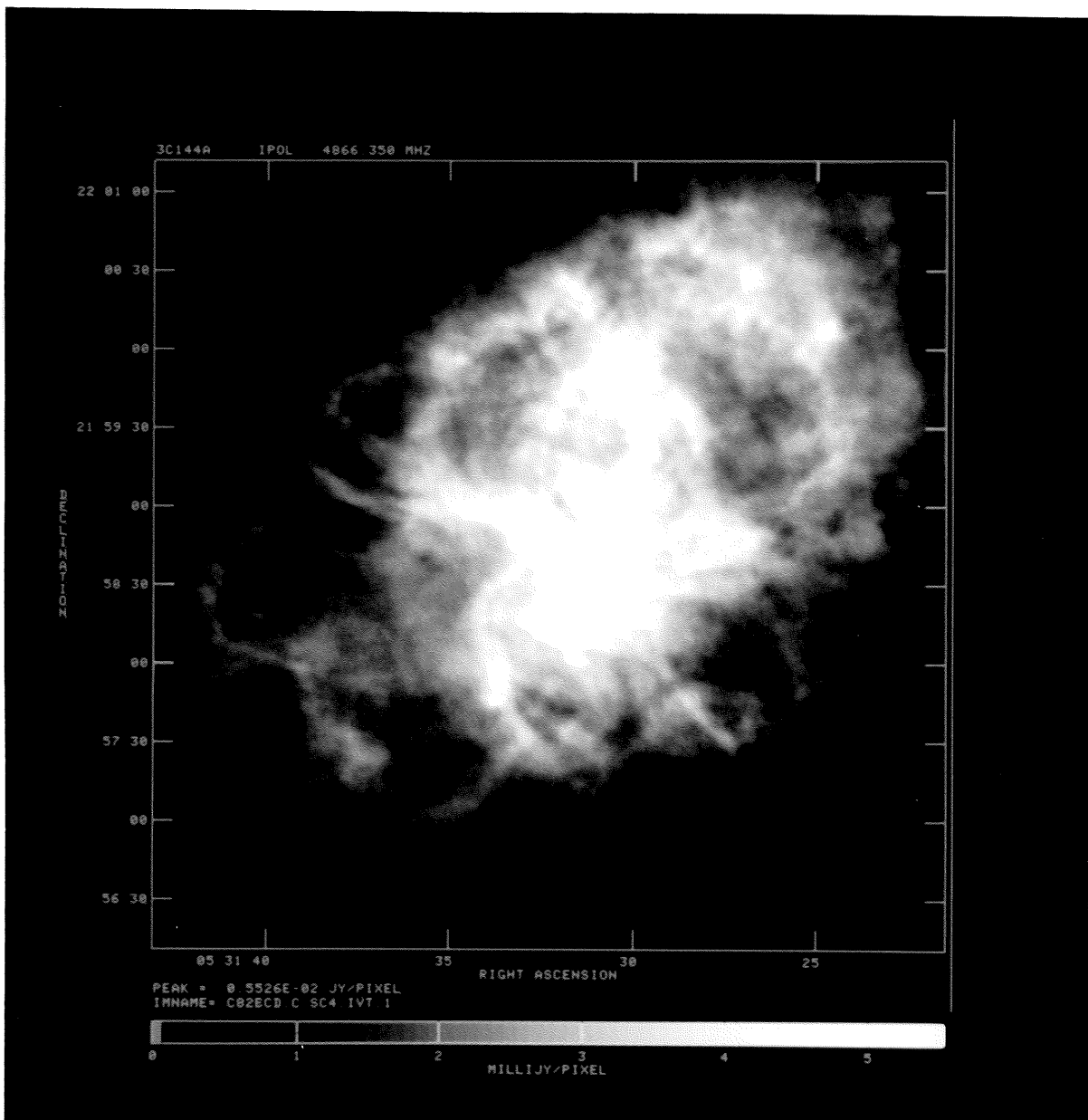


THE DAVID DUNLAP DOINGS

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EDITORIAL

Surely you've noticed how frequently "super" is used in both our popular and professional vocabulary, e.g. the supernova brought Ian superstar status. In this issue we bring you a supernova remnant, as output from our supercomputer, brought to U of T by a supersalesman, Phil Kronberg.

Deadline

The next deadline for contributions to the Doings will be September 26. Chris Rogers will be away at that time. Please send email to Bob Garrison at GARRISON or GARRISON@UTORPHYS on bitnet. Hard copy should be submitted to Esther.

Our Mistake

The last issue was incorrectly labelled as Vol. 20, No. 4. It should have been Vol. 21, No. 2.

CONGRATULATIONS

To Judith Irwin and Dieter Brückner on the the birth of their first child, Alexander Michael, who arrived at 12:03 PM on July 11 (a Cancer!).

To Dave Blyth who was awarded a Commemorative Medal by the Soviet Union. This medal was struck to honour Canadians who served in the Murmansk convoys during World War II. It was presented to Dave during a solemn ceremony on June 27 at the Naval Association Club in Burlington.

To Helen Hogg Priestley on the arrival of her second great-grandchild, Nathan Longley MacDonald, born in Coquitlam, B.C. on January 17, 1988. For the record, the first great-grandchild for Helen and her late husband, F.E.L. Priestly, arrived last September in Thornhill. Her name is Allison Lai MacDonald.

COMINGS AND GOINGS

Martin Duncan visited the department and CITA during the third week of July. He has just taken up his tenure stream position at Queen's.

John Percy attended the 1988 Spring Meeting of the American Association of Variable Star Observers, at Cornell University in early May, and presented a paper (co-authored by summer students from past years) on "Photometric Monitoring of Bright Be Stars".

Christine Clement spent 11 nights observing on Las Campanas in May using the photographic camera and the CCD camera. "The CCD is a pleasure to use!"

Bob Deupree (Los Alamos National Laboratory) is spending June-August as a visitor to the department and to CITA, working on problems of the structure and evolution of rotating stars. Bob received his Ph.D. from our department in 1974.

Dennis Crabtree (DAO) and Chris Rogers made CCD observations of circumstellar dust envelopes using the Kitt Peak 2.1 meter. The monsoon season there normally starts in early July, but has been delayed by the drought. Thus they had four clear nights and detected faint optical haloes around several stars.

POTPOURRI

On June 2, Christine Clement gave a talk to the Hamilton Centre of the RASC on Double-mode RR Lyrae stars.

John Percy and Ian Shelton were invited speakers (on SN1987A) at the 1988 annual meeting of the Ontario Association of Physics Teachers, at Scarborough College June 26-28.

Amy Alfred (Northern Secondary School) completed a research project on the long-term (two centuries) changes in the RV Tauri star R Sct, as part of the University of Toronto Mentorship Programme for gifted high school students. She gave talks on her work at her school and at a special meeting of Mentorship Programme participants at University College on May 9. Her supervisor was John Percy, with help from her school science teachers including Tom Wells, a recent graduate from our department.

John Percy is a co-author (responsible for the astronomy chapters) of a recently-published grade 10 science textbook: Science 10 (Prentice-Hall, 1988).

Phil Kronberg was re-appointed to the University of Toronto Research Board for a further term ending in June 1989.

During the Spring of 1988, Phil Kronberg was appointed by NSERC and NRC as Chairman of an international review committee to assess the Sudbury Neutrino Observatory proposal headed by George Ewan at Queen's University. Phil's committee held their main meetings in Ottawa during June 14th to 17th. Their report was submitted to the Canadian government in July.

Phil Kronberg is SOC Chairman of IAU Symposium No. 140 on Galactic and Intergalactic Magnetic Fields, which is to take place in Heidelberg, Germany during June 19-23 1989.

K.T. Kim has submitted his Ph.D. thesis entitled "A Radio Continuum Study of the Coma Cluster of Galaxies". K.T. spent part of his Ph.D. enrollment time at the DRAO in Penticton under the local supervision of Peter Dewdney and Tom Landecker.

The Friends of the DDO Lecture Series was initiated by Bob Garrison on 2 June. His topic was Supernova 1987a. In attendance were two David Dunlaps, the grandson and great-grandson of our benefactor.

Nearly a dozen members of the department and observatory attended the CASCA meeting in Peterborough this May.

Our Cover by Phil Kronberg

The cover illustration shows the latest supernova "first" from the Astronomy Department at the U. of T. – This most detailed radio picture ever seen of the Crab Nebula was generated last month by graduate student Michael Bietenholz using the CRAY X-MP supercomputer at the Ontario Centre for Large Scale Computation.

Given its precision and high dynamic range, it is the most accurate picture of the Crab yet seen in any waveband. It shows a number of new features, including a complex pattern of loops which suggest that magnetic fields play an important role than previously thought in the physics of the supernova remnant.

The data were taken from VLA observations during 1987 at 1.4 GHz. The resolution is just over 1". It was generated using a WERONG maximum entropy deconvolution algorithm written by Bob Sault at the University of Illinois, and modified for the Toronto CRAY by Patricia Monger.

This is only one of several images at different frequencies and epochs. With the high resolution and very accurate imaging, it is possible to measure detailed motions in the Crab. Mike Bietenholz and Phil Kronberg are comparing this new data with re-analysed 1982 VLA data taken by Dave Hogg at NRAO and Andrew Wilson at the University of Maryland.

Our Summer Students from the Staff

James DiFrancesco is working with Dieter Brückner and John Percy on the IAU "Travelling Telescope" project. This consists of a Celestron-8 with solid-state photometer, slit and objective grating spectrographs, and camera, to be used in various developing countries as part of existing IAU programs. James is testing the equipment, and writing documentation.

Rene Plume is working with John Percy, making photoelectric observations of Be stars with the 0.4m telescope. Observations of the same stars are being made contemporaneously at the Hvar Observatory in Yugoslavia, in order to reduce the effects of "aliasing" on the approximately-one-day periods of these stars.

Barry Sloan is working with John Percy on two projects: a study of period changes in long-period variables (as a PHY 471Y project), and a study of the periodicity of four Be stars which were observed as part of a multi-wavelength "campaign" in 1987.

Ted Colivas is finishing up an Ontario Work-Study project with John Percy - a study of the variability of the RS CVn (?) star 27 Cygni.

Shauna Sallmen, a student who is entering the third year of our programme is working with Barry Madore and Christine Clement.

Marcus Neeser has been working at DDO with Karl Kamper on several astrometric and spectroscopic projects. His primary effort has been piloting the fibre-fed PCS on its shakedown cruise, along with Jim Thomson. They accumulated several weeks of observations through a long spell of clear, but relatively poor seeing, weather, obtaining a large number of spectra of standards plus G to M dwarfs in the 7th to 10th magnitude range. The observing went smoothly and the reductions, using the PC version of RETICENT, are now well along thanks to some heroic efforts on the part of Mark and Jim. Our main concern has been to look at the drifts in the geometric and photometric distortions in the system and to determine enough radial velocities to check out the system as a Doppler device. The first-pass results are encouraging, with a scatter of about 1 km/sec after a systematic offset of 3 km/sec is allowed for. The scatter is thus about the same as for photographic observations of, of course, brighter objects.

In addition, Mark has nearly completed the infamous "Lick Double Stars" project which has occupied generations of summer assistants. The 36inch refractor archives contained some 570 multiple-exposure photographs of wider doubles (1" and up) which had never been measured. At an average of 60 exposures per plate, it is understandable that enthusiasm for the manual measurements of the past waned. Even on the PDS it can be a tedious operation, but the Lick observing list contained a number of objects not observed elsewhere and the plates are of inherently high precision with errors of a few milliarcseconds, so it seemed a worthwhile effort. Well, the last batch of plates were in hand at the beginning of the summer, and it looks like Mark will have them all scanned and reduced in time to take a holiday before classes start.

GASA Gossip

by Mike Fieldus

Well, it happened, again. We had a picnic. We ate lots of food, drank lots of beer, and lost at volleyball to the DDO team. Once again, I make no excuses for this loss, (I could point out that a star student, John Dubinski, was playing for the DDO team, or that one of our better players, Bob Hill, sucked out and didn't come, or that our captain, Rob Straker, was drunk, all of which are true, but I won't), we played, we knew the rules (oops, I mean the rule), and we lost. Congratulations to the DDO team.

The rest of the picnic, however, was quite the success. The major problem with any picnic, keeping Archie Ridder amused, was easily solved this year by purchasing less hamburger buns than hamburgers. He still hasn't stopped making fun of us. The games went over well, except I didn't win anything this year (unlike last year when I won the coveted second place award in the egg toss. The real plastic clock and compass set I received for my efforts still occupies a place of honor on the side of my desk), and the brief rain storm during lunch only served to reinforce what a marvelous day it was, all afternoon.

Returning to the more mundane matters of real life, there has been a big shake up in GASA since I last spoke to you. Yep, the GASA elections have come and gone for another year, and once again we are left, pretty much, with the same people doing the same things. Despite a concentrated campaign prior to election day, we once again entered the meeting without a candidate for president. As you know, this situation makes everyone in GASA eligible for the position, so you could hear a pin drop in the room when it came time to select our new leader. John Dubinski was the first to cave in under the pressure and actually say something, and was unanimously elected president less than 30 seconds later by a suddenly very enthusiastic following.

Following in the true GASA tradition, numerous people who take advantage of the many functions and services GASA offers its students were nowhere to be found when it came time to actually contribute something in return, but we did get some interest from a few people and so are set for another year. Thanks to all those taking on positions this year, and to those who have just ended a year of service.

The next time you are feeling overworked, imagine what it would be like to try and finish off a Ph.D. thesis, have an observing run for your post-doc research, and have a baby, all in the same week. Our congratulations go out to Super Judith and Dieter on the birth of their new son, Alexander Michael. A significant fraction of the stellar group students in the department approve of the choice of names 100%. After visiting the hospital, I can assure you that the rumors about the baby looking exactly like Dimitar are true.

Last week, we re-arranged part of the student office in room 1405, in what has turned out to be a vain attempt to reduce the noise level in that room. As we allotted desk space to each student, one over riding consideration suddenly became apparent. It seems that people were not so much concerned with a lot of space, or the location of their desk, or the lighting. All that seem important was enough privacy to allow the student to explore the interior of their nose without anyone noticing. We are doing follow up research to see exactly why faculty professors insist on private offices.

Well, I seem to have been a bit full of myself last issue. Much to my dismay, John Dubinski figured out the mystery student without even having to think about it. I guess it wasn't all that hard. In case anyone hasn't figured it out yet, I leave it with you one more month, and add the final clue that his initials are BB. This month's student is hopefully much harder. The hint is that his mom makes great potato salad.

On 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 of 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.

Library News

by Marlene Cummins

Highlights of the libraries' annual report (1987/88):

Total expenditures for all three libraries, excluding salaries, conferences, furniture; i.e. including acquisitions, supplies, etc. was \$33,892. This sum represents a 10% decrease from last year's expenditures. About 19% fewer monographs were purchased this year than last (i.e. 266). Six serials, most of them for DDO, were added to our collection as well as several free or cheap newspapers. Excluding observatory publications downtown and the catalogue room at DDO, the number of physical volumes held is: DA monographs 4192, serials 3252 (bound volumes).

PAPERS SUBMITTED

Gray, R.O.; Garrison, R.F. Early F Type Stars: Refined Classification, Confrontation with Stromgren Photometry, and Effects of Rotation.

Garrison, R.F. Spectroscopic Parallaxes, an invited review for the P.A.S.P. Centenary Year.

Frail, D.A.; Clifton, T.R. A kinematic distance to the supernova remnant G33.6+0.1. DDO/U of T. 88-0710. 7 July 88.

Irwin, Judith A.; Seaquist, E.R. Nuclear jets in the radio lobe spiral galaxy, NGC3079. DDO/U of T. 88-0664. 22 June 88.

Kamper, Karl W. Fiber-linked spectroscopy at David Dunlap Observatory. DDO/U of T. 88-0666. 24 June 88.

Leonard, Peter J.T.; Merritt, David. The mass of the open star cluster M35 as derived from proper motions. U of T/CITA. 88-0683. 29 June 88.

Leonard, Peter J.T. Stellar collisions in globular clusters containing hard primordial binaries. DDO/U of T. 88-0652. 21 June 88.