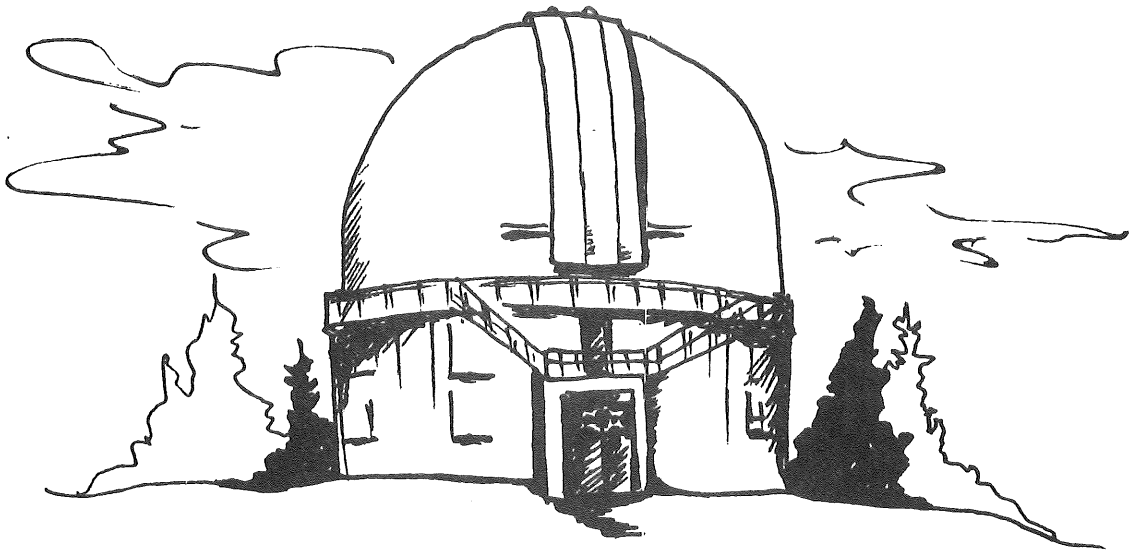

DAVID DUNLAP DOINGS

VOL. 11, NO. 3 APRIL 25, 1978

NEW EDITORS

I am happy to be able to report that it took hardly a wave of the editorial baseball bat to find not merely one, but two, new editors for the DDD. After next month Don MacRae will become Chief Editor and Bob McLaren Assistant Editor, an arrangement which I hope will strengthen ties between Observatory and Department and also simplify the newsgathering. True, there was some slight grumbling about was this to be the fate of all ex-Directors, but the answer to that is a firm No! - not if they have already served time as DDD editor!

There will be at least one other change in the DDD. Already the passage of paper across my desk has made it clear to me that the Final Item - at least any written by me - will have to become a sometime thing. I say that with regret, for I have enjoyed writing them, and I hope still to write one now and then, but I see little chance of meeting a regular deadline.

The new editors propose producing their first issue at the end of July; I am sure it will be the most interesting I, for one, have read in the last eighteen months.

Don Fernie
Editor

COMINGS and GOINGS

Don MacRae attended the annual meeting of Universities Space Research Association in Washington on March 31, as U. of T. representative. There is now a Canadian counterpart to this consortium. Both are dedicated to the development of space-related research in universities and the U. of T. belongs to both.

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Bob McLaren gave a seminar at the University of Rochester on March 27 entitled Infrared Heterodyne Spectroscopy of Planetary Atmospheres.

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A summer assistant has been hired for the DDO library. Anne Kubjas, a first-year library science student, is expected to start work on May 1.

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Don Fernie, as a member of an Ad Hoc Committee to review the radio astronomy activities of the Herzberg Institute of Astrophysics, was in Ottawa and Algonquin Park April 3 - 5, and in Vancouver and Penticton April 13 - 15.

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Dot Fraquelli reports that she and Steve Shore attended a working group meeting on RS CVn binaries at the New Mexico Institute for Mining and Technology on April 6, with the meeting continuing the following day at the VLA site in Socorro, New Mexico.

Those attending represented not only theoreticians but observers working at all wavelengths from X-ray to radio. Dot says that perhaps the most exciting result reported was the detection of RS CVn's at X-ray wavelengths. HR 1099, UX Ari, and RS CVn have been detected, and there is a possible detection of HR 5110. No decision was reached regarding the sources of emission in these systems, but a general consensus seemed to be that chromospheric activity of some type is responsible.

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Jim Clark was at Arecibo for three weeks from April 15, observing with Peter Biermann and Klaus Fricke.

* * *

Stewart Button and Phil Kronberg had a one-week run on the VLA starting April 20.

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SEMINARS

Only one seminar is planned for May:

May 19 McL. Rm 137 2 p.m.	Dr. Peter Biermann, Max-Planck Institut, "Aspects of Galaxy Evolution"

VACANCY NOTICE

The Canada-France-Hawaii Telescope Corporation will open a position of

STAFF ASTRONOMER

on 1 September 1978, and two additional positions of a similar nature on 1 September 1979. Applications are invited for all three positions.

REQUIRED QUALIFICATIONS: Ph.D, with several other research articles published in major astrophysical journals. A minimum of three years of post-doctoral scientific activity. Familiarity with observation techniques and at least one type of instrumentation (photometry, or imagery, or spectrography, etc..) is a requirement. English or French must be spoken fluently; knowledge of both languages is desired.

In addition to the above professional qualifications, successful candidates will be subject to a medical examination in order to determine their ability to perform their duties at an altitude of 4200 meters. Applicants who are not citizens or permanent residents of the United States must be able to satisfy all conditions necessary to obtain an appropriate visa.

DUTIES: The Staff Astronomers must maintain the telescope and its instrumentation at optimal performance level; receive the visiting astronomers and assist them in initiating their observation runs; and pursue personal or general interest research projects making use of the telescope and its instrumentation.

PLACE OF WORK: Mauna Kea (altitude 4200 meters) and the offices and laboratories of the Corporation in Waimea (altitude 800 meters) on the Island of Hawaii. Each Staff Astronomer must be prepared to spend up to one third of his/her time on Mauna Kea, especially during the first few years of operation, which constitute the running in phase of the telescope.

COMPENSATION: The basic salary will be determined by reference to the schedule for faculty and research staff of the University of Hawaii, based on qualification and experience. Currently the basic salary range is from $20,000 to $30,000 per year. In addition, during the first four years, employees appointed from outside the State of Hawaii will receive a non-residence allowance equal to 12% of basic salary. Scholarship grants for dependent children attending schools charging tuition will also be granted.

Benefit plans are according to the Corporation's Personnel Policy and include medical and dental insurance, group life and disability insurance, and a retirement plan with employer contributions vested in the employee in case of termination.

RELOCATION EXPENSES: For employees appointed from outside the Island of Hawaii, travel expenses for themselves and their family and relocation expenses for personal belongings will be covered in accordance with the Corporation's Personnel Policy. In addition, an installation grant equal to at least one monthly basic salary will be paid.

TERM OF APPOINTMENT: Two years, renewable.

SUBMISSION OF APPLICATIONS: Applications should include a detailed curriculum vitae and a list of publications. They must reach the Waimea office of the Corporation, at the address below, by 10 May 1978 for the position vacant as of 1 September 1978, and by 1 March 1979 for those vacant as of 1 September 1979:

Canada-France-Hawaii Telescope Corporation,
Kamuela, Hawaii 96743,
U.S.A.

POTPOURRI

The University has promoted Joan Tryggve from Secretary to Administrative Assistant, effective retroactively from February 1.

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Helen Hogg retired from the Board of Bell Canada at the Shareholders' Meeting in Hamilton on April 18 after ten years of service. The Chairman of the Board, Jean de Grandpré, gave a Board dinner in honour of her retirement at the Hamilton Club that evening. She was presented with a silver tray bearing the signatures of all her co-directors.

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Rob ("Redshift") Roeder received a trophy at a recent Scarborough College Athletic Awards Dinner for 1000 miles of running. He was also named Sportsman of the Year, and that too "brought quite a good-looking trophy."

* * *

Bill Herbst (Ph.D. 1974) has accepted an assistant professorship at Wesleyan University (Van Vleck Observatory), starting this fall.

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There was much fluttering in the dovecotes recently when someone called Tom Bolton from the Mississauga Parks Department to say he had been charged with designing an observatory and could Tom assist him in the planning. This sounded exactly like John Percy's Erindale dreams coming true, but a quick follow-up on John's part revealed that the caller had misread his instructions: he had been charged with designing a conservatory, not observatory.

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Readers are reminded of the workshop on the teaching of elementary astronomy courses to be held in the Department on May 18. Details are available from John Percy.

* * *

To Bruce and Kaye Campbell: the birth of a son, Clayton Boone Robinson, on March 31.

* * *

The Dunlap family has presented to the Observatory a magnificent scrapbook, enormous wooden covers, iron hinges, clasp and all, that was previously kept by Mrs. Jessie Dunlap to contain original letters from Dr. Chant, newspaper clippings, and photographs concerning the founding of the Observatory. Once refurbished, the book will go on display under a suitable glass cover in the entrance hall of the Observatory.

* * *

A further ominous note has been sounded in the Government's Canadians-First policy. The Globe and Mail for March 27 reports that "university departments will have to abandon the practice of awarding graduate assistantships as patronage. Instead they will have to hold job competitions that consider qualified Canadians before qualified foreign students.... Enforcement of the new policy is going to extend... even to one-day workshops and seminars." One report has it that this policy is likely to come into effect next January 1.

* * *

DDD's agents in Montreal report that René Racine has been promoted to Full Professor. They also report that the installation of the 60-inch telescope in the Megantic Observatory began the week of April 10.

TEN YEARS AGO

From our issue of April, 1968:

John Schmitt has been able to identify a known radio source with a known variable star, BL Lac. Details have been sent in a letter to Nature.

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A University of Toronto 60-foot paraboloidal telescope is under construction at the Algonquin Radio Observatory by Casey Berlanda and an assistant.

∞ ∞ ∞

Doug Hube has been awarded an NRC Post-doctorate Fellowship and hopes to hold it at Kitt Peak. NRC studentships have gone to Bob Chambers and Peter Martin. Renewals to Lorne Braun, Orest Dubas, Greg Fahlman, Peter Hagen, and Raymonde Verreault.

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A new shipment of Palomar Atlas glass prints have been received - none broken.

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Mr. and Mrs. R. Remage announce the engagement of their daughter Nancy to Mr. Martin Evans.

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PAPERS SUBMITTED

J. Maza, P. Martin & J.R.P. Angel	On the Composite Nature of the BL Lacertae Objects Markarian 421 and 501.
Mary C. Lane R.F. Garrison	The Night Sky Spectra of Toronto
P.P. Kronberg J.N. Clarke	What is the Compact Radio Source in the Nucleus of M82?

REVISIONIST'S CORNER

The uninterruptible power supply used to provide power to the computer data system failed.

- Kitt Peak Quarterly Bulletin
July-August-September,
October-November-December, 1977

F I N A L I T E M

The Origins of the DDO. VII.

Soon after the new observatory's site had finally been confirmed, the contract for the 'great' telescope let, and the entire project swimmingly underway, tragedy struck. It came through the unexpected death of Sir Charles Parsons.

Not only did Grubb-Parsons have the contract for the mechanical parts of the telescope, they also had the contract for the mirrors inasmuch as Sir Charles owned the Derby Glass Works in England. Parsons, it seems, had been very much looking forward to producing the 74-inch primary mirror, for it was his father, the Third Earl of Rosse, who had in 1845 built the largest and most famous of all nineteenth century telescopes - the 72-inch "Leviathan of Parsonstown". Sir Charles, by all accounts, was eager to go his father two inches better!

But much more serious than the frustration of Parsons' ambition was the fact that he was really the only person in England who knew enough about the casting of large mirrors to have much hope of success. And although his staff continued to work

hard and carried through many experiments, they finally had to report to Chant that it was most unlikely they would succeed in producing a 74-inch mirror.

Sir Charles died in early 1931, and by mid-1932 Chant was still at a loss to know where he was going to obtain a primary mirror. But in September of that year Chant attended the IAU meetings at Harvard and there heard a similarly sad tale about the primary mirror of George Ellery Hale's dream: the 200-inch telescope. It had been intended to make the 200-inch primary of quartz to avoid expansion problems, but despite much experimentation all efforts had failed. Now it was to be made of the Corning Glass Company's recent invention, Pyrex glass, and the Corning people were planning to work their way up to a 200-inch disk via a series of smaller ones.

> *At the banquet on September 8 I found myself sitting beside Walter S. Adams, Director of the Mount Wilson Observatory and a member of the Committee on the production of the 200-inch telescope. He told me that the report was correct that the Corning Glass Co. expected soon to cast the great disc.*
>
> *I asked him if his Committee would object to my inquiring if the Company would undertake to produce the 74-inch disc. He assured me that no objection would be raised, and he said he intended to go to Corning in a few days and would urge the Company to give us all possible assistance.*
>
> *The reply of the latter to my inquiry was prompt. They were willing to supply the disc, the work on it to begin in six months. The price would be: for a plain disc, $11,000; for one with open spaces in the back, as proposed for the 200-inch disc, $12,000. We were pleased with the offer, as also was the Grubb-Parsons firm when it was communicated to them.*
>
> *There was a discussion as to what guarantees the glass company should give. There were many uncertain factors and it was difficult to specify just what could be guaranteed. In the end, I believe it was left almost a "gentleman's agreement," the company undertaking that the disc should be "satisfactory." It was a pleasure to deal with such a company.*
>
> *About the middle of June [1933] a telephone message from Corning stated that they expected to do the pouring on the morning of the 21st, the summer solstice.*
>
> *On the day before that date my wife and I in Mrs. Dunlap's car, and Dr. Young and P. H. Mitchell in Mr. Bell's car, motored to Corning. Mr. Mitchell was a consulting engineer interested in the problem of utilizing glass in the making of artificial teeth.*
>
> *Early in the morning we went to the nearby Works, where the pouring was scheduled to begin at 5.30 a.m. on account of the very hot weather then prevailing.*

The melting furnace contained about 75 tons of glass, and it had taken five weeks to insure that it was of the proper consistency. The furnace was heated by gas to about 1600 deg. C = 2912 deg. F. The mould, which was constructed from refractory bricks, was about 25 feet away from the furnace. First the scum was drawn from the surface of the glass, then a large iron ladle capable of holding about 800 pounds was thrust through the furnace door, filled with glass and then carried by means of an overhead trolley to the mould. Over the mould was a domed covering shaped like an old-style beehive. The ladle was pushed within and inverted. The viscous glass flowed from it and slowly flattened out in the mould, which was being maintained at about 800 deg. C. When about half the contents had run out of the ladle it was withdrawn and the balance of the glass in it dumped on an iron plate and then into a tub of water. This process continued until the mould was filled, thirteen ladlefuls, or nearly two and a half tons in all, being required. The operation lasted two hours.

When the mould was full the temperature was raised to 1250 deg. C. and held there for about four and a half hours. This was done to bring the glass to the proper consistency and also to cause any bubbles in it to rise to the top. Then the upper beehive covering was raised and the mould pushed aside into the open, revealing the tawny-red disc of glass. I got a photograph of it.

After allowing it to cool for four or five hours, until a temperature of 600 deg. C. was reached, it was moved into the annealing oven. The temperature was set at 475 deg. and held there for nine days. After this the cooling began, first at a rate of 2 $\frac{2}{3}$ deg. a day until 380 deg. was reached, and then the rate was increased to 18 deg. a day. Quite a process, but the result was satisfactory.

This was the largest disc, up to this date, made by the Corning Glass Works. They had made a 30-inch and a 60-inch disc; and a few days after ours, poured one 120 inches in diameter. The first pouring of the 200-inch mirror was on March 25, 1934.

Before we left for home, the company presented to Mrs. Dunlap and my wife, each a beautiful, artistically wrought Pyrex teapot as a souvenir of the occasion.

The disk was finally removed from its mould some three months after pouring, and Chant and Young again went down to Corning for an inspection. They found the disk to be, in fact, 76 $\frac{3}{4}$ inches in diameter, and beautifully annealed. Tests with polarized light showed it "exceptionally free from strain."

By early November of 1933 the blank had arrived in England for grinding and polishing, a process that required another six months, and then Dr. Young was sent over to carry out tests before the final acceptance.

These tests allowed one to place the mirror in the highest class. Dr. Young stated that the surface of the mirror was at no place at fault, i.e. differed at no place from the theoretical value, more than two millionths of an inch.

The precious mirror was then carefully packed in its strong case which, with its contents, weighed five tons. On May 2, 1935, it arrived at the Observatory and was unloaded into the Great Dome through an opening made in the wall. On May 7, the day after King George V's Jubilee Celebration, it was placed in its steel cell, which next day was attached to the lower end of the tube of the telescope, thus completing that noble instrument.

J.D.F.