

THE ^{DAVID} DUNLAP DOINGS

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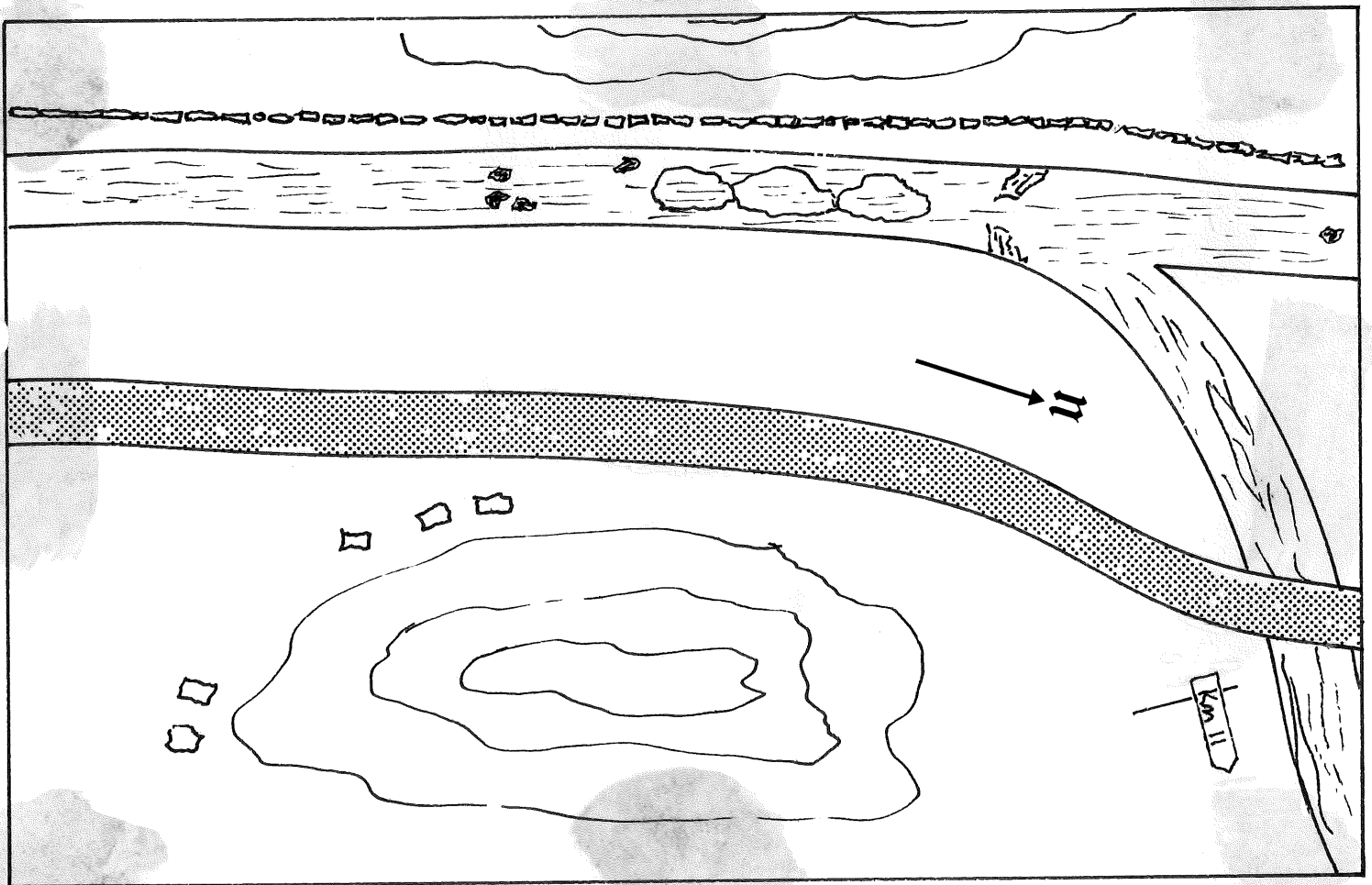
Photo: Karl Kamper

Cover Story Page 3

C O N G R A T U L A T I O N S

To *Rick and Nancy McGonegal* on the birth of their son, *John Edward*, 8 lbs., 4 oz., born October 19, 1982.

To *Dave DuPuy*, former U. of T. student (Ph.D. 1972) and long time colleague in Canadian astronomy, as he takes up his new position in the States. Dave has moved from St. Mary's University in Halifax to the Virginia Military Institute in Lexington, Virginia. Dave is enthusiastic about the opportunities for astronomy at VMI, and "from here on", he says, "it's Lutenant Colonel DuPuy!!" Best wishes to both Dave and Liese.



Cover Story

SOME LAS CAMPANAS PRE-HISTORY

The reader might suspect that Las Campanas pre-history refers to any time before the arrival of John Irwin and Manfred Wagner on the mountain, but we mean the real pre-Columbian stuff. At kilometer 11 on the Observatory road, the road passes near an old river bed, which is, nowadays, just a slightly damp gully, containing, however, a few almost mythical green trees, the only ones to be seen near the Observatory. On the west side of this arroyo, the ruins of a stone wall run along the old bank, as you may see in the upper left photo on the cover montage. The wall is of simple rubble construction and may date only from the colonial period or may be of indian origin. In the river bed itself there are also the ruins of a dam of similar construction. On the east bank, however, where a hill rises about 40 meters or so, the visitor can find innumerable traces of an old indian site. Most striking are dozens of petroglyphs covering the black-crustured rocks on the hillside, which make the area look very much like a somewhat scaled down version of Petroglyph Park outside Albuquerque N.M. We have reproduced a small selection of these in the cover montage. Unlike the New Mexico glyphs, which are all pecked into the rock, these are both pecked and scraped. They depict the usual animals, along with some hunting scenes and various symbols. The most readily interpretable symbols seem to be Sun signs and, naturally, any simple dot looks like a star to us. We have tried to interpret the "stars" in the upper right photograph as the Hyades as seen from zeta Ret, but this requires a Hyades modulus of only 2.91, which isn't the value we were looking for. Nevertheless, the presence of the unmistakable "spacemen" with helmets and antennae in the lower left picture may indicate that this value has some cosmic credibility (at least to von Daniken!).

At the base of the petroglyph site, there are three rectangular plots outlined with rocks which look like graves, although generally in this part of Chile grave markers are small and often located on the opposite side of a river from the actual grave. Instead these are probably dwelling sites. Both Bill Robinson and Tony have done a little sifting of the sand at the base of the hill and come up with a modest quantity of worked flint including a few arrowheads. The nearest deposits of flint known to us are a few kilometers away.

Prospective tourists should be warned that the site isn't very obvious as you drive by, so Tony has prepared a somewhat schematic map. (see facing page) There is another site over on the ESO access road which is worth a visit. At the La Silla site, the petroglyphs are arranged in a more hieroglyphic, story-telling manner. Here also are typical creek bank burial sites plus some large stone tables hollowed out for grinding ("metates").

The inhabitants of these sites may now be centuries dead, but that is lively by Las Campanas standards, and we found a stop at Km 11 a welcome break from the usual attempt to achieve supraluminal velocities on the Serena run.

GASA GOSSIP

Volleyball has long been recognized as a partial fulfillment of the requirements of Astronomy degrees awarded at U. of T. Therefore, the decision to offer a downtown section of this important seminar was greeted with great enthusiasm. The downtown version of the game is much different from the wide open style of the DDO parking lot. The venue is the Graduate Student Union gymnasium which is just large enough to accommodate a volleyball court. By just large enough, I mean that it is impossible to serve with both feet behind the back line of the court. The transition has been difficult for some players. After a summer playing at DDO, it can be a little disconcerting to have your serves suddenly bouncing off overhead lights, your spikes hitting the 'slightly' higher net and your setups coming down through the basketball hoops which hang over the court. It takes awhile to get used to it but for all its faults the GSU volleyball court has one thing to offer that DDO can't. There's a bar in the same building.

For the more competitive among us, Astronomy has fielded a team in the GSU league for the past few seasons. After the team experienced early exits from the playoffs under the easygoing tutelage of the past two coaches (Ctn and Cbt), the management has hired a tough new skipper to take over the team. Things promise to be very different under new coach, Al Busch. Last night was our first game and the team gathered for a chalk talk and strategy session before going out and losing to Botany three games to one. However, it was a very good first game for the Busch Wackers (Busch Leaguers?) against last year's champions.

Ctn

DDO Summer Tours 1982

Chris Corbally reports:

What can one add to GASA Gossip (D.D.D. 15, #6, p.15)? Nothing save statistics; ah, not as "vital" as Gossip's young lady, but rather more prosaically, the tour numbers. These totalled 3086 this summer, up 13% on last summer. Substantial articles in both the Globe and Mail and the Toronto Star seem to have been the explanation of the increase. "The sight of the white dome opening and the giant telescope pointing up to look at the sky is as awe-inspiring as the arrival of the intergalactic visitors in the film Close Encounters of the Third Kind." (Betty Zyvatkaukas, Globe and Mail 29th May 1982). Perhaps we should really be in film producing.

This year's cast was: Arellano, Box, Busch, Clayton, Crowe, Corbally, Duric, Ford, Fullerton, Gies, Heggie, Kim, Richards, the Rusks, Swift and Zukowski.

Thanks to all!

Cy

Two Oil Paintings Donated

The Observatory was informed a few weeks ago that through the will of Kathleen Monica Heaton it is the fortunate recipient of two oil paintings. Mrs. Heaton, who died on October 1, was a student of Helen Hogg's back in the 1940's, and was also an enthusiastic member of the RASC. Interestingly enough, Mrs. Heaton's son, Dr. Peter Heaton of Alberta, is married to Ann, sister of our former student Bob McClure (M.Sc. 1964, Ph.D. 1967).

One painting, (24 in. x 20 in.), is by Raymond R. Broadfoot and is a depiction of M81. Ray Broadfoot is an amateur astronomer and accomplished artist. He has been active in the Toronto Centre of the RASC, serving as its president in 1961 and 1962.

The other, (36 in. x 46 in.), titled "Northern Lights", is by Franz Johnston, who was one of the founders of the Group of Seven. It is therefore probably of quite considerable value.

For the moment at least, we have the Johnston hanging in the main entrance hall of the Observatory. The Broadfoot is to be seen on the wall of Esther and Rosemary's office.

Fe

Here is our new letterhead, soon to be put in service. It was devised by Joan Tryggve in consultation with the Press and with help and opinions of others at DDO. Eye-catching it will certainly be, in this day and age when computer generated dot-matrix liquid-crystal styles are so common.

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OCTOBER ON LAS CAMPANAS

Neb Duric reports:

My second trip to Las Campanas proved as productive as the first. Out of 19 nights, 17½ were usable. I collected about 100 plates, most of them with the image tube camera, for the purpose of obtaining UBVRI light distribution of ~25 spiral galaxies. This is part of a larger study to look for correlations between colour and radio continuum morphologies of galaxies in order to understand the origin of relativistic electrons.

As for my actual stay on the mountain, it was rather uneventful. I have no new tarantulas or scorpions to report although I did survive two earthquakes, an early morning spell of Boliviano-inspired hail, 50 mph winds, the mighty ham and cheese sandwiches and the shortwave broadcasts of the World Series. As a result of the earthquakes, the polar axis of the 24" is slightly misaligned, about as much as I was when the second earthquake practically threw me out of bed in La Serena.

In short, it was another run of clear skies and on top of that, the St. Louis Cardinals won the world series.

* * *

rG is on Las Campanas now. In a recent radio phone conversation with Frank Hawker he reports that things are going well and good weather continues. At intervals he is reading Bob Gauthier's thesis draft and he had some things to say about it, too complimentary to be quoted.--Eds.

FIFTH BUSINESS

As Don Fernie will be completing his first five year term on June 30th next, the Dean has struck a Committee for the purpose of recommending a Chairman of the Department/Director of the Observatory for the next five years. Its membership is:

Dean R.L. Armstrong (Chmn.), Vice-Dean R.H. Farquharson, Professors J. Keffer (Assoc. Dean SGS), Dick Azuma (Chmn. of Physics), Allen Yen, Bob Garrison, John Lester, Bill Clarke and Phil Kronberg.

Comments and nominations may be made verbally or in writing to any member of this committee, the Dean's memorandum states.

Sixth Kingston Meeting on Theoretical Astrophysics

This meeting will be held on 25-26 Nov. Scientific sessions, constructed around contributed papers, will occupy the first day and a half. The final session will be devoted to a discussion of the Canadian Institute for Theoretical Astrophysics (CITA). It is hoped that by that time a firm recommendation for the immediate formation of CITA can be made and agreed upon. Contact K. Lake of Queen's, local organizing representative, for further details or ask a colleague for a registration form.

Mn

Ralph E. Williamson 1917-1982

Word has reached us, through Margaret Heard, of the death of Ralph Elmore Williamson in June of this year. Ralph joined the staff of the Department of Astronomy and David Dunlap Observatory in 1946 as a lecturer. He was Assistant Professor from 1947 to 1952, when he was promoted to Associate Professor. However he left in 1953, relocating at the Los Alamos Scientific Laboratory in New Mexico.

I first met Ralph in 1944 when he came to Cornell from Chicago. The U.S. Navy was training its Midshipmen there and we taught the course in navigation. Apart from some elementary radio astronomy studies sparked by Charles L. Seeger Jr. in the Electrical Engineering faculty, astronomy at Cornell seemed unlikely to develop, and both of us left with regrets in 1946 - Ralph to take the junior position at Toronto which followed upon R.K. Young's resignation as DDO Director. But Ralph kept in touch with Seeger and he and later he and Ruth Northcott published the first two papers on radio astronomy from the U. of T.

The first was "The present status of microwave astronomy" in the Journal of the R.A.S.C., 42, pp. 9-32, 1948. (DDO Communication No. 15) It contains a mere 34 references; they can fairly be considered as the totality of published scientific papers in the field of radio astronomy at the time of writing (late 1947)! The second was "Galactic noise and the plane of the galaxy" in the same volume, pages 269-279 (DDO Communication No. 17).

An Oklahoman by birth and early education, Ralph's Ph.D. at Chicago was with Chandrasekhar, whom he admired very much. His training was therefore in stellar atmospheres, stellar dynamics, and stellar interiors. When they came along in the 50's he was one of the first to apply electronic computers to such problems. At Los Alamos his work was in weapons physics and design. His contacts with astronomers soon became infrequent although he remained a member of the AAS. He made one foray into the outside world in the sixties, spending a few months at a new job in New England, but he soon returned to Los Alamos and never left. Perhaps it was that he found the cold of Ontario and New England a good deal less to his liking than the warmer states in the southwest.

Ralph was a brilliant colleague and a charming and good-natured friend. When I knew him he was very fond of astronomy, working with great enthusiasm, fascinated by the new ideas which were just then coming forth. He would have made a great professor.

MR

"Universe" Revisited

Most DDD readers will be familiar with the film "Universe" and its continued popularity over the years with varied audiences. Universe was made by the National Film Board in 1960, and featured the 74-inch telescope at DDO and Don MacRae. What readers may not have appreciated is the impact that this film has had on the film industry.

In the cover story of Maclean's of 19 July 1982, Lawrence O'Toole takes up the topic "Special effects: the brightest new stars". This somewhat astronomical sounding article does indeed hold something of astronomical interest, as the following excerpt shows:

Camels passed through the eye of a needle in *2001*, which most special-effects artists today cite as the movie that cleared the path toward the present Golden Age. What most people do not know is that Canada's National Film Board was instrumental in creating the revolution sparked by *2001*. In 1960 the NFB produced a short film called *Universe*, which *2001*'s author, Arthur C. Clarke, saw and advised director Stanley Kubrick to see also. Impressed by its special effects, Kubrick became inspired by their possibilities in *2001*. "*Universe*," says its codirector Colin Low, "experimented with motion control and synthetic imagery. Kubrick wanted me to work on *2001*, but I was busy on a new film, *Labyrinth*, so I put him on to a graphics company in Los Angeles." The effects in *2001* owe their success, partially, to a process developed in *Universe*—chemicals reacting on large glass slides, shot by a variety of powerful lenses, producing such staggering events as nova explosions.

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So let's not hide our light under a bushel - astronomy does have some commercial spinoff! Wouldn't it be nice if a 1980's version of Universe could be made, with some financial return for the forthcoming. After all, DDO is in TRONto ...

Mn

COLLOQUIA*

- October 6 *Dr. Paul Barker, University of Western Ontario,
"Be Stars"*
- October 13 *Raymond Rusk and Mario Pedreros, University of Toronto,
G2000 Current Literature Seminar*
- October 20 *Dr. Nelson Caldwell, Rutgers University/Yale University,
"Dynamics of Gas in Early-Type Galaxies"*
- October 22+
Friday *Professor J.D. King, University of Toronto,
"7Be Decay and the Solar-Neutrino Problem"*
- October 27 *Allan Busch and Wendy Freedman, University of Toronto,
G2000 Current Literature Seminar*
- November 1'
Monday *Dr. R.E. Pudritz, University of California, Berkeley,
"Hydromagnetic Outflow from Molecular Clouds"*
- November 3 *Doug Welch and Kwang-Tae Kim, University of Toronto,
G2000 Current Literature Seminar*
- November 10 *Dr. Frazer Owen, NRAO, Socorro, New Mexico,
"M87 and Other Jets"*
- December 17
Friday *Christmas Countdown, David Dunlap Observatory*

**Unless otherwise noted, colloquia are held on Wednesdays at 4:00 P.M. in Room MP 137 with TEA at 3:30 in the Reference Room, MP 1404.*

+Physical Sciences Division Colloquium, 4:10 P.M. in Room H215 with refreshments in the Faculty Lounge between 5:00-6:00 PM.

'Special Seminar, 11:10 AM, Room 1422.

PAPERS SUBMITTED

- P. Martin
I. Thompson
J. Maza
J.R.P. Angel
- The Polarization of Seyfert Galaxies*
- C. Corbally
R.F. Garrison
- MK Spectral Classification in the Praesepe Lower Main Sequence*
- W. Freedman
B. Madore
- Time Evolution of Disk Galaxies Undergoing Stochastic Self-Propagating Star Formation*
- P. Biermann
P.P. Kronberg
- X-Ray Detection of Hot Intergalactic Gas in Small Groups of Galaxies*
- R.F. Garrison
L. Zimmerman
- The Spectrum of the Solar Disk*
- L. Rudnick
E. Zukowski
P.P. Kronberg
- Measurement of Unambiguous Rotation Measures of Extragalactic Sources*
- P.P. Kronberg
P. Biermann
- Luminous Supernova Remnant Candidates in M82 and the Physical Properties of the Variable Radio Source 41.9+58*

OBSERVING RUNS

Barry Madore reports:

As well as I can remember I hit the road late in July. My first stop was Madrid, where Armando Arellano and I had time on the IUE satellite for a survey for hot companions to intermediate supergiants. Our particular type of programme kept the project scientists very worried because a successful detection can also mean a blazing over-exposure of their camera. But luck was with us and while our only discovery turned up on the last picture (displayed only after we had returned control of the satellite to Goddard) it was a perfect exposure.

From Madrid it was on to Besançon for IAU Colloquium #100 on the Kinematics and Dynamics of Galaxies. From there it was on to Patras to present a review paper on the cepheid distance scale, emphasizing the recent progress made by our infrared group here at Toronto.

After a bit of sun on the French Riviera it was back to Toronto for "breakfast at Terminal 2" with my graduate students just before heading out to Cerro Tololo, Chile. On the way down I had the honour of being accompanied by none other than Karl Kamper (en route to Las Campanas) and the entire Canadian Ladies Olympic Volleyball Team (heading to a tournament in Lima, Peru). Even Jumbo jets aren't big enough to practice volleyball in so I moved up to first class and slept for 6000 miles or so.

On Tololo Chris McAlary (from Tucson) and I had moderate success using the 4 meter for more infrared observations of the Cepheids in NGC 6822, LMC, SMC and even a couple of points in NGC 300, the first galaxy in our calibration outside of the Local Group. We worked on four out of the six nights scheduled, being shut down by cirrus on the other two.

An arduous flight up to LA and across to Hawaii got me to the Big Island in time to meet with Wendy Freedman for three nights at the prime focus of the CFHT. There the skies were extraordinarily clear with seeing dropping down to under 0.5 arc seconds on each night. To everyone's dismay the telescope control system and the prime focus camera were not working at all well and we lost a great deal of data on nearby resolved galaxies.

Leaving Bob McLaren, Doug Welch and Rick McGonegal to have a go with the new infrared system on the CFHT I flew on to LA, for the last leg of the journey and six nights on the Palomar 5m. Once again Chris McAlary joined me for the observing and again we were moderately successful. We were able to observe on each of the nights but intermittently lost time due to fog one night and 65 mph gusts of wind on two others.

So now I am back and looking forward to at least a few weeks of relaxed teaching and writing in Toronto - Chris tells me that we have two nights on the MMT in November and ...

P O T P O U R R I

Rick Crowe was featured in "The Sunshine News", a paper for high school students. In it there is a "Careers" section and Rick was interviewed and photographed at DDO. His motivation and dedication shows clearly in the report. Here is how it starts out "Rick Crowe is a down to earth type of guy who appears to have a bright future ahead of him"! (The Editors thank *Peter Broughton*, for many years at T.A. here, for his letter enclosing this item).

Jurg Pfund paid a surprise visit to the Department on Sept. 24. He took his M.Sc. in Radio Astronomy with Ernie Seaquist in 1973-75. He now has a senior position with a firm in Switzerland as an electrical engineer and was in Toronto on business.

Dave Blyth has returned (Oct. 17) from a 2-week visit with family and friends in Scotland. Cold and wet though the North Sea wind was in East Lothian, he absorbed enough of the more cherished aspects of his Scottish homeland to ensure his survival here for another year.

John Percy (and *Tom Bolton*, *Bob Garrison* and *Bob McLaren*) attended the meeting of the NRC Associate Committee on Astronomy in Ottawa on October 15.

Ernie Seagquist has been appointed to the NSERC Space and Astronomy Grant Selection Committee for a three year term beginning July 1, 1982. Ernie has also been appointed to the NRAO Visiting Committee for a four year term commencing on January 1, 1983. This is the committee that *Phil Kronberg* has been serving on, and of which he is currently Chairman.

John Percy attended the Man-Environment Impact Conference 1982, a conference of ~2500 school science and geography teachers, in Hamilton on Oct. 21-22. He gave a presentation on "Teaching the Astronomical Environment: Why and How?"

Phil Kronberg is a recently appointed member of the U. of T. Research Board (*Don Fernie* is going off this committee, having completed his term).

Ernie Seagquist tells us that the eagerly awaited CLBA Report was submitted to NRC in October. As chairman of the committee, he is to make a presentation dealing with the report to the NRC Program Selection Committee on November 18. Among the many items which will be brought out for discussion will be the desirability and feasibility of collaborating with U.S. radio astronomers, as one option.