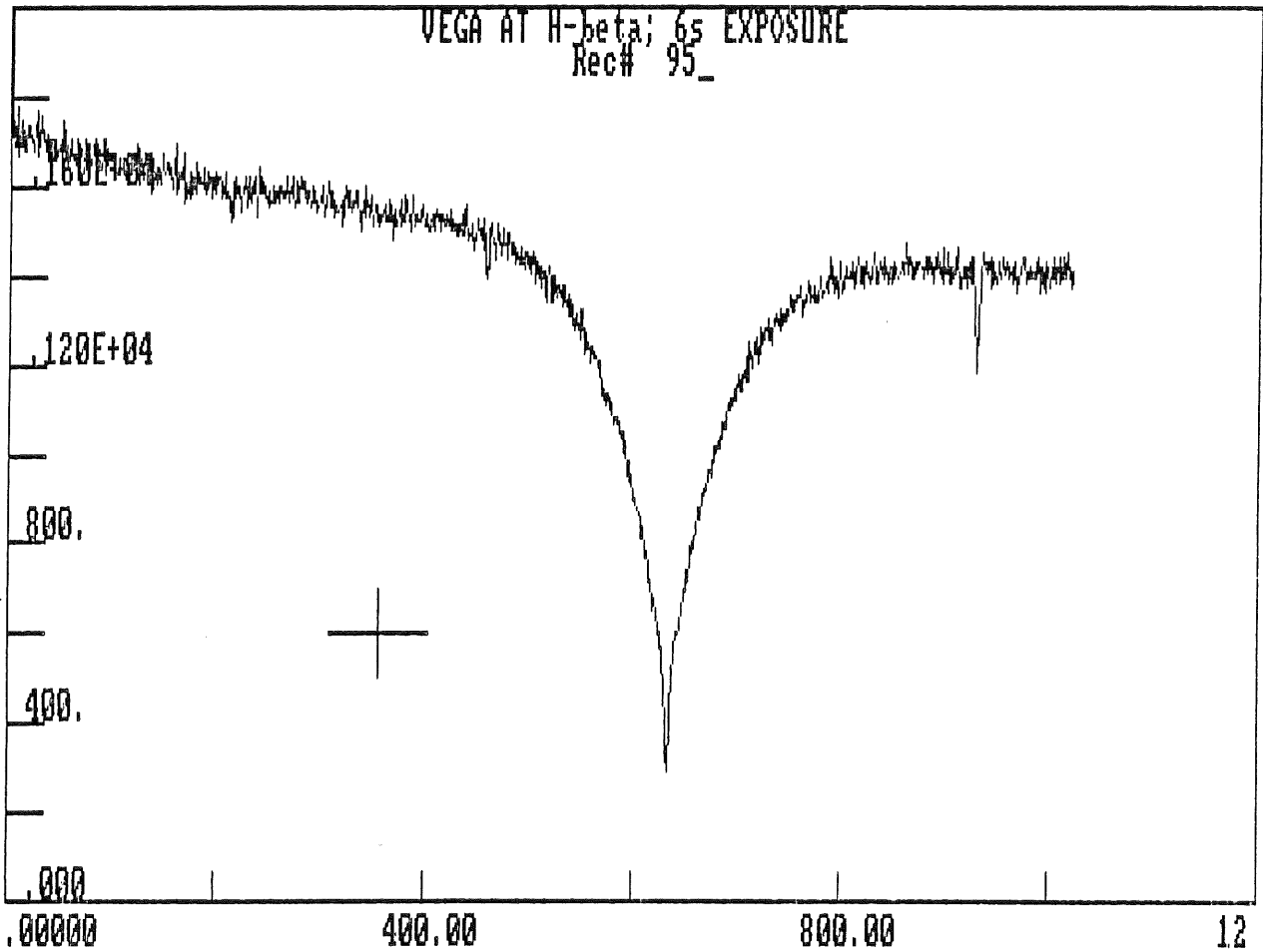


THE DAVID DUNLAP DOINGS

Vol. 23, No. 3 June 8, 1990



New CCD operational at DDO

FROM THE EDITOR

This spring of 1990 marks a milestone in the life of DDO with the arrival of a CCD for the spectrographs on the 1.9 m telescope. As Karl Kamper describes in this issue, things are not yet completely optimized, but the way ahead seems clear and it is particularly pleasing that the first starlight measures came on May 31, the 55th anniversary of the Observatory's opening. We look forward to much improved efficiency in the use of the old 74-inch.

* * *

As noted in our last issue, we are busy compiling a list of e-mail addresses of past students and associates with a view to soliciting updates on their activities. This issue brings the first batch of responses, and I hope you will agree they make for interesting reading. Others of you whose e-mail addresses are not available in places like the AAS or CASCA directories please send them on to us at the Internet address fernie@centaur.astro.utoronto.ca, along with a word or two on what you are up to these days.

* * *

Finally, we remind readers that DDD takes the summer off; our next issue will be at the end of September.

Don Fernie

CCD FOR 1.88m TELESCOPE

Karl Kamper

The Photometrics CCD for DDO arrived on May 15. The system is equipped with a Thomson 1024 x 1024 chip and PC/AT interface and will be used for spectroscopy on the Cass spectrograph, the echelle, and the fibre-linked spectrograph. For testing, we have set it up with the fibre link to minimize the number of variables and took our first starlight exposures on May 31 after some prior sky spectra.

Some of the system parameters, as reported by Photometrics, are:

pixel size: 19 micron square

read-out noise: 5.0 electrons with the gain at 4.3 e⁻ / ADU

dark count: 0.4 e⁻ / min at -90C

The suggested operating temperature of -90 is unusually warm and is due to reported problems with charge transfer efficiency at colder temperatures. We have been doing tests over a range of temperatures to determine whether that value is optimum, since, otherwise, dark current would be a significant noise source for very faint objects.

The starlight tests were done at 0.2 Å/pixel and 3 pixel slit width on the fibre spectrograph. At 100 S/N per pixel, exposures were less than 10 min for magnitude 5.0 at H-beta, where the quantum efficiency is about 25%. At H-alpha, it rises to more than 40%. We were also very pleased with the positional stability: monitoring one comparison line over four hours of observing, we found a total range of less than a micron.

Mating with the echelle will probably take place in about mid-June.

COMINGS AND GOINGS

Bob Garrison will start his sabbatical year off with a journey to the Vatican where he will be a faculty member at the Vatican Observatory Summer School in Astronomy and Astrophysics, which is to be held from 11 June to 11 July 1990. The school will be held at Castel Gondolfo, the Papal summer palace. Bob says "It doesn't sound like much of a relief from teaching, but there is a BIG difference; there are no tests and no grades, so the environment will be much more relaxed than in normal university courses." The 25 students will be drawn mostly from third world countries, with a maximum of 2 from any one country. The title of the course is "Probing the Personalities of Stars: the Classification of Stellar Spectra" and the level is first year graduate school, assuming a basic astronomy/physics background.

Bob Garrison gave a Sigma Xi lecture "Life on Other Worlds" at Middle Tennessee University on 5 April and a colloquium "Denizens of the Halo: Spectra and Implications" at Vanderbilt University (Nashville) on 6 April.

Bob Garrison visited Richard Gray at Appalachian State University and reports that Richard seems to be well-situated and happy with the opportunities there. Bob gave 3 lectures: "Supernova 1987A," "Life on Other Worlds," and "Stellar Spectroscopy" in the Physics/Astronomy department 25-26 April.

Ernie Seaquist is pleased to announce that Dr. Simon Lilly, currently at the University of Hawaii, will be joining the Department of Astronomy as Associate Professor with tenure, beginning November, 1990. Dr. Lilly will be the permanent replacement for the position vacated by the earlier resignation of Dr. Barry Madore.

CONGRATULATIONS

To Ray and Joanna Carlberg on the birth of their daughter, Amy, at 3:07pm on Friday, May 11, after spending a rather daringly short 45 minutes in the hospital, which includes the time for paperwork. Amy weighed in at 3 Kg, or, 6lb 10oz. and now mother and baby are both resting comfortably.

To Jim Thomson who is pleased to announce that he and M.J. are expecting a little one around July 1st.

To Raymond and Ann Rusk, on the birth of an 8 lb 12 oz son, David Louis Edward, on April 17.

To ex-staffer Sidney van den Bergh on his winning a \$50,000 Killam Prize for his work on galaxies, as well as the Russell Lectureship of the AAS.

To ex-staffer René Racine, who returned to his old stomping grounds of Erindale College April 21 as Sneider Lecturer.

MUSIC ON THE MOUNTAIN: THE BEGINNINGS OF A NEW SYSTEM, WITH CDs

Bob Garrison

For 18 years now, we have enjoyed great music on the mountain, thanks to a large number of people who have contributed in one way or another (especially Crowe, Clement, and Garrison, who recorded most of the tapes). In the early days (1972), we chose reel-to-reel tape as the medium. Back then, there was a real difference in sound quality between the big tapes and the cassettes; that is no longer the case, though there is still a difference to the discriminating listener. Reel-to-reel recorders and tapes were much more robust than Cassettes (they still are!). Cassette recorders were not as easy to repair (they still aren't). The cassette recorders, the cassettes themselves, and the thin tapes, were fragile (they still are). Records were out of the question, considering the environment and the heavy use by many people.

In retrospect it was a good choice. Each of the reel machines lasted about 6-7 years with 12 hours a night use in the dome, through all kinds of temperature and humidity changes. They were repaired (some many times over) and retired to the house where they could continue life under easier conditions for another 6-8 years. Most of the 140 tapes are still in reasonable condition; though some of the old, cheap ones have deteriorated, they are usable. The oldest Sony, Ampex, and other high-quality tapes are still quite good. Very few tapes have broken, whereas cassettes would have had much shorter lifetimes - a few months in most cases.

But, the tapes and recorders are wearing out, so now seemed a good time to switch to a new medium. Tape recorder #3 is 5 years old and the repair frequency is increasing. Tape recorder #2 is 11 years old and is really on its last legs. #1 is completely dead. A new tape deck costs well over a thousand dollars and good ones are even more.

Tapes are on their way out, though digital tapes (not allowed in North America) are very popular in Japan. Compact disks seem to be on the increase and seem to be the medium of the foreseeable future, at least if you consider the trends in all the record stores, radio stations, and most North American Yuppie (and some Muppie = Middle-aged University Professor) homes.

After thinking about the possibilities for awhile, and considering the state of the UTSO budget, I decided that we couldn't afford a new system of any kind. Other demands on the budget have higher priority. So, I have taken an unusual first step toward realization of a new system. I have purchased (out of pocket, not grant money) the first compact disk player and have also bought 5 disks of classical music (on sale). They are now on the mountain, but it is a VERY limited selection so far.

The player is a Luxman DZ-111 which I decided, after some research, was the most robust and simple player available. Higher priced ones have more features (with more repair problems), but are not better made; less expensive ones are not made as well and are not likely to survive as well under harsh conditions.

I hope that most observers going down will voluntarily contribute a disk (or more) of their favorite music. That way, we will build slowly a library of CDs containing music of all types in proportion to the tastes of the observers and each person will have his/her favorite there. The CD library should be fairly substantial by the time the last of the tape recorders wears out, in about two years. Until that time, the two systems will coexist.

We welcome contributions of CDs, even from non-observers; when you see a sale, how about picking up one or more and contributing to the cause? Anyone who has ever observed on the mountain knows how important the music is for maintaining sanity.

We aren't the only ones who tactfully answer strange questions...

Solution of the Month

March's Solution of the Month comes from the "oddest question ever" category.

"A man came in with a seed, perhaps from a squash, in his hand. He said that it had been given to him by an alien and he would like to see a book that would help him identify it. I told him that our books were only about plants on the planet Earth and suggested that he plant the seed and see what kind of plant grew. He accepted that answer and left."

"He didn't come back." ■

From Joan DeFato, plant science librarian, Department of Arboreta and Botanic Gardens, Arcadia, CA.

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SpecialList

The Newsletter of Special Libraries Association

PAPERS SUBMITTED

PREPRINTS BY FACULTY AND STUDENTS RECEIVED IN THE ASTRONOMY LIBRARY

March 27, 1990 to June 1, 1990

- Bond, J.R. Theoretical maps of CMB anisotropies. CITA. 90-0447. 10-Apr-1990.
- Clement, C.; Nemec, J. A search for double-mode RR Lyrae stars in 22 galactic globular clusters. DDO/U of T/UBC. 90-0511. 25-Apr-1990.
- Couchman, H.M.P. Mesh-refined P3M: a fast adaptive N-body algorithm. DDO/U of T. 90-0614. 29-May-1990.
- De Robertis, M.M.; Yee, H.K.C. Optical nuclear activity in the radio galaxy 3C 465. York U/DDO/U of T. 90-0504. 23-Apr-1990.
- Fernie, J.D. Y Ophiuchi revisited. DDO/U of T. 90-0457. 11-Apr-1990.
- Kronberg, P.P. Radio emission from intergalactic gas, and its implications for low frequency astronomy in space. DDO/U of T. 90-0446. 9-Apr-1990.
- McGill, C.; Couchman, H.M.P. Detecting clusters in galaxy catalogues. DDO/U of T. 90-0615. 29-May-1990.
- Quinlan, G.D.; Tremaine, S. Symmetric multistep methods for the numerical integration of planetary orbits. CITA. 90-0562. 9-May-1990.
- Sasselov, D.D.; Lester, J.B. Accurate relative temperatures and reddenings for cool stars from CI lines at one micron. DDO/U of T. 90-0377. 29-Mar-1990.
- Sasselov, D.D.; Lester, J.B. Infrared spectroscopy of cepheids II. Line profiles from different atmospheric layers. DDO/U of T. 90-0387. 2-Apr-1990.
- Tremaine, S. On the origin of the obliquities of the outer planets. CITA. 90-0611. 28-May-1990.
- Wehlau, A.; Clement, C.M. A period determination for M28 V7. UWO/DDO/U of T. 90-0390. 3-Apr-1990.

LETTERS

Dear Don,

Your prompting tactics deserve that you get inundated by e-mail from the DDD diaspora. Here is my contribution.

I was glad to welcome Richard Gray to Tucson in early March. We had to sit behind closed shutters for our two nights on the Steward Observatory 90 inch but I think that John Percy will confirm that even Kitt Peak gets some clouds. The successes of Richard's visit were a lunch time talk on the calibration of supergiants, discussions of our joint project on lambda Bootis stars such as are not possible over e-mail, and explorations of local archaeology including a stone circle, indian villages, and missions. We also visited the mount of VATT (Vatican Advanced Technology Telescope) which is being tested out near Tucson before going to Mt. Graham in 1991. (Yes, the joke of my giving a sermon on the mount has already been cracked.) A recent appellate court's lifting of a temporary injunction on building on Mt. Graham has made that date more realistic. Pseudo-environmental concerns are being used as a way to stop any change at all on

the mountain, even if biologically responsible. I go soon to Castel Gandolfo to welcome Bob Garrison, John Stocke, and Jacqueline van Gorkom as the intrepid faculty to teach 25 students from 22 countries at the third Vatican Observatory Summer School. You will surely hear more about that later from Bob or myself.

Best wishes to you and all,

Chris Corbally

Don,

Got to respond to your e-mail gauntlet! Especially since my e-mail address is not in the AAS directory. (I would certainly like to obtain a copy of an e-mail directory for DDO-types.) I intend to send along to you also a picture of our new telescope. It's a 20-inch Melsheimer, all computer controlled, with a 14-bit Photometrics CCD system. If you are ever in this neck of the woods stop in.

Cheers,

David DuPuy

Don,

What news could I possibly submit for the Doings when even close friends describe the life styles of Pat, Jennifer and me as "dreadfully dull"? Jennifer, who was born just a month before the Cepheid Colloquium of 1984, started Nova Scotia Grade Primary this year and is doing very well. Pat is "enjoying" motherhood and putting her years of part-time work at the DDO Library to good use by doing volunteer work in Jennifer's school library. I now have tenure at Saint Mary's, and became Astronomy Department Chairman last summer when everyone else turned down the job. We still make annual visits to Toronto to visit friends and relatives, and usually I make an appearance at the Astronomy Department or the DDO to check out those obscure references published in journals that we do not subscribe to at Saint Mary's, as well as to find out who has been the latest victim of the DDO marital jinx. Just don't ask me when I am finally going to get around to publishing those DDO velocities!

Dave Turner

Hi,

I got a note from Don Fernie by e-mail, so I decided to send a note to everyone up there in Toronto. Donald and I moved to the University of Virginia three years ago and we enjoy working with our colleagues in the Math and Astronomy departments. We have two daughters, Chandra (3 years) and Suzanne (2 months). They have kept us happy and busy. I have been studying starspot activity and the effects of mass transfer in short-period Algol-type binaries.

Drop me a line sometime. My e-mail address is mtr8r@virginia.edu or mtr8r@virginia.bitnet.

Mercedes Richards

Don:

I have just received the March 31, 1990, issue of DDO Doings, and decided to respond to your invitation for submissions from, in this case, an ex-student. Exams are over and done with, and we have all been entertained by the usual gaffs and howlers. I was, however, presented with a new one this year which you may wish to share, or not, with your readers.

Carrying An Analogy Too Far

When discussing stellar evolution in an introductory astronomy course I do what many others do, namely, draw an analogy between the evolution of a star and the aging of a human being. When an interstellar cloud reaches a critical density and becomes gravitationally bound that is analogous to the moment of conception. The phase of protostellar gravitational contraction is analogous to the foetal stage. When a balance is achieved between gravity and the internal pressure which is associated with energy release through fusion reactions the star is born.

For me, the analogy usually ends there, but not for some students.

On this year's final exam, students were provided with a sketch of the evolutionary track of a 1 solar mass star. Eight points were marked on the track, and students were asked to identify the evolutionary phase at each of the eight points, describe the appearance of the star, discuss the internal processes, etc. The 4th point corresponded, in fact, to the present state of the Sun, and was correctly identified by most students as the "main sequence" phase.

However, one student, perhaps fresh out of a biology exam, or simply wishing to impress this professor by carrying his clever analogy a few logical steps further, labelled that point "menopause".

With best wishes,

Doug Hube

Dear Don,

Your message absolutely hit home with me: I have had the good intention of sending a contribution to the DDD for a long time, but the potential barrier of a letter is too high. As my incoming mailbox will attest, the barrier for electronic mail is all-too-low, so here are a few thoughts.

When I left DDO for a postdoc at the McDonald Observatory in October 1970, I would never have believed that twenty years later I would still be in Texas and be Associate Director. My blood is now so thin that I feel cold at temperatures below 70 degrees. (When I was at U of T y'all still used a sensible Fahrenheit scheme.) I can also say y'all and sound convincing.

Here are a few remembrances from the '60s. I recall that as first year students our fear of Gerry Longworth was exceeded only by our absolute terror of Sidney van den Bergh. Both of these fears subsided in time as we got to know them both. Nonetheless, it was considered quite risky when David DuPuy gave Sidney a sabbatical going-away present for us all: a red hot water bottle marked "sock it to 'em, Sid."

In keeping with the times, we were greatly concerned that the faculty were likely conspiring behind our backs in the faculty meetings, and in any event were not likely to be able to run the institution without our assistance. So, we eventually got a student representative admitted as an observer to the faculty meetings. It was very disappointing when our representative, René Racine, returned to say that it was really pretty dull in there.

We also formed an organization called GASA. It was supposed to help us present a “united front” to the faculty. (There was a lot of “uniting” in those days.) I see from the DDD that GASA has fallen on hard times and is now more a social club than the serious governance body we intended.

I remember the Christmas countdowns, especially Jack Heard’s discourse on the relative merits of two and three tined fork mounts. I remember the impromptu gatherings of observers in the kitchen behind the library when the clouds came in late at night. I remember the miracle of the Wang electronic calculators which could actually take square roots - and the long wait to get access to one. I remember when Peter Hagen died.

Back to the present. After two years as a McDonald Fellow, I joined the faculty at UT Austin and then in 1978 moved into administration. The latter has been a lot of fun; it is tremendously rewarding to accomplish things for an institution and over time to see the effects of one’s decisions in the growth of the facility. Right now we are excited by the prospect of the Spectroscopic Survey Telescope, an 8-meter class, innovative telescope we are designing in collaboration with Penn State University. If all goes well we hope for the official “go-ahead” on it this summer.

Meanwhile Bobbe and I had two boys, Jeff who just graduated from high school and Eric who is nearly 13. Bobbe and I were divorced in 1982. Bobbe lives in Denver and is a CPA there. In 1984 I married Sandi Preston who is in charge of public programs for McDonald Observatory. If any of your readers have heard the radio program StarDate, it is produced in Sandi’s office.

Receiving the DDO is a great treat for me. I have loved watching the DDO evolve over the last two decades and continue to feel a part of the observatory. I hope this letter will renew my subscription for twenty more years.

Best wishes,

Tom Barnes,
class of 1970

FROM THE DOINGS OF TWENTY YEARS AGO:

Dr Henry King suggested in the last issue that Sir John Herschel’s 1837 noting of the red colour of 47 Tuc probably constituted the earliest reference to Population II stars. However, Sir John’s father, William, reading a paper on nebulae to the Royal Society in 1785, noted the one “in the girdle of Andromeda, which is undoubtedly the nearest of all the great nebulae.... The brightest part of it ... begins to shew a faint red colour; which ... I believe to be an indication that its distance does not exceed 2000 times the distance of Sirius. There is a very considerable, broad, pretty faint, small nebula near it; my Sister [Caroline] discovered it August 27, 1783, with a Newtonian 2-feet sweeper. It shews the same colour with the great one and is, no doubt, in the neighbourhood of it.” This may be the first estimate of the distances of M31 and M32.

Don Fernie

FROM THE DOINGS OF TEN YEARS AGO:

U of T's newest telescope, a 30-cm Questar situated atop Scarborough College, was officially dedicated on March 12. A group of about 25 chilly but enthusiastic onlookers gathered for the event and applauded heartily as Scarborough Principal Joan Foley cut the ceremonial ribbon. Principal Foley remarked that she had learned something about astronomy during the protracted telescope negotiations, but that she had learned even more about astronomers, in particular that "they know what they want and they are very persistent."

REVISIONIST'S CORNER

Tom Bolton contributes this quote from a site plan sent to him for review: *This is to certify that ... we are not using skylights ... so the amount of light escaping to the sky from interior illumination will be negligent.*

Tom also received this on an AST 321 term paper: *Since all the other planetesimals in the outer solar system were flung out, it might be that Pluto's resonance with Neptune (along with the influences of the other Jovial planets) might have saved it from a similar fate.*

I myself (Don Fernie) returned this past academic year to teaching science students after years of non-science students. I had forgotten that while the former can be just as hopeless as the latter, their howlers usually have a certain technical ingenuity. Here are some of the answers I got from AST 120 students in response to the question 'How do we measure the distance to the sun?' I'm glad I was sitting down as I read them.

Watch the earth's shadow crossing the moon at a lunar eclipse. Thus get the earth's orbital velocity, which, with the length of the year, will give the distance of the sun.

Measure the energy coming from the sun. Use stellar interiors theory and angular size of the sun to get the energy output at its surface. The inverse-square law will give sun's distance.

Classify the sun's spectral type. Look up M_v in tables. Measure V . Calculate sun's distance from $V - M_v = 5 \log d - 5$.

Measure the parallax of a star of known distance. Calculate sun's distance from

$$\tan(\text{parallax}) = (\text{sun's dist}) / (\text{star's dist}).$$

Wait for the sun to become a cepheid. Apply the period-luminosity law to get M_v . Use this and V to get distance.

Measure the sun's redshift. Apply Hubble's Law.