



# THE DAVID DUNLAP DOINGS

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## STOP PRESS!!

SEAQUIST APPOINTED FOR SECOND FIVE-YEAR TERM AS CHAIR/DIRECTOR

- PREPARES TO FLEE COUNTRY

- FERNIE TO BE DUSTED OFF, PATCHED UP, FOR INTERIM

(Story on page 2)

## The Chair/Directorship

It is with much pleasure that we report Ernie Seaquist's appointment for a second term as chair of the department and director of DDO. His current term will end on June 30, 1993, and he will then take a well-earned year's administrative leave to work with Nick Scoville's group at Caltech. Ernie's second five-year term will begin on July 1, 1994. In a fit of temporary insanity Don Fernie has agreed to be acting chair and director for the intervening 1993/94 year.

### POTPOURRI

*The new console and telescope control system was shipped to Chile on 24 November. John Pimentel will be in Chile to install it during the first two weeks of December.*

*On October 4, the department held its regular staff meeting and colloquium at Erindale, in recognition of the College's 25th anniversary. The colloquium speaker was Nancy Evans, a Toronto PhD graduate and Erindale faculty member in 1982-83.*

*The Department hosted a record 700+ visitors on U of T Day last October 17. The previous record was 400. Sandra Scott, Patricio Ortiz, and Christine Clement did most of the organizing, ably assisted by Jenny Krestow, Kirsten Vanstone, Paul Wiegert, Omar Lopez-Cruz, Charles Kerton, Peter Papadopoulos, James Brown, Pierre Gravel, Jonathon (Gang) Li, Aaron Sigut, Piotr Zembrowski, and Joachim Stadel.*

*Christine Clement reports hearing from Robin Kingsburgh, who graduated from our undergraduate program some years ago. Robin was to defend her thesis at University College, London, in November, and will start a postdoc at the University of Mexico with Manuel Peimbert in February.*

## COMINGS AND GOINGS

Tom Bolton attended the NASA Extreme Ultraviolet Explorer (EUVE) Time Assignment Committtee meeting in Columbia, MD from October 13-15. He was a member of the Extragalactic and Hot Star panel of the TAC. After the meeting, Tom spent an afternoon working with Steve Shore on a paper about their HST spectra of  $\xi$  Per. On the way home, he stopped in Newark, Delaware and spent a day visiting Alex Fullerton at the Bartol Research Institute of the University of Delaware.

Tom was in Ottawa October 23 for the Fall meeting of the Joint Subcommittee on Space Astronomy.

Chris Corbally was in Toronto from 26 November until 5 December, for the purpose of giving one of the 10th Anniversary lectures in the Wiegand Lecture Series (chaired this year by Bob Garrison) and to finish a large project (with Bob) involving classifications of digital spectra of G-type dwarfs at the north and south galactic poles.

John Percy attended the fall meeting of the American Association of Variable Star Observers, in Cambridge MA, October 23-25, and gave a paper (with Lee Snyder and summer student Kathy Hayhoe) on "HD 187299: Not Eclipsing, Maybe Pulsating".

John also attended the 1992 meeting of the Science Teachers' Association of Ontario, in Toronto, and gave an invited paper on "Linking Science Education and Research".

Marlene Cummins was at CfA in Cambridge, Mass. on November 20 for a meeting of the AAS Publications Board. She reports that the meeting was mainly given over to electronic publishing and had a very steep learning curve.

We welcome Rob Ivison, who arrived from Liverpool on October 13 to take up a pdf with Ernie Seaquist.

Tom Meylan from Goddard visited DDO in October to observe with the 1.88m.

Jean-Marc Perelmuter from U. Montreal/ STSI spent a few days at the Observatory using the PDS to scan CFHT plates for M81 globulars.

## LETTERS

Ernie Seaquist passes on the following communication from Raymond Rusk (Ph.D, 1988):

As of December 1, we are moving to 1784 Kisber Place, about 2 blocks north of our present address but in a quiet cul-de-sac just off the U. Vic. campus. This house has more room for expansion. Ann is expecting our second offspring in mid-December.

With the upcoming move, sale of our present house, and the final stage of her pregnancy, we expect to be busy for the next while. However, we were tired of traffic noise and being off the main street will buffer us a bit from all the activity leading up to the Commonwealth Games.

The 1993 C.A.S. meeting is in Victoria. We have quite a lot of room in the new house and could put up one or two students in sleeping bags if other accommodation is scarce or expensive.

DREP is expecting a 25% reduction in science and technical staff by 1999/2000. Hopefully, most of the reduction can be accommodated by natural attrition.

On a more positive note I have been promoted from DS-3 to DS-4 and am looking forward to the increased salary.

Dr. Raymond Rusk  
 Defence Research Establishment Pacific  
 Electromagnetics Section  
 FMO Victoria, B.C.  
 V0S 1B0  
 Tel: (604)363-5048  
 FAX: (604)363-2856  
 e-mail: rusk@orca.drep.dnd.ca

Chris Stagg (Ph.D, 1986) sends a short note regarding his regular column devoted to astronomy published in the Calgary Herald:

Spacebound geodesic domes, a universe full of WIMPS, antimatter factories, gigantic underground craters: Calgary Herald readers get to read about it in the Saturday "Eye on the Sky" column I write every few weeks.

Almost without exception, the people I interview for articles are helpful and patient. And my readers? Positive, so far! As a result of my newspaper column, I was assigned a magazine article which appeared in press recently.

If you would like your work to be immortalized in the pages of one of Canada's major dailies, please get in touch. My email is crstagg@acs.ucalgary.ca.

Chris Stagg

### REVISIONIST'S CORNER

Babylonian astronomers did arithmetic with a base 60 system called the sexydecimal system.

- from AST210

**PAPERS SUBMITTED**

**PREPRINTS BY FACULTY AND STUDENTS RECEIVED  
IN THE ASTRONOMY LIBRARY**

September 23 to November 23, 1992

- Clement, M.J., *Hydrodynamical simulations of rotating stars I. A model for subgrid-scale flow* David Dunlap Observatory, University of Toronto, 92-1493 20-Oct-1992.
- Howarth, I.D.; Bolton, C.T.; et al, *Time-series observations of O stars - III. IUE and HST spectroscopy of [zeta] Ophiuchi, and implications for the 'photospheric connection'* David Dunlap Observatory, University of Toronto, 92-1491 20-Oct-1992.
- Lilly, S., *Scientific windows of opportunity for the Canada-France-Hawaii Telescope* David Dunlap Observatory, University of Toronto, 92-1552 29-Oct-1992.
- Percy, J.R.; Shepherd, C.W., *A photometric survey of small-amplitude red variables* David Dunlap Observatory, University of Toronto, 92-1463 15-Oct-1992.
- Perry, J.J.; Watson, A.M.; Kronberg, P.P., *Magnetic field strengths in high redshift galaxies: Can the galactic dynamo be tested?* David Dunlap Observatory, University of Toronto, 92-1403 25-Sep-1992.
- Reid, A.H.N.; Bolton, C.T.; et al, *Time-series observations of O stars - II. Optical spectroscopy of [zeta] Ophiuchi* David Dunlap Observatory, University of Toronto, 92-1492 20-Oct-1992.

**Editorial Remarks**

Soon after the Doings was started in 1968 I began writing a series of short articles, more or less for each issue, which became known as the Final Item. These were anecdotal pieces, usually historical, usually with a bit of humour. I stopped writing them in 1978, when more pressing activities captured my attention, and I regret not having returned to them.

However, these are perilous times. When an issue of the DDD can muster no more than a couple of sentences from Bob Garrison and John Percy the editors know they're in trouble. As a filler, therefore, we are reprinting a randomly selected Final Item, and will perhaps reprint others as space dictates. This one first appeared in the April 1975 issue of the DDD. Please excuse its topical references.

Don Fernie

**FINAL ITEM**

The Great Automated Comet-hunting Machine

Comets, to be quite candid, don't really turn me on. Or, at least, they haven't so far. Every few years, when the comet of the century comes by, I rush out like everyone else and boggle through my binoculars, and yet, even in those cases where I've actually succeeded in finding the comet, little more than ennui overcomes me. Furthermore, although I hate to confess the depths to which I've sunk, I'm not even troubled by my lack of enthusiasm. I can await 1986 and the return of Halley's Comet with scarcely a tremor of anticipation. All of which may be indicative of severe psychological disturbance, for the literature clearly indicates that the rest of mankind has

always regarded comets as a pretty big thing. Perhaps I'm in the plight remarked on by Rudyard Kipling in his famous poem: "If you can keep your head while all about you are losing theirs, maybe you just don't understand the situation." Or something like that.

Anyway, as any long-suffering A100 instructor could tell you, some of us at least had recently to face up to what the Children of God had to say on the subject of Comet Kohoutek, and that, you will recall, was pretty hot stuff. But only the latest in a very long line of such exhortations.

The superstitious have always got pretty worked up about comets. A character by the name of Ambroise Paré in the early 1500's was recording for posterity:

*This comet was so horrible and so frightful and it produced such great terror in the vulgar that some died of fear and others fell sick. It appeared to be of excessive length and was the colour of blood. At the summit of it was seen the figure of a bent arm, holding in its hand a great sword, as if about to strike. On both sides of the rays of this comet were seen a great number of axes, knives and blood coloured swords among which were a great number of hideous human faces with beards and bristling hair.*

Halley's Comet has always been a bit of a beast too. You recall what happened when it was around in 1066, later causing first Milton ("That fires the length of Ophiuchus huge....and from his horrid hair shakes pestilence and war") and then Tennyson ("You grimly-glaring, treble-brandished scourge of England....") some upset - not to mention poor old Harald himself. It was back again in 1456 when the Muslims were hammering on the gates of Christendom at Constantinople. On that occasion, an apocryphal story has it, Pope Calixtus III, in a masterly stroke of tactics, excommunicated the comet, but the ploy unaccountably failed.

On the other hand, Halley himself couldn't complain about the luck his comet brought him. Back in 1691, before he'd really got to work on the comet, he applied for the Savilian Chair of Astronomy at Oxford, and was turned down because crusty old John Flamsteed dismissed him as "a drunken sea-captain". It's true that Halley, in his sea-faring days, had at least picked up a degree of quarter-deck language. But then in 1701 he really got down to the comet, and lo, in 1704, was appointed Professor of Geometry at Oxford.

Also on the beneficent side, I've always been rather charmed by the story that all French vinters naturally attributed the magnificent claret of 1858 to the appearance of Donati's Comet. This because the great comet of 1811 had done so well for both claret and port.

But it is the views of scientists that make the best reading. In the eighteenth century the great French scientist Buffon attributed the formation of the entire solar system to a passing comet. Less extravagantly, but more precisely, William Whiston, who succeeded Newton in the Lucasian Chair of Mathematics at Cambridge, worked out the entire history of the earth based on three comets. The first comet became the earth itself. The second, in a close encounter, imparted life to the earth, allowing the development of a magnificent paradise. But then came impure man, necessitating the sending by God of a third comet "to inflict an awful punishment on man for his sins". Whiston relished the details: "On Friday 28 November 2349 BC...the comet was situated at its node....from which our globe was separated by a distance of only 3614 leagues.... The conjunction took place at the hour of noon under the meridian of Pekin, where Noah, it appears, was dwelling before the flood." When the comet's tail struck the earth's atmosphere the Deluge began ("thus were opened up the cataracts of heaven"), causing a flood "six English miles

deep" which swept away the guilty "in a glorious religious purge". Velikovsky got it down a little differently.

The French have usually taken a more cheerful view of things than puritanical Englishmen like the Rev. Whiston. The great Maupertuis considered comets to be "peopled by a certain race of men" and cometary tails to contain a real "dazzling train of jewells". In 1742 he wrote that if only we could collide with a comet "Earth would enjoy rare treasures.... We should be much surprised to find that the remains of these bodies we despise are formed of gold or diamonds." He was right; we should be much surprised.

Well, anyway, you can see how important it is to know about comets. So, skipping about 999 other such stories, let's get back to modern times and take a look at E.E. Barnard's fabulous automated comet-hunting machine. E.E., then a staff-member at Lick, didn't know about it himself until he read the details in the San Francisco Examiner of March 8, 1891:

#### *DISCOVERS COMETS ALL BY ITSELF*

*A wonderful Scientific Invention that will do away with the Astronomer's Weary Hours of Sweeping - It's Just Like Gunning for Wandering Stars with a Telescope.*

Flabbergasted, Barnard read on to where he was supposedly quoted verbatim:

...."Mark now the effect!" cried Barnard, almost rapturously: "When the Moon goes down I will start the telescope 'sweeping'. I can then leave my comet-seeker to its own intelligent work, and give my attention to stellar photography and other important matters. Throughout the night my human telescope explores the skies, stars, nebulae, and clusters innumerable crowd into the field with every advance of the clock, but the telescope gives no sign of their presence, for the analyzing prism spreads out the light of even the brightest among them throughout the length and breadth of the spectrum, and when this spectrum falls on the three slits of the diaphragm its light is far too feeble to exercise any electrical effect upon the selenium!

"But let even the faintest comet come into range and see what are the consequences! The prism instantly analyses the light, the bright hydrocarbon bands fall upon their respective slits. The light of these, reaching the strip of selenium, so changes the electrical resistance as to disturb the balance of the Wheatstone bridge, and a feeble current is sent through the wire. This in turn closes all the circuits of the powerful Leclanche battery, and the comet is caught, as in a trap.

"An alarm-bell rings in my bedroom down at the cottage. Of course, the signal quickly summons me to the roof. A single glance should suffice to reveal the position of the newcomer.

"Have I tested my invention? Certainly, or I should not speak so confidently. You remember reading of the comet discovered by Professor Zona, at Palermo, November 15th of last year? Well, this comet was fairly bright at discovery, but, last month, when my machine was just completed, it had become sufficiently faint to be a most severe test. One night, when the conditions were favorable, I started the finder several degrees from the comet's position, and allowed it to sweep back and forth in the heavens. Sure enough, the distant body - barely visible to the naked eye through the same object glass - was instantly detected, and my experiment proved a complete success.

*"You may be sure that I feel pleased: not so much for the honor of the thing (which we all share), but at the immense saving of valuable astronomical success."*

*By this time I had been so impressed with the grandeur of this invention perfected by these modest workers in astronomical science that I felt impelled to decline their generous offer of further entertainment, and, full of the subject, returned to San Jose with their entire permission to make the facts known to the public. I am happy to be allowed the honor of communicating to the world this brief sketch of the new invention, which will revolutionize at least one branch of astronomical investigation.*

*(signed) Collis H. Burton*

Barnard, of course, leapt for paper and pen and wrote a white-hot denial to the Examiner. That was when the second surprise came. The hoaxer had forewarned the paper that Barnard, in his modesty, would deny the story, and that the editor should ignore all protestations of innocence. Poor Barnard, in the absence of denials he was deluged for years by inquiries from around the world by people wanting to build themselves such machines. He could see, of course, that the story must be the work of more than just a newspaperman, and after the Examiner published an apology on February 5, 1893, it was revealed to have originated with a junior assistant at Lick, Charles Hill. There was a strong suspicion, though, that Jim Keeler, soon to be director at Lick, had been behind it. Later, when life at Lick became even more neurotic, E.E. was happy to accept Hale's invitation to join the new Yerkes Observatory half a continent away.

Barnard, however, should not have minded all that much, for he was one of the very few who have ever made significant financial gains out of comets. He himself related how in 1880 a certain wealthy Mr. Warner offered \$200 for every unexpected comet discovered by an American or Canadian. The first time E.E. won this prize, he and his wife decided to use it as a downpayment on a house. Every time the mortgage fell due they lived in fear and dread as to where they'd find the next payment, but everytime E.E. succeeded in finding another comet. Eventually, says Barnard, "it finally came about that the house was built entirely of comets. This fact goes to prove the great error of those scientific men who figure out that a comet is but a flimsy affair after all, infinitely more rare than the breath of the morning air, for here was a house, albeit a small one, built entirely out of them. True, it took several good-sized comets to do it, but it was done nevertheless."

Thinking it over, maybe I should revise my ideas on comets after all.

J.D.F.