew | 40. Don MacRae |
| 3. Teresa Kroeker | 22. Frank Hawker | 41. Tom Bolton |
| 4. Susan Tarr | 23. Ian Shelton | 42. Mike Jewison |
| 5. Sandra Scott | 24. Omar Lopez-Cruz | 43. Bob Hill |
| 6. Gang Li | 25. Yvonne Fernie | 44. Marc Krogulec |
| 7. Dave Earlam | 26. Dan Blanchard | 45. Albert Hartviksen |
| 8. John Percy | 27. John Dubinski | 46. Victor Krogulec |
| 9. Don Fernie | 28. John Harper | 47. Mario Pedreros |
| 10. John Lester | 29. Francine Marleau | 48. Peter Ip |
| 11. Florence Unwin | 30. Patricio Ortiz | 49. Maurice Clement |
| 12. Christine Clement | 31. Hugh Couchman | 50. John Pimentel |
| 13. Laura Carriere | 32. Stefan Mochnacki | 51. Siqin Huang |
| 14. Joan Tryggve | 33. Margot Mandy | 52. Larry Widrow |
| 15. Rosemary Diamond | 34. Gerry Quinlan | 53. Ernie Seaquist |
| 16. Margaret Fukanaga | 35. Archie Ridder | 54. Jean-Louis Trudel |
| 17. Paul Hendry | 36. Ray Carlberg | 55. Dick Bond |
| 18. Gloria Seaquist | 37. Dimitar Sasselov | 56. Steve Myers |
| 19. Adam Seaquist | 38. Simon Lilly | |

COMINGS AND GOINGS

John Percy was in Halifax on September 21-22 to speak at St. Mary's University (on the "The AAVSO and its Role in Variable Star Research") and to the RASC Halifax Centre (on "An Astronomer's Encounters with Creationism")

John Percy was in Munich October 15-18 (along with Tom Bolton, Mike Fieldus and U of T alumni Alex Fullerton and Doug Gies) for an ESO Workshop on "Rapid Variability of OB Stars".

John Percy spoke (on "Amateurs: Astronomy's Amazing Allies") at the Space 1990 Symposium at the Ontario Science Centre, October 27.

John Percy gave a presentation on November 1 (on "Astrophysics in your Classroom") at the Centennial Conference of the Science Teachers' Association of Ontario, of which he is honorary president.

John Percy was in Boston November 9-10 to chair a council meeting of the AAVSO, and consult with Janet Mattei on various scientific and educational programs.

Indrek Kolka (Tartu Observatory, Estonia) spent three months, based at Erindale College, working on spectroscopic and photometric observations of P Cygni.

John Percy gave a talk (on "The AAVSO and its Role in Variable Star Research") at the University of Western Ontario on January 17.

In October, Bob Garrison attended the workshop on Precision Photometry, held in Schenectady, New York, where he and Richard Gray gave papers arising out of Richard's thesis.

Bob Garrison had a successful two-week observing run in Chile in early December after a week of touring with Jim Keffer, U of T Vice President, Research (see below for details). Before returning home, Bob spent an adventurous week on Isla Robinson Crusoe, 670km off the coast of Valparaiso.

Bob Garrison attended the January AAS meeting in Philadelphia, where he gave a paper on Recent Spectroscopy of Mira, co-authored by Mike Fieldus and Shawn Hunt. They gave details of the 1989 maximum, which was early and brighter than usual, and the 1990 maximum which was flat and fainter than usual.

Bob Garrison will participate in the Atlantic Undergraduate Physics Conference to be held at the University of New Brunswick February 8-10. The two other featured speakers are Jay Ingram from CBC and Robin Armstrong, President of UNB and former Dean of Arts and Science at U of T.

Bob Hawkins, who was a graduate student in the department circa 1970, dropped by recently for the first time in many years, taking a nostalgic look at the corner desk in room 1318. He is still teaching astronomy at Seneca College, where, he reports, things are going well.

Tom Bolton and Mike Fieldus were observing with the McDonald 2.7m telescope December 21-26 and had four clear nights out of six.

CONGRATULATIONS

To Nick Kaiser on the award of a 1991 E.W.R. Steacie Memorial Fellowship, one of only four awarded across Canada in all sciences. Nick is already the recipient of the AAS's Warner Prize and a fellowship of the Canadian Institute for Advanced Research for his work in physical cosmology.

CONDOLENCES

To Tom Bolton, who is suffering a prolonged bout of pleurisy that has forced him to take an extended sick leave. We wish him well and a speedy recovery.

Those of us who were around DDO in the 1960s will certainly remember Jean Lehmann, who was our first (part-time) librarian. Jean, now 86, suffered a heart-attack last December, but at last report was recovering well and will soon be returning home. We wish her happiness in her new surroundings.

POTPOURRI

Li Sen (Northern Secondary School) is working with John Percy in the University of Toronto Mentorship Program. His project involves using new and existing methods of power spectrum analysis to study the periodicity of the short-term variations in the Be star KX And.

John Percy is serving on the University's Teaching Advisory Committee. If anyone has comments or suggestions about the role of the University's new Teaching Development Service, please let him know.

John Percy is editing the proceedings of the AAVSO's first European meeting, held in Brussels from July 24 to 28, 1990.

REVISIONIST'S CORNER

From New Scientist, Dec. 1, 1990, page 55:

"... the Small Magellanic Cloud ... has about 2×10^9 solar masses of material. (For comparison, the Milky Way has roughly 10^{12} times the mass of the sun.)"

RECOLLECTIONS OF PETER M. MILLMAN (1906 – 1990)

Helen Sawyer Hogg

When Dr. Peter Mackenzie Millman died in Ottawa on December 11, 1990 the Department of Astronomy of the University of Toronto lost its earliest surviving appointee. Peter Millman joined the Department as Demonstrator in 1933, becoming Lecturer in 1934, going on leave of absence in 1941 to enlist in the Royal Canadian Air Force for World War II. After the war ended, he left the staff of U of T in 1946 to become Astrophysicist at the Dominion Observatory, Ottawa.

Peter Millman was an outstanding astronomer who will be remembered by many friends and associates for many different contributions to their lives. His obituary or biography is appearing in various journals and I will not repeat here many details of his life. That by Dr. Ian Halliday in a forthcoming issue of the *Journal of the Royal Astronomical Society of Canada* will also give a full bibliography of his papers. The article in the Winter Solstice issue of *Cassiopeia* by myself gives many biographical details, and an excellent Curriculum Vitae is to be found in the *Canadian Who's Who*. He had over 150 publications in various fields of meteors and meteor spectra, as well as phenomena of the upper atmosphere. Quite unusual is the number of distinguished collaborators he had in several dozen of his papers. He contributed a great deal to the many societies of which he was a member, and often an officer, and his work as Secretary during the first seven years of the Canadian Astronomical Society helped get that organization on a firm basis.

I first became acquainted with Peter Millman in September, 1929 when I was a fourth year graduate student at the Harvard College Observatory, working in the field of Star Clusters under the supervision of the Director, Dr. Harlow Shapley. Peter had graduated in June that year from U of T in the Honours Math and Physics course, receiving the Gold Medal of the R.A.S.C. He had had two summers as assistant at the Dominion Astrophysical Observatory where the splendid scientific training by the late Dr. J.A. Pearce remained with him for life. Under the influence of Dr. C.A. Chant, to whom he was devoted, he proceeded to Harvard for graduate work. In this he was following in the footsteps of Frank Scott Hogg of Preston, Ontario, who received his Honours B.A. in Math and Physics in 1926 with the Gold Medal of the R.A.S.C. Three months before Peter's arrival at HCO Frank had become the first person ever to receive the Ph.D. in Astronomy from Harvard University. In 1925 Cecilia Payne received the first doctorate for work at the Harvard College Observatory, but her Ph.D. had to come from Radcliffe College because in those days Harvard did not give advanced science degrees to women. I received the fourth in 1931.

In the academic year 1928-29 Frank shared a double room in a Harvard dormitory with a U of T friend, James Roberts MacGillivray of Guelph, Ontario, who had received his B.A. in Honours English in 1926 and his M.A. in 1928. When Frank left for Europe in September, 1929 on a Harvard Travelling Fellowship Peter Millman moved into the half of the room with Jim MacGillivray that Frank was vacating. In 1928 Helen Sawyer of Lowell, Mass. and Elinor Lane of Spencer, Mass., roommates at Mount Holyoke College earlier, and now both graduate students at Radcliffe, shared a two room apartment on the third floor of a private house in Cambridge. They enjoyed occasionally trying out their culinary skills on the two students from distant Canada. During the early part of his time at Harvard Peter had a brief illness which put him in the Harvard Infirmary where he became determined to make a registered nurse, Margaret Gray from

Westville, N.S. his companion for life. He even managed to get a part-time job on the telephone switch board of the Infirmary to be near Peggy more hours a week. Frank Hogg and Helen Sawyer were married September 6, 1930; James MacGillivray and Elinor Lane September 20, 1930; and Peter Millman and Margaret Gray July 10, 1931. With his doctorate in 1930, James MacGillivray joined the Department of English at U of T in the fall; Peter Millman returned to Toronto in 1933 and Frank and Helen Hogg came to the David Dunlap Observatory in January, 1935 after three and a third years at the Dominion Astrophysical Observatory.

We have a host of memories of the many occasions we have shared together in the past 61 years. The first break came in the sudden death of Frank Hogg on January 1, 1951 of a heart attack brought on by rheumatic fever in childhood. On that date Frank had been Professor of Astronomy and Director of the David Dunlap Observatory for precisely five years, as well as being on the board of the Richmond Hill High School for exactly the same time, the last two years as Chairman.

As the Millmans and Hoggs were conscientious attendants at scientific meetings we had many delightful hours together fostering science. Peter was also an Associate of the Harvard Observatory, 1955 – 75, which is only 35 miles from my family home in Massachusetts, to which I made frequent trips. On one occasion, with his great photographic skill, he made an excellent record of the contents of my home there, photographs which later proved exceedingly useful to me and my insurance company after a burglar had spent a night loading his truck with my possessions.

Peter's vigor seemed remarkable to me, with his strenuous trips around the globe, his mountain climbing, and his long hours of work at NRC in his 80's as Canada's second oldest astronomer still working. For the past decade the word STAMINA has always brought to my mind the vision of Peter at the Annual Banquet in Halifax of the General Assembly of the R.A.S.C. on June 28, 1980. Peter had just received one of his many medals, the Gold Medal in Prague from the Czech Academy of Sciences and had made the long flight that day back to Canada, arriving in Halifax at about 2 a.m. his time in order to attend the banquet. We waited expectantly for him. When I first saw him he was already seated behind me, neatly attired in his lobster bib, and delightedly picking out the meat from a lobster in the shell.

Mrs. Millman lives in the Ottawa house into which they moved in 1946. Professor Emeritus MacGillivray and his wife Elinor live in their Lawrence Park, Toronto home of 50 years and received congratulations from the Queen and the Governor General on their Diamond Wedding Anniversary. And Helen Hogg is still living in the Richmond Hill house into which she and Frank moved in May, 1937.

Modern medicine is doing wonders in lengthening the life span of elderly people, but it cannot ease the sorrow when long-term friendships are broken.

REPORT ON THE JANUARY AAS MEETING

Karl Kamper

The Philadelphia AAS meeting was well attended by present and past department members, including Bob Garrison, Rachel Webster and Patricio Ortiz among the current and Alex Fullerton and Bill Weller among the recent past, along with dozens of temporary more distant kin and, of course, Dimitar, whose exact location cannot be defined. Aside from one day of heavy rain, January in Philly was quite bearable with mild temperatures and real sunlight. The latter is what I miss most here in the muskeg.

Special sessions were set up for the first HST results, the Astro-1 mission, and the "partial Keck" results, making this meeting quite a media event. As such, however, it was eclipsed by the outbreak of war in the Persian Gulf which resulted in the cancellation of the post-Banquet festivities and the hasty erection of monitors tuned to CNN. The shift in routine was obvious on the last day when everyone would pause on their way from poster to oral session to check the monitor for the latest news from high atop the Baghdad Hotel. My planned dinner with an old classmate who now works in military intelligence (I know, I know, another oxymoron) was postponed indefinitely.

Most of the HST results have already been seen in the press but it was possible to get a more detailed view from the poster session. The topic of deconvolution was omnipresent. One has only to bear in mind that, on the HST, the point spread function changes significantly across the field of view, to realize the amount of paper to be devoted to this. Unfortunately, I missed the Keck session, since this may be an historic first - a special meeting to report results from a mirror less than half complete!

My paper on Flamsteed and Cas A was totally eclipsed by Jeri Reed's colour stereo slides of the remnant showing it from different angles in x, y, z-dot space. Her work with Fabian and Winkler is based on 72 long slit CCD spectra slicing the remnant every 4" and represents a great leap forward in taxonomy. I could only claim the highest percentage of Latin of any paper presented. Next time, however, I'll do holograms!

CHILE WELCOMES THE VICE PRESIDENT

Bob Garrison

During my recent visit to Chile (20 November - 25 December), I was accompanied by Dr. Jim Keffer, the University of Toronto's Vice President (Research), who stayed for a week. This was the first visit by any U of T administrator, so he was treated to the full tour of all the observatories: Las Campanas, Cerro Calan, ESO, and Tololo.

The visit to Cerro Calan in the outskirts of Santiago was organized by José Maza, former Ph.D. student here), and the visit to Tololo was arranged by Bill Weller, who spent three years working at DDO after receiving his Ph.D. from York University about eight years ago. It pays to have associates in high places!

While in Santiago, we had lunch with the Canadian Ambassador at his Residence, a meeting with the Prorector of the University of Chile (arranged by José Maza and Claudio Anguita, Director of Cerro Calan), a meeting with U of T alumnae in Santiago (arranged by Antonio Urrutia, U of T's lawyer in Chile), and a lunch at the Club de Union (equivalent of our Granite Club, also arranged by Urrutia).

The lunch at the Club de Union was a Grand Affair, two photographs of which made it into the society pages of *El Mercurio* (equivalent of our *Globe and Mail*). Among the guests were the Minister of Foreign Affairs of Chile, the Subdirector of Protocol (Ministry of Foreign Affairs), the Canadian Ambassador, Canadian Consul and Canadian Commercial Attaché, the President of the BICE Bank, the Vice-Rector of the University of Santiago, Director of the University of Chile Observatory, and the Associate Director of Carnegie in Chile. The entire visit went extremely well; Jim was impressed with the operation on Las Campanas and with the high profile of Canada and the University of Toronto in Chile, despite the extremely low budget. (Ahem, ATTENTION UNIVERSITY BUDGET OFFICIALS AND FUNDING AGENCIES!!). Canadian astronomers work hard and are good at what they do, albeit with a very small telescope - for the time being. Just think what we could do with a University of Toronto 2 meter telescope to complement the Canadian share of 1/4 of an 8 meter in Chile! The universe awaits the revelation of its secrets.

AMUSEMENTS

Here is a little program in BASIC written by a W. Simmons. Can you foresee what its output is? Better yet, can you figure out why it produces what it does?

```

10 A=0
20 B=1
30 C=2
40 For D=1 to 8
50   A=A+B
60   B=sqr(1+A*A)
70   C=C+C
80   Print 3*C/(A+B+B)
90 Next D
99 End

```

GASA Gossip

Mike Fieldus

Okay, I guess I have to talk about our Volleyball team sometime this year. I sure made a lot of fuss about it when we were very good and winning all the time, so it is only fair to let you know that this season, we are having a lot of fun. But, we are not winning. At least, not a lot. We did win last week, steamrolling over the last place team in the league 2 games to 0, to bring our season record to 3 and 6. The participation on the team this year, however, is much greater than it has been in the past, with several CITA post-docs, and at least one staff member who learned to play her volleyball under the dubious DDO rules, coming out to play each week.

Despite our less than stellar record, everyone is enjoying the games and the only real complaint we have is that most of the team seem to be skipping the mandatory post-game debriefings in the GSU pub.

I am a little saddened to report that Tom Bolton is quite ill again, and is on sick leave for all of this month. Tom and I spent several nights over Christmas observing at McDonald Observatory in Texas, where he was complaining most of the time that his health was not good. This seems to have developed into something a bit more serious, but the latest word from Tom is he will be back, at least part time, in early February. I must also point out that, despite the coincidental timings, there is no correlation between the time of Tom's disappearance and the out break of hostilities in the Gulf.

This has been a very busy month for graduations in the department. First Paul Hendry defended his master's thesis, followed the next week by Omar Lopez-Cruz. The last of this series will be Sang-Hee Kim, just nipping in under the dual enrollment deadline. It looks like the new department policy of holding masters degrees to one year is just in time, as the entire class this year was pushing the hard deadline. What would have happened to next year's class if the expectations for Masters theses continued to grow? Unfortunately Dimitar was not able to make Omar's talk, which was based in part on work Dimitar had done previously. As most of you are aware, Dimitar is commuting back and forth between Boston and Toronto often enough to fill up a whole page in the Comings and Goings section.

Along the lines of graduations, Bob Hill and Laura Carriere were back in Toronto over Christmas for a visit and to allow Bob to defend his thesis. Naturally enough this defense was followed by a small celebration over one or two drinks, ending up with a large group of people throwing sharp pointed objects at the wall of Lee and Esther's basement.

I would like to add more this week, but the computer is making strange beeping noises at me, and generally behaving badly. When it does this, I usually figure it is tired and let it rest for a while. Once, I brought up the subject with our systembeing, the one paid by the department to provide support for the users of the system, and was rebuked quite soundly for the effort. Our being resides at a computer terminal located underneath two signs, one suggesting you don't ask him any questions, and the other claiming membership to an organization called RDQASTOA, which, the sign proudly proclaims, stands for Reject Dumb Questions And Shoot The One Asking. I realize that our systembeing is very busy doing whatever it is he can't be interrupted from (it certainly isn't fixing mail because I still can't get things to Erindale), so I don't ask my silly question about what I am doing wrong.

THE GASA GOSSIP SUPPLEMENT SERIES (GGSS)

This column (the Gasa Gossips Supplement Series or GGSS) is open to all the DDD audience. You can submit by e-mail any material which you think is funny, but is not long enough for a full article. The material is confidential, not even the editors will know who submitted the message unless you want to sign it! Some soft screening will be done to avoid inflammatory material from appearing, but no correction to spelling, syntax, or style will be attempted. In other words, what you submit is what will be printed. To submit material, simply send mail to:

ggss@vela.astro

We know a lot of funny things happen around the department, DDO, and CITA, but simply because they are not suitable for any "journal" they are forgotten and lost.

[This column brought to you courtesy of the PBS network]

While skating one evening the following transpired:

Omar: "Gosh, I don't understand why my feet hurt so much."

Ed jokingly said: "Maybe you have your skates on the wrong feet"

To which Omar queried: "You mean they're NOT both the same????"

Needless to say, Omar's second time on the ice was much less painful (until he fell and almost drowned).

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To: ggss@vela.astro

> TO: STELLAR DISCUSSION GROUP

> FROM: Mike

> RE: Next Meeting

>

> Hi Everyone,

> It is high time we began meetings again. Don Fernie is finally ready to

> give us the presentation he promised last year, and will be talking on

> Sirius on Wednesday, January 30th at 2:00 ...

>

> Mike

>

WOW! Looks like the stellar discussion group is going on location!

LETTERS

Dear Joan,

Hi Joan! Hope this letter finds you well and happy. I read a write-up in the Doings about you some time ago and was just surprised my goodness. It seems there are more to your ages than just appears to be. Also here comes my thanks for sending the Doings regularly (also letters as well). This certainly helps myself keep in touch with CA, though things in the Doings are all read in the "ancient" past tense here.

I wonder if you could kindly relay this mail to Russia. A direct mailing to Russia from Korea isn't yet possible, though I anticipate this will soon be okay considering much ongoing improvements recently being achieved between the two nations. The mail contains a copy of paper written in collaboration with Phil Kronberg with the Russian recipient asked for.

Hope things with you all well. Many thanks and bye for now... With very best regards...

Sincerely Yours,

Kwang-Tae Kim

Hi Don.

I'm pretty much settled here in my new job at CASA at the University of Colorado. My new e-mail address is: clayton%hyades.span@star.stanford.edu

In December I was at Marshall Space Flight Center in the Payload Operations Control Center to participate in the Astro-1 Shuttle mission. When I left Toronto in 1983 I went to the University of Wisconsin to work on The Wisconsin Ultraviolet Photo-Polarimeter Experiment or WUPPE. This was one of the 4 telescopes on the Astro-1 mission. I spent 5 years in Wisconsin and 2 at NASA Headquarters in Washington DC working on this project. I'm happy to say that despite the many shuttle problems that occurred during the mission, our telescope worked perfectly and we got good ultraviolet spectropolarimetry of a wide range of interesting objects including Interstellar dust, Be Stars, WR stars, Seyferts and QSOs. We will be working on the data for some time to come.

All the best in '91

Geoff (Clayton)

Hi,

I just wanted to let people back in Toronto and around the world, especially places like Austin and Boston, who might remember me from my days as an undergraduate hanging around and bothering the grad students that I have passed my preliminary examinations at Berkeley and am now officially on my way to my Ph. D.

The exam is not unlike the oral one in Toronto, although we get to choose not only who will be on the committee, but what topics we will be tested on. For my exam, I chose the topics Extragalactic Astronomy, Stellar Structure, and Stellar Dynamics. The committee consisted of Hy Spinrad, Alex Filippenko, and Frank Shu. Aside from evil questions about clusters at large redshift and their significance to active galaxies, the next hardest thing was just to retain my composure while repeatedly answering with an "uh". Thankfully they were not out for blood.

I should let Mr. Clement know that his 420 notes really came in useful when I was studying for stellar structure, since the course I took last year was completely optically thick. In fact, I really do believe that the undergrad degree which I obtained from U of T has been very helpful.

For the future, I will be working with Ivan King in the spring. Some topic on dynamics, likely involving star clusters and evaporation. As well, I hope to get involved with Frank Shu and his group, dynamics of accretion disks and the like.

Let Mike and the others, Ian, Peter, Francine, and Barry know that all is well, and that things here although crazy have never been as strange as I have seen the fourteenth floor in the wee hours of the night.

Doug (Johnstone).

Class of 1989.

FROM THE DOINGS OF TWENTY YEARS AGO:

There was a news release on January 18 [1971] regarding the [new] U of T telescope in Chile. Auxiliary instruments ... will include a low-dispersion grating spectrograph designed and built here under the direction of Dr Garrison and a highly sophisticated photoelectric photometer being developed by Dr Racine. We are excited about the project, grateful to the NRC and the benefactors and eager to start our programs – later this year, we hope.

FROM THE DOINGS OF TEN YEARS AGO:

Ultraviolet astronomy at DDO? Tom Bolton reported on experiments with the 1.9m telescope's spectrograph that produced usable spectra of α Persei (F5 Ib) at 3300Å and of Algol (B8 V) at 3200 Å.

PAPERS SUBMITTED

PREPRINTS BY FACULTY AND STUDENTS RECEIVED IN THE ASTRONOMY LIBRARY

November 22, 1990 to January 24, 1991

Bietenholz, M.F.; Kronberg, P.P.; Hogg, D.E.; Wilson, A.S. The expansion of the Crab Nebula. DDO/U of T. 90-1387. 17-Dec-1990

Bietenholz, M.F.; Kronberg, P.P. Radio spectral index variations in the Crab Nebula. DDO/U of T. 90-1386. 17-Dec-1990

Dubinski, J.; Carlberg, R.G. The structure of cold dark matter halos. DDO/U of T. 90-1269. 23-Nov-1990

Fernie, J.D. A search for eclipses in delta Sagittae. DDO/U of T. 91-0063. 18-Jan-1991

Fullerton, A.W.; Gies, D.R.; Bolton, C.T. Detection of small-amplitude pulsations in HD 34656 (O7 II) DDO/U of T. 90-1355. 7-Dec-1990

Kim, K.-T.; Tribble, P.C.; Kronberg, P.P. A search for intracluster magnetic fields in clusters of galaxies. DDO/U of T/CITA. 90-1375. 14-Dec-1990

REPORT ON THE JANUARY AAS MEETING (II)

Patricio Ortiz

I went to the AAS meeting in Philadelphia between January 13 and 17. The main purpose of this trip was to give a dissertation talk about my thesis topic. In the meantime, I met some people from NASA's Astrophysics Data System, who are in charge of installing a network service which will allow users direct access to several catalogs, from stars to galaxies/quasars in several wavelengths, from Gamma rays to Infrared. The software is quite sophisticated, but the entry level is very friendly. I expect to have some news from them in a few months as to how to install the code that will allow us to take part in this effort. The first few months will be experimental, with some catalogs not yet available, but improvements should be quick. I hope this database will be put to use by most members of our community. We still have to get used to the idea of using the computer as a research facility, but the sooner we start, the more benefits we are likely to get from it.