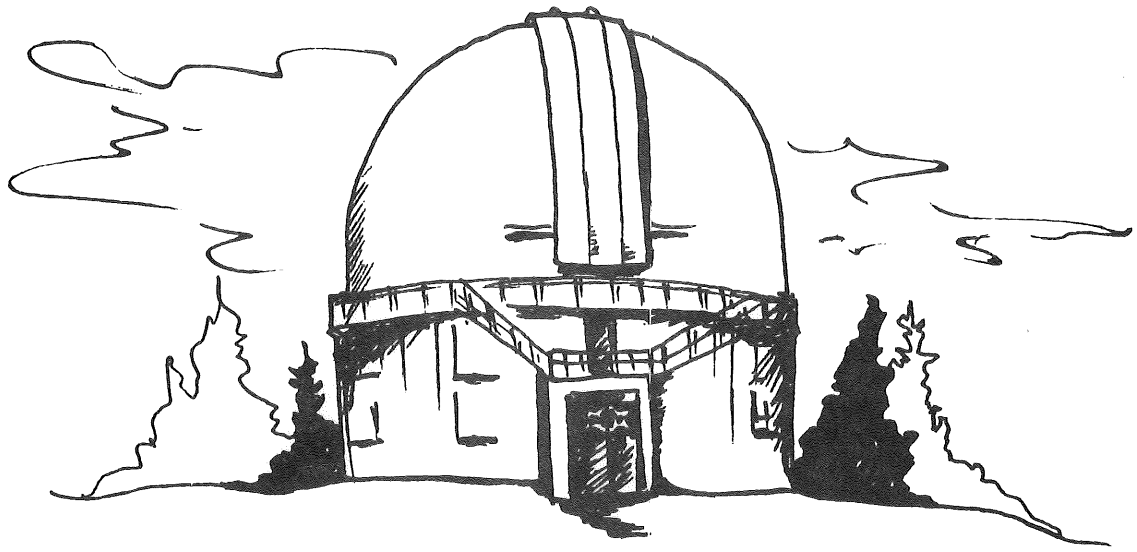
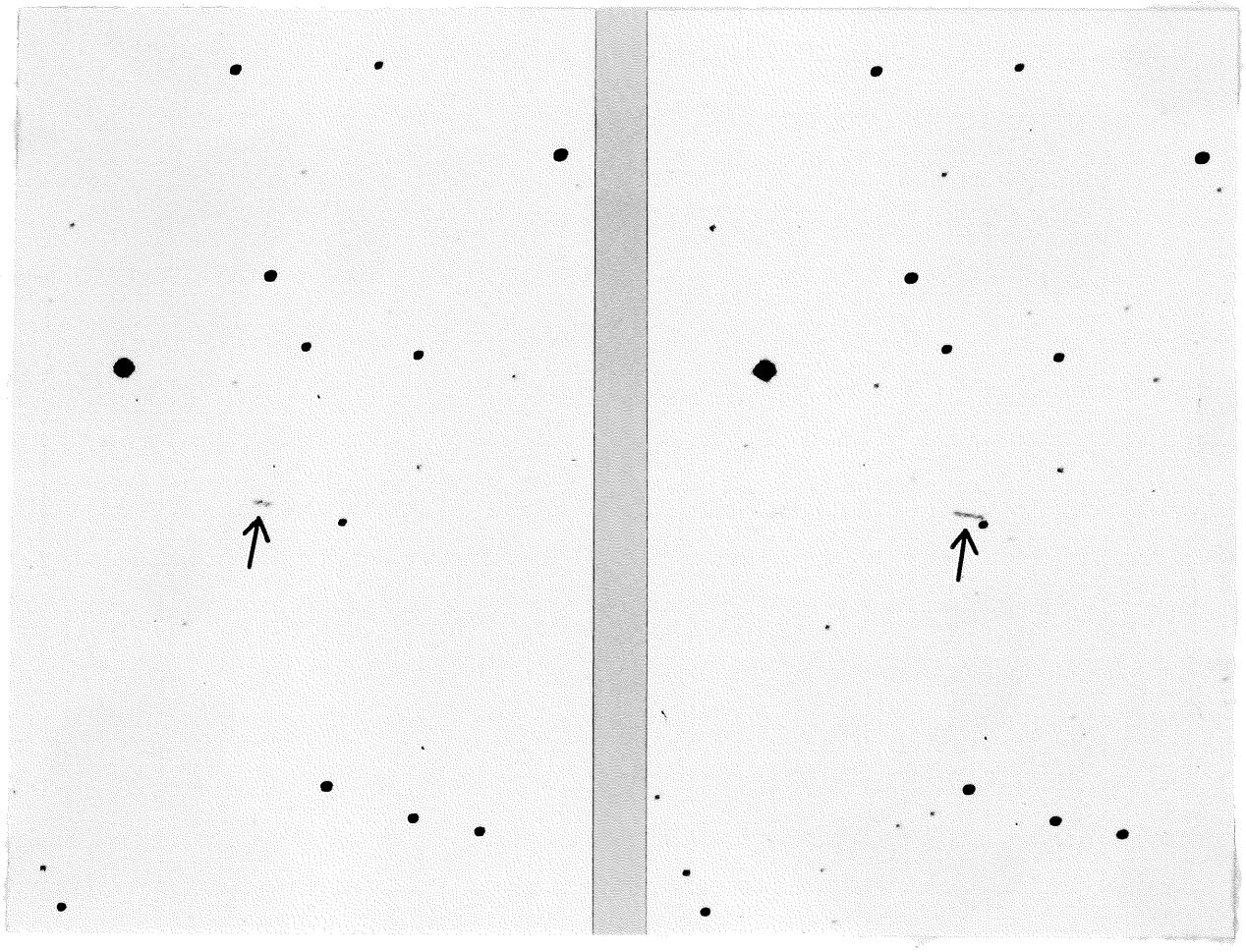


DAVID DUNLAP DOINGS

VOL. 12, NO. 7 NOVEMBER 2, 1979



TORONTO: OPPOSITION # 5

... and photographed with one of our own telescopes this time. Alan Boyce obtained these two plates, an hour apart, with the Las Campanas 24-inch on July 14/15. The asteroid was right on schedule, providing a stunning verification of the Law of Gravity (Newton, 1687).

KK

NEW GRADUATE STUDENTS

This fall we welcome eight new students (5 M.Sc., 3 Ph.D.) to the Graduate Department of Astronomy.

Two of the incoming M.Sc. students, *Wendy Freedman* and *Nebosja Duric* are already well known to many of us - both Wendy and Neb completed the Astronomy and Astrophysics Specialist Programme last spring. Wendy's thesis project on Star Formation in Disk Galaxies is being supervised by Barry Madore. Neb will be doing an AST 1500 project on Models of Galactic Nuclei Derived from Radio Observations under the supervision of Ernie Seaquist.

Lale Akatli is a graduate (B.S. Physics) of the Middle East Technical University in Ankara, Turkey. Lale will be working with John Percy on an AST 1500 project involving theoretical models of Cepheids.

Karen Finstad has decided to do a Master's thesis on Population II Cepheids under the supervision of Don Fernie. Karen is a graduate (B.Sc. Physics) of the University of Alberta.

Louis Noreau comes to us by way of Université Laval (B.Sc. Physics) and will be doing a Master's thesis in radio astronomy with Phil Kronberg.

Mercedes Davis obtained her undergraduate education (B.Sc. Physics) at the University of the West Indies in Kingston Jamaica (her home town). This past spring she completed an M.Sc. in Astronomy at York University. For her Ph.D. thesis, Mercedes has decided to work on Stellar Structure with Maurice Clement as supervisor.

Jeff Clayton(B.Sc. 7T7, Astronomy and Astrophysics) has returned to Toronto for his Ph.D. after completing his Master's degree at the University of Western Ontario. Jeff's Ph.D. thesis advisor will be Peter Martin.

Rick Crowe is no stranger either, since he served as our resident observer at Las Campanas from July 1977 until August 1979. Rick was at Western for both his undergraduate and Master's degrees. Rick will be doing a Ph.D. thesis on Mira variables with Bob Garrison as supervisor.

Raquel Borgono received her B.Sc. from the University of Chile in 1962. Following that she held a number of teaching and research positions at that University including responsibility for the project of Absolute Determination of Right Ascensions. This past spring Mrs. Borgono completed the M.Ed. program at University of Toronto, and she is now enrolled as a Special Student in our Graduate Department.

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Editors: Donald A. MacRae and Robert A. McLaren

A DART DAY AFTERNOON

A "rallye" good show, sponsored by the Erindale College Alumni Association on Saturday, September 22nd, saw the debut of DART (Department of Astronomy Rallye Team). Stiff competition was provided by Erindale College Students, Alumni, and the Principal.

Our team: "Hobbles" Button, "STP" Crabtree, "Power-shift" Grieve, "U-Turn" Sterns, "Tornado" Toth (a government import), and "Hotrod" Zubrod. In a warm-up practice of their navigation skills they successfully found the registration desk but extra-time penalty points were almost awarded to "U-Turn" and "Hobbles" for missing the parking lot entrance.

DART's lead car, piloted by "Powershift" and navigated by "Hotrod", was closely followed by "STP" and "Tornado" in the YELLOW STREAK. Anchoring the team were "U-Turn" and "Hobbles" in the BLUE BOMBER. After two and a half hours of treacherous roads in the wilds of Brampton, attaining speeds of 60 km per hour (except "STP", of course, who approached c), DART scored very well, placing 4th, 5th and 7th. DART plans to improve on this record as soon as we can pry "Tornado's" fingers loose from the dashboard of the YELLOW STREAK.

DART

NIGHTS OF DOUBT AND SORROW

Through the night of doubt and sorrow
Onward goes the pilgrim band
Counting photons - Oh, so slowly
On the fingers of one hand

-- Old English Hymn (mostly)

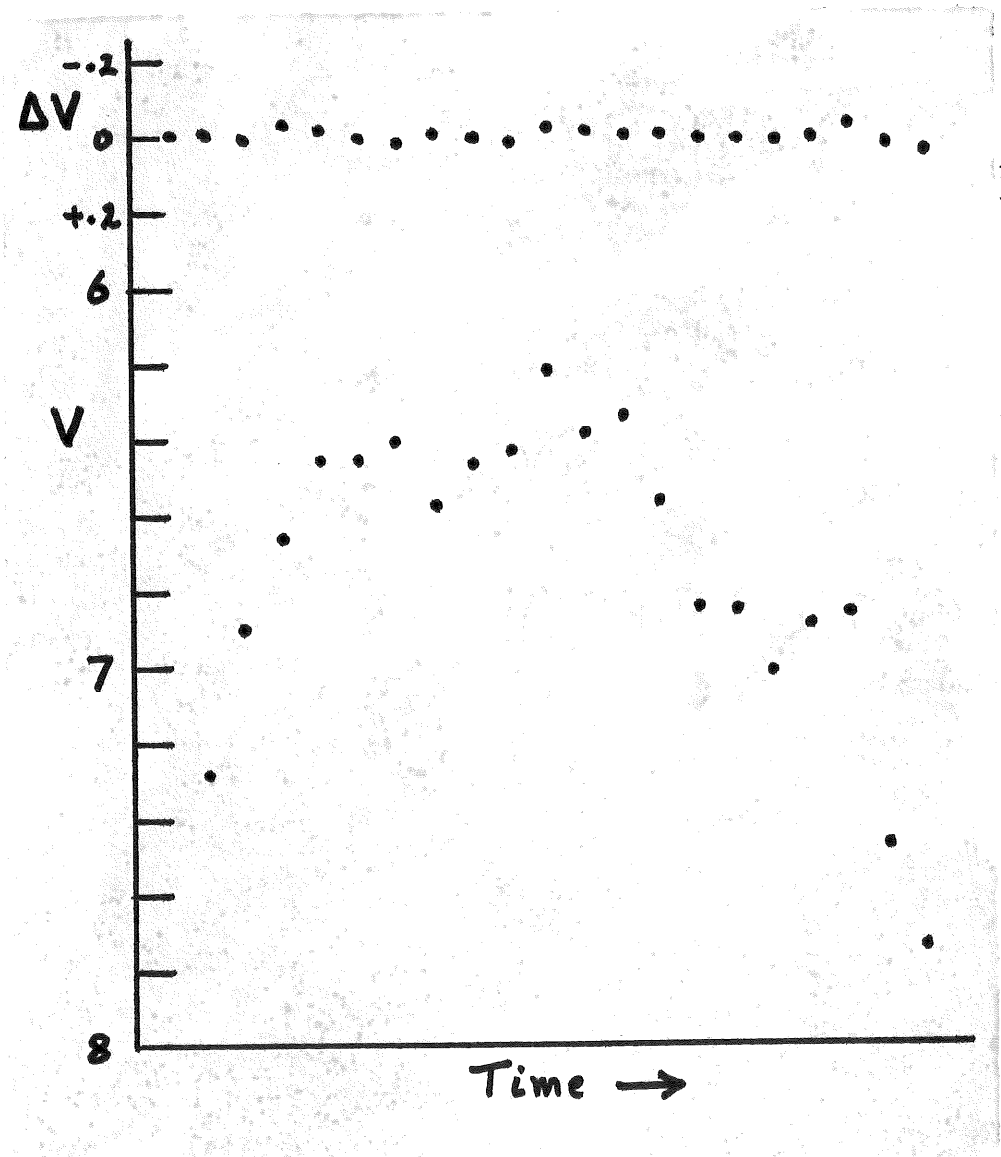
Most people, of course, have more sense than to do photoelectric photometry at all. But among those who do, the majority will try and avoid having to do it on a telescope 50 years old. Still more will decline use of a 100 year-old telescope, and when it comes down to asking who would do photometry with 50 year-old and 100 year-old telescopes together, the population must surely be down to one - me!

Which brings us to those nights of doubt and sorrow. While these may constitute most of an astronomer's nights, there are some more evocative of doubt and sorrow than others. You know what I mean. It is the night your binary is going into its once-a-century eclipse, the sun has set on a sky of the most incredibly clear empyrean blue, the equipment is stable to a zillionth of a magnitude, your fingers twitch in anticipation. And then, slowly out of the northwest, comes creeping like some inexorable slime in a sci-fi movie a great sea of high thin cirrus.

What you need on those all-too-frequent occasions, primal screaming apart, is a second channel to monitor the sky transparency while the first channel whacks away at the binary. But they must work in unison, not merely consecutively. The idea isn't new, of course. Quite a few enthusiasts have built photometers with fancy little mirrors in them that grope after nearby comparison stars, but these have their problems.

An alternative is to use another telescope/photometer altogether as the second channel. This has not been much tried, no doubt because not many observers happen to have a couple of nearby telescopes handy. But at the DDO we do. The only question is how far apart can the telescopes be (or the variable and its comparison) and still allow good results? Last summer I decided to put it to the test.

For one telescope I used the 19-inch, for the other the 6-inch. You raise your eyebrows at the latter (not to mention the former), but it has one inestimable advantage over the 24-inch - there are no damned spectroscopists lurking in the woodwork to pop out and demand their pound of flesh on non-photometric nights! So it was the 6-inch, with a little DC photometer incongruously strapped to its tail, and a bloody long wire running across the roof to the 19-inch where, push-button in each hand, I could triumphantly start the integrations together.



The results surprised even me. The figure shows them for one gorgeously horrible night that would have made even a spectroscopist whimper. Great smeary clouds were roaring over in rapid succession. In the upper part of the figure you see the difference between the outputs of the two photometers, in the lower part the output of one photometer alone. The former is constant to around 0.03 mag., the latter varies by nearly 2 mag.

Now let me admit to just a teensy bit of cooking here. (Massaging the data, as they say these days.) In the original figure the upper part, while smooth, had an unpleasantly significant slope to it. Naturally, like any self-respecting photometrist, I at first cursed out the DC electronics for its drifting,

but it turned out in the end to be a sky-brightness problem. When great grisly clouds come overhead here the city lights bounce off them like sunshine off a Caribbean beach, and the background level can easily change by a factor of five. The available DC system really couldn't handle it properly, but sporadic background measurements and just a leetle not-too-wild extrapolation got rid of that slope. So lesson one is that a rapid chopping photometer is called for.

Well, the 6-inch is a dandy little thing, and its gravity drive and vernier circles no doubt the pride and joy of 1880, but by modern standards it does leave just a little to be desired. After the initial tests it became clear that if one was to go so far as to get actually useful results, one would have to brave the spectroscopists of the 24-inch after all.

The results were again fine, and I routinely got differences of around 0.01 mag (even for stars up to two degrees apart) when the sky was changing by tenths of a magnitude. But lesson two now became crystal clear: do you know what it's like to run up and down those stairs to the 24-inch literally every ten seconds to change filters? My God, even at Vic Tanny's they don't torture you like that! After a few cycles one was left limp and glassy-eyed, saving the last gasp to clutch weakly at the filter button.

So it's a great system, and could really double the number of nights (God and the spectroscopists willing) on which we do photometry here, but one needs properly designed chopping photometers automated under computer control so the observer can sit back and puff his pipe while filters click away in distant domes.

That's a bit expensive, so I've written away to the chaps at NSERC to see if they can find some money for it. If they can, who knows, we may have to restore that fine old English hymn to its original version:

Through the night of doubt and sorrow
Onward goes the pilgrim band
Singing songs of exultation
Marching to the Promised Land.

Don Fernie

CFHT NEWS

The big news about Canada's great big eye is of course the official dedication on September 28.

The telescope looked gorgeous with a barely-dry coat of yellow paint. There it was, festooned with three of the longest lei ever seen, and set off with a huge bank of brilliant Hawaiian flowers. It was serenaded by four anthems under four flags - and there followed a number of appropriate speeches.

Many of the guests looked with awe at the prime focus cage perched so high up in the dome, and were properly impressed when the great mass dipped and turned so rapidly yet so noiselessly.

The CFHT staff saw to it that the occasion went off without a hitch but no doubt they were glad to get back on the job of tuning up the telescope for serious use, next January if possible. We saw some very promising photographs taken by Bruce Campbell. For the record we note there that the first CFHT photo, featured on last month's issue of DDD, was taken by our alumnus, Rick Salmon, now on the CFHT staff.

Don and Yvonne Fernie were on hand, the Canadian news media were represented by one of the editors of DDD, and Bob Garrison was there as well. Prof. Boris Stoicheff from the Physics Department represented the National Research Council (in addition to Dr. Schneider, of course). rG and MR stayed on to attend meetings of the SAC and the Board, but Don and Yvonne went off happily to visit another island ....

MR

COMINGS AND GOINGS

William G. Weller took up his position as a Reinhardt research associate on November 1. Bill comes to us from York University where he has been finishing up his Ph.D. thesis on the application of a SIT Vidicon spectrometer to observations of southern emission line stars. He used the U. of T. Las Campanas 24-inch for these observations. Lately he has also been closely involved in the design and construction of a slitless spectrometer with CCD detector. The latter device was flown on a rocket from Red Lake, Ontario, at the time of the solar eclipse of February 26, 1979.

P O T P O U R R I

Congratulations to *Kathleen* and *Karl Kamper* on the birth of a son (7 lbs. 9 oz = 3.43 kg) on September 16. Karl says he resisted the temptation to call the little fellow "Toronto" and that they chose instead *Brendon David Kamper*.

Congratulations (of another sort!) to *Chris Corbally* who passed his Oral General Examination on September 13. Shortly thereafter, Chris embarked on a 3-week observing trip to Chile. He had four nights on the Curtis Schmidt at Cerro Tololo (and reports that it still has some undiagnosed malady) with the rest of the time on the U. of T. 24-inch at Las Campanas. The weather was very unsettled ($\sim$ 65% of the time usable) after a cold dry winter. Chris reports a very impressive rainbow arching over the dome of the 24-inch on October 12.

Tom Bolton and *John Lester* spent 7-14 September at the Goddard Space Flight Center using the I.U.E. satellite to make high-dispersion observations of the OBN/OBC stars. John reports that everything went quite well - even the Sun cooperated by turning down its activity so that they could make exposures of up to an hour during the high-background shifts. In all, they did 26 of the 28 program stars not obscured by the Sun and for the remaining ones they can use existing observations.

Don Fernie has accepted President Ham's invitation to serve on the University's Research Board for a 3-year period.

Mario Pedreros has submitted his M.Sc. thesis in time for fall convocation. The title of his study is "Metric Properties of the Inner Ring Structures of Galaxies". Barry Madore was the thesis supervisor.

Don Fernie and *Bob Garrison* attended a meeting of the Associate Committee on Astronomy in Ottawa on September 17.

On October 19, *Barry Madore* was in London, Ontario to give a talk to the RASC Centre. The topic was "Peculiar and Interacting Galaxies".

Ernie Seaquist gave a talk on SS 433 to the astronomy group at Queen's on October 30.

Joan Tryggve recently had a phone call from Nancy Gorza, *Walter Gorza's* wife, who was on a visit to their old haunts here in Toronto. Walter worked with Jack Heard and took his M.Sc. in 1970. He left to become a teacher in New Zealand not long afterwards, and sends word that everything is going very well. His address is 33 Seddon Crescent, Grisborne, New Zealand.

Bob Garrison is building a pocket spectrograph. Designed for classification work, it will be easy to carry and compatible with f/ratios at both DDO and CFHT prime foci. He hopes to have it ready in the early months of 1980. Quite possibly it will be the first spectrograph to be used on the not-so-pocket telescope on Mauna Kea.

HANDS OFF?

The following directions, verbatim, are to be found attached temporarily to the weather radio receiver in a certain staff member's office at DDO:

NOTE: Power switch on bottom is off. To operate turn power switch off and depress bar.

IMPORTANT: Turn power switch off after using until I return from holiday. Thanks.

We think he <u>needed</u> a holiday.

PAPERS SUBMITTED

A. Arellano Ferro and R.F. Garrison	*On the λ4430 Interstellar Band: A Visual Classification*
P.P. Kronberg et al	*The Discovery of Possible Giant Radio Structure of the D2 Radio Sources 3C273, 3C293, 3C380, 3C345 and in the Field of 3C454.3*
P.P. Kronberg and P. Biermann	*A Study of the Radio Structure of the Nucleus of NGC 2146*
J.R. Percy	*Recent Theoretical Results for Delta Scuti and Dwarf Cepheid Variables*
H.S. Hogg and A. Wehlau	*The Variable Stars in the Globular Cluster NGC 6934*
J.R. Percy	*The Teaching of Astronomy in Canadian Schools*
C.W. McAlary and R.A. McLaren	*Infrared Spectrophotometry of SS 433*
C. Corbally	*A Solar Flash Spectrum for 26th February, 1979*
W.L. Freedman and B.F. Madore	*Concerning the Global Distribution of Gas in the Galaxy*
B.F. Madore and J.D. Fernie	*Concerning the Incidence of Duplicity Among Cepheid Variables*
D.G. Turner	*Association Membership for the 20 Day Cepheid RU Scuti*
D.G. Turner	*An Investigation of the Zeta Geminorum System*

COLLOQUIA *

November 7	Sun Kwok, Herzberg Institute of Astrophysics "Mass Loss From Late-Type Stars - Its Significance and Implications"
November 14	Chris Corbally and Chris McAlary, University of Toronto G-2000 Current Literature Seminar
November 15 (Thur.)	Joseph Veverka, Cornell University "Jupiter and Its Satellites - A Voyager View" (Joint Astronomy-Physics, Room MP 102, 4:10 p.m.)
November 21	Donald MacRae, University of Toronto "The OHP CORAVEL, a Superb Radial Velocity Device"
November 28	T.B.A.
December 5	Ermanno F. Borra, Université Laval "The Magnetic Field Geometries of the Peculiar A,B Stars"
December 6 (Thur.)	John Reynolds, University of California, Berkeley "Isotope Anomalies in the Early Solar System" (Joint Astronomy-Physics, Room MP 102, 4:10 p.m.)
December 12	Armando Arellano and Chris Rogers, University of Toronto G-2000 Current Literature Seminar

* Unless otherwise noted, colloquia are held on Wednesdays at 4:00 P.M. in Room MP 137 with TEA at 3:45 in the Reference Room, MP 1404.

FROM THE MAILBAG

OFFICE OF THE
VICE-PRESIDENT AND PROVOST

UNIVERSITY OF TORONTO
TORONTO, ONTARIO M5S 1A1

September 10, 1979.

M E M O R A N D U M

To: President J.M. Ham,

From: Dr. D.A. Chant, Vice-President and Provost.

The attached re the C.A. Chant Estate is self-explanatory and I will appreciate your authorizing signature.

May I remark that though Professor Chant and my father were acquaintances there is no family relationship that anyone has been able to determine. In the early 'thirties,' my father sometimes received midnight 'phone calls about new comets, while C.A. Chant sometimes got calls from incipient suicides. Somehow they managed to sort it all out!

D. A. Chant

cc: Ms. Isobel Robertson,
Dean A.M. Kruger,
Professor J.D. Fernie.✓