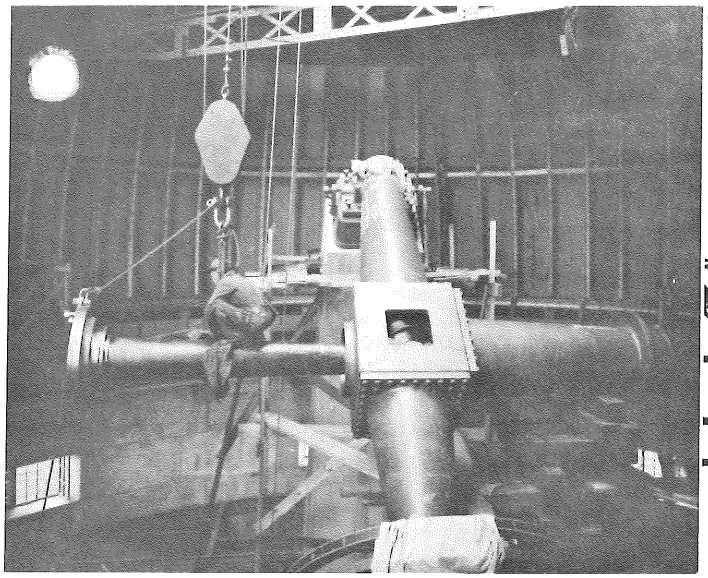
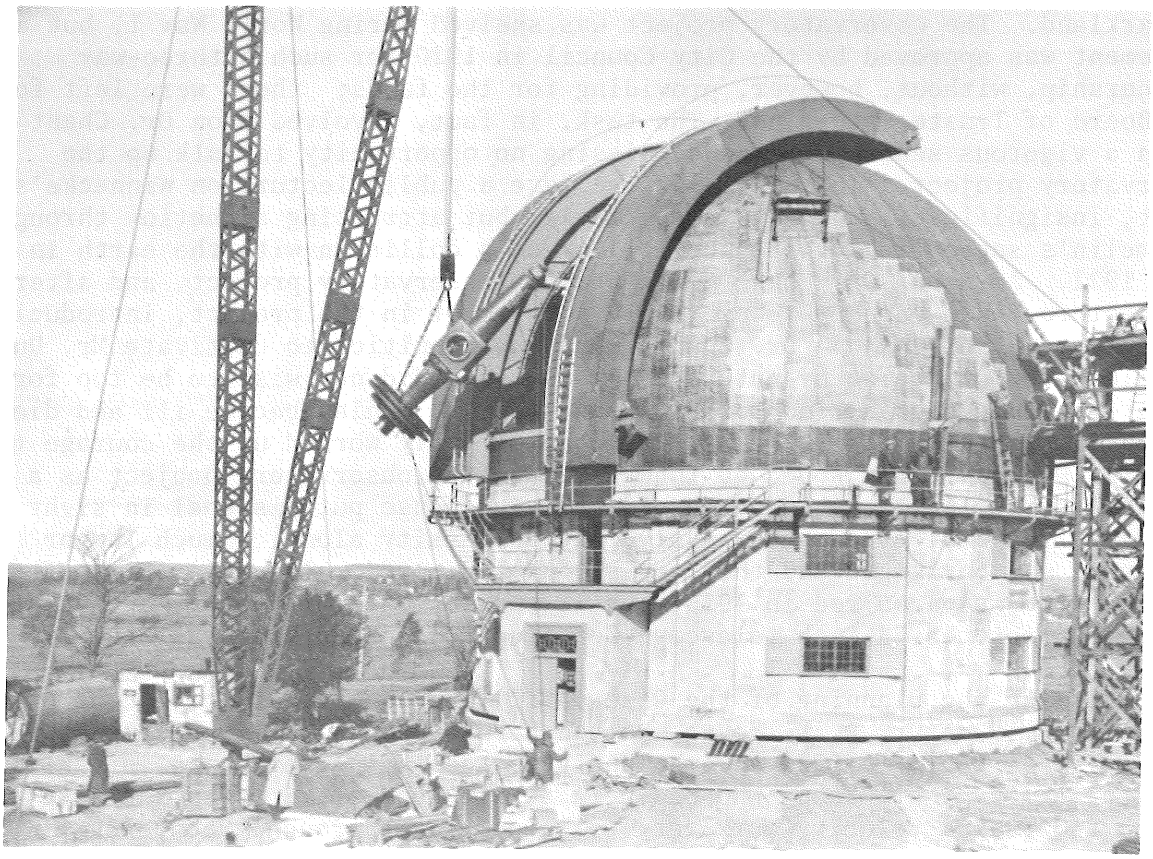
1975: 40TH ANNIVERSARY YEAR OF THE DDO.



# DAVID DUNLAP DOINGS

VOL. 8, NO. 2 FEB. 25, 1975



The polar axis (above) and the declination axis (upper left) were installed on October 23, 1933, and the 74-inch mirror, taken into the dome (upper right) on May 2, 1935. Standing beside Helen Hogg are Edna Fuller, the Observatory's first secretary-librarian, and a University policeman. At the left is Mr. Shortreed of the Superintendent's Office who later became Superintendent at U.W.O.

# EDITORIAL

## The Conception and Construction of the Observatory

These are not my recollections, since I did not arrive on the scene until May 7, 1935, when the buildings were completed and the 74-inch mirror had been lifted into the silvering room as shown on this month's cover. Rather, what I have set down here is condensed from Dr. Chant's Autobiography, part of which was printed in booklet form as "Astronomy in the University of Toronto" by the U. of T. Press in 1954.

A Toronto Observatory had been Dr. Chant's dream from the earliest years of this century. For some time his dream took the form of a three-way partnership among the University, the City and the R.A.S.C. In fact, in 1913 a virtual agreement was reached for the University and the R.A.S.C. to build an observatory on 14 acres of land on the east side of Bathurst Street half-a-mile north of St. Clair Avenue. This land had been bought by the City in 1911 for an isolation hospital, a project soon abandoned as a result of a storm of protest by the citizens of Forest Hill. The land then was declared as parkland. The observatory project was shelved during World War I, but an agreement was approved by the City Council in 1920 for such a three-way partnership, without, however, providing for the funds; these were left for the Board of Trustees to find. The task, in fact, devolved upon Dr. Chant who began a vigorous search for funds, missing no opportunity to talk up the observatory project. In May of 1921 he gave a public lecture on Winnecke's Comet, insignificant enough as a spectacle, but attracting attention through Crommelin's suggestion of the possibility of a collision with the earth in June 1921. As usual Dr. Chant mentioned his observatory project, and after the lecture a man came up to express his interest in the project, introducing himself as David Dunlap. Dr. Chant found opportunities to cultivate Mr. Dunlap's acquaintance but, being by nature a shy man, he "did not wish to be too forward to take advantage of a kind word". Meanwhile Mr. Dunlap became ill and died in 1924. It was not until 1926 that Dr. Chant finally worked up the courage to ask Mrs. Dunlap if she would be interested in the observatory project as a memorial to her late husband. Her friendly response put his goal in sight. Gradually the project came to involve the University alone, a much larger telescope was envisaged and the city site was dropped. The major part of the present site was acquired in 1925, but it was not until 1930 that a contract was signed for the 74-inch telescope. Construction on the site was begun in 1932.

During the planning of the Observatory and the 74-inch telescope Dr. Chant relied heavily on Dr. R. K. Young who had been on an Australian eclipse expedition with him in 1923 and who had accepted an invitation to join him at Toronto in 1924. Dr. Young who had been at Lick and at Victoria knew big telescopes and radial velocity work very well, and was thoroughly competent in

matters of design and testing. With help only with the castings, it was he who built the 19-inch telescope in a basement room in Baldwin House and mounted it in the south dome of the new Administration Building.

As Dr. Chant continued to build his staff for the observatory and the expanding Department, Peter Millman became the next appointee (in 1933). Coming from Harvard where he had done his thesis on meteor spectra, he brought with him an intense interest in meteor research which he pursued vigorously along with the share in stellar spectra observing and measuring which was expected from all of us once the 74-inch was in operation. The next appointee was former Toronto student Frank Hogg who had obtained his Ph.D. at Harvard in 1929 and had been on staff at Victoria since 1931. Frank and Helen arrived in January of 1935, lived until May in an apartment in the city then moved to a rented house on the Yonge Street property where Wimbridge the cleaner now is.

We are sometimes asked the original cost of the Observatory. Piecing together the information in Dr. Chant's little book it seems to work out as follows:

| | |
|---|---|
| The original 123 acres | $28,000. |
| 55 additional acres to the north (Dr. Chant later bought & donated 12 acres to the south) | 13,750. |
| The Administration Building | 109,160. |
| The dome for the 74-inch | 59,000. |
| The 74-inch telescope | 112,500. |
| The Hilger spectrograph | 4,000. |
| The water supply | 15,000. |
| Remodeling Observatory House | 11,200. |
| Total | $352,610. |

I don't think this included furnishings, and no doubt there were extras - there always are. Still it sounds like a bargain until you begin to compare other prices with present ones: rent of an eight-room house $30, meat 15¢ to 25¢ a lb., starting salary for a Ph.D. $1620. A factor of ten would seem to be reasonable for most of the items - except for the land which looks more like a factor of 100.

J.F.H.

## COMINGS AND GOINGS

Robert Roeder was in Halifax Feb. 13-14, speaking to the St. Mary's University Physics Department and the Nova Scotia Institute of Science on "Cosmology" and "Black Holes, White Holes and Worm Holes". He also spoke on the latter topic to the Department of Astronomy of the University of Western Ontario on Feb. 20.

Staff and students attending the Seventh Texas Symposium on Relativistic Astrophysics in Dallas on Dec. 16-20 last were: Tom Bolton, Maurice Clement, Serge Pineault and Steve Shore, as well as those listed last month.

Helen Hogg and Jack Heard were in Ottawa Feb. 6-8 attending committee and Council meetings of the Royal Society of Canada.

René Racine and Philipp Kronberg were in Ottawa Feb. 17-19 for meetings of the NRC Grants Committee.

Tom Bolton who gave a joint colloquium (with Physics) Feb. 13 on "The Nature of the Non-Pulsating Binary X-Ray Sources", gave the same talk at the University of Toledo on Feb. 20.

## SEMINARS

FEBRUARY

As announced with these additions:

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| Tues. 11th<br>DDO | Maurice Clement on "Highlights of the Dallas Symposium" and Philipp Kronberg on "Radio Observations of M 82". |
| Tues. 25th<br>DDO | Dr. H. van der Laan, Institute of Advanced Study (Princeton) "Leiden-Westerbork Investigations of Peculiar Radio Galaxies". |

MARCH

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|---|---|
| Tues. 4th<br>DDO, 4 p.m. | David N. Fort (M.Sc. 1969), Astrophysics Branch, N.R.C., "Long Baseline Observations of 3C273 and NGC 1275". |
| Tues. 11th<br>DDO, 4 p.m. | To be announced |
| Tues. 18 or 25<br>DDO, 4 p.m. | Dr. G. Rybicki, Centre for Astrophysics, Cambridge, Mass. Title to be announced. |

Plan to attend Apr. 3, Thurs. (Joint with Physics) Dr. Morton S. Roberts, NRAO; Apr. 8, Tues., Scarborough, Owen Gingerich, Cambridge, Mass; and Apr. 15, DDO, Dr. W. Duley, CRESS.

*PAPERS SUBMITTED IN FEBRUARY*

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|---|---|
| *K. Lake & R. Roeder* | *Generalized Frequency Shift Associated with Tachyons and Antiparticles.* |
| *R. Roeder* | *The Significance of the Angular Diameter-Redshift Relation.* |
| *R. Deupree* | *On Shallow Convective Envelopes.* |
| *D.A. MacRae & A. Gulliver* | *Nineteen New Peculiar A Stars.* |
| *S. van den Bergh* | *Discovery of Herbig-Haro Objects by (S II) Interference Photography.* |
| | *The Nature of Quasars.* |
| *Wm. Harris* | *New Colour-Magnitude Data for Twelve Globular Clusters.* |
| *P. Martin* | *On the Kramers-Kronig Relations for Interstellar Polarization.* |

## P O T P O U R R I

### President's Visit

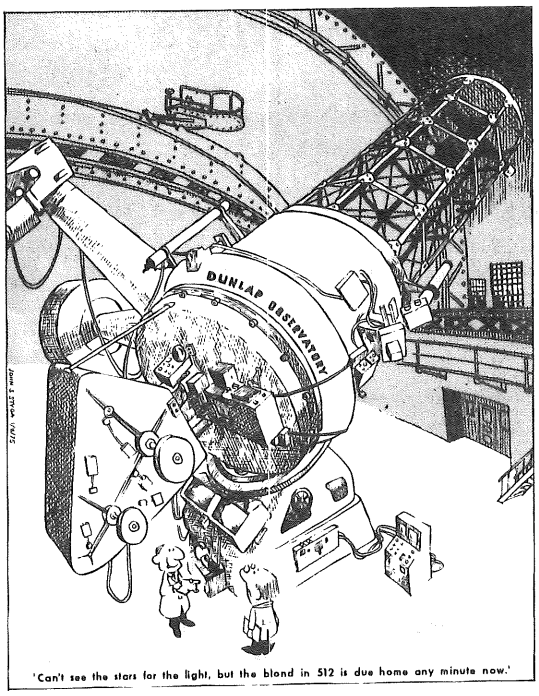
President John Evans visited the Department for two hours on Jan. 30. At the President's request the visit included teaching and support staffs and students and took a very informal form, everyone bringing a sandwich to our 15th floor lounge and sharing the coffee made by Esther and Elizabeth and the homemade cookies brought by Helen Hogg. Dr. Evans talked about the problems facing the University and his aspirations for the improvement of teaching and scholarship despite these problems. He invited comments about our problems and aspirations and appeared to be favourably impressed by what he heard from us. Though this sort of thing can't happen frequently between Department members and President, it struck the older ones of us as a welcome return to the informal relations which existed when the University was much smaller.

### School Liaison (by John Percy)

Our school liaison programme is off to a good start this term. On Feb. 6, I gave a guest lecture (on "Light Pollution") to the Physics specialists at the Faculty of Education. Later the same day, I conducted the first of five half-day workshops (on "Astronomy for Elementary Schools") for teachers in different parts of Metro Toronto and vicinity. On January 22, I was one of several Erindale College faculty who met with teachers from Peel County to develop a school liaison programme, and on January 29, I gave a talk (on "Astronomy") to about 60 students at Western Technical School. Also, the latest issue of the Journal of the Science Teachers' Association of Ontario contains an article on "Light Pollution" written by me, with Tom Bolton's help.

## DDO Cartoon

The local weekly, the Richmond Hill Liberal, carried this large editorial cartoon in the issue of February 13. We enjoyed the good-natured reference to our anti-light-pollution campaign and we congratulate cartoonist John Styga of Aurora on his accuracy and attention to detail. The cartoon is reproduced here in reduced size with permission of the Liberal.




## Violence Comes to the Observatory (well, nearly)

Bob Garrison's son Lee has an after-school job minding a Snap Shot Photo booth at a shopping plaza. On Feb. 10 a nervous-acting character approached Lee's booth with a paper bag in his hand, said it contained a gun and demanded the cash. Lee wisely complied and then was told to rip off the phone cord. As soon as the hoodlum had gone Lee ran to a nearby shop and phoned police but the thief eluded them. Lee spent an hour or two examining mug shots at the police station but found that after ten minutes they all looked alike.

## Tom Bolton on Science Magazine

A few weeks ago a crew from Dr. David Suzuki's TV show, Science Magazine, spent a half day shooting and taping Tom Bolton on the subject of Black Holes. First scheduled for a March screening, it was advanced to Feb. 17 under the title,

we understood, of "Dead and Dying Stars", in combination with some footage obtained in England with Jocelyn Bell on Pulsars. So on Feb. 17 at 10 p.m. there we all sat in front of our little boxes. Came first the Alberta tar sands, then the threat to the Ozone from the spray cans, (and if it hadn't been for Prof. Alan Brewer of the U. of T. Physics Department I'd have given up at that point), but then came Jocelyn (very photogenic, by the way) and finally Tom. But guess who did give up (even before Alan Brewer), saying he was fed to the teeth with tar sands! Well, I promised not to tell, but it was a last December Sirgay Award winner.

Alumni

Anybody remember Ken McCullogh? He was around for a few years in the early 50's doing some make-up years towards graduate work, then went into the Meteorological Service and has been stationed at Baker Lake. He came down to the recent annual awards dinner of the Toronto RASC to get his Service Medal, along with his wife and little girl.

More of us will remember Fred Hickok (M.Sc. 1969). He married Helen, one of our more memorable assistant secretaries. They live in Cantonsville, Md. where Fred teaches astronomy in the Community College and Helen does full-time volunteer work at a cerebral palsy school. They have a foster child and are expecting a child of their own soon. Fred's father, Cliff, who is an oil geologist and solicitor for the Rockefeller interests, visited Toronto last week (as he often does) and entertained the Heards and some other of his friends at the Royal York.

Married

On Feb. 1 at St. Mary's Anglican Church, Richmond Hill, Dale Ogden of the Observatory secretarial staff and Kirk Douglas. The Observatory staff had a coffee party and presentation for the bride on Jan. 31. On their return from their wedding trip Dale and Kirk took up residence in a Willowdale apartment.

Papic, resident engineer on Las Campanas and invaluable to our observers in emergencies, was married on Feb. 22 to a beautiful 18-year-old girl from La Serena. His friends here have, with Betty MacRae's help as shopper, purchased an Eskimo carving as a wedding present.

Double Birthday

Staff and students had a coffee party in the library Feb. 19 to express birthday greetings to Librarian Ruta Caune and Director Don MacRae on the occasion of their common birthday. Nicholas Copernicus was also present, in effigy, to make a trilogy.

FINAL ITEM

Davey. II.

Today the big jets bring you in low over the white beaches of Mauritius, sweeping up the sugarcane-clad valleys and round the grey mountainsides, down to Port Louis. It is an island rich in history, even the history of the transits of Venus. For long before Lord Lindsay and Davey Gill were there, it, as the Isle de France, had been the base for Le Gentil's famous travels to observe the eighteenth century transits.

The mountains are steep, often covered in cloud, and Lindsay's expedition, located on one of the lower slopes, was lucky to have clear weather that December 8, 1874, to observe the first of the nineteenth century transits. But the clouds did spoil some of the observations by which Davey was trying out a new method for getting the solar parallax.

Gill, in fact, was trying two innovations. He was returning to the idea of a direct trigonometric parallax determination, but based on a minor planet rather than a major planet, since minor planets had now been found which came closer to the earth than any major planet. Secondly, rather than sending two or more observers to remote regions of the earth to form the necessary baseline, why not save expense (he was after all Scotch) and avoid problems of personal equation by merely letting the rotation of the earth carry a single observer around in the course of a night to form a baseline of thousands of miles? He put the method to the test by using the heliometer on Juno, although the cloudy weather reduced the many observations he had intended making to a mere handful. Nevertheless, his result of 8".77 was more accurate than that of 8".85 which emerged years later from the enormous international campaign for the 1874 transit of Venus (the answer we now know to be 8".794...). Davey was embarked on one of the three great contributions of his professional career.

The second of these began on the way home from Mauritius, when the Khedive of Egypt invited Gill to organize and begin a geodetic survey of that country. It was a mark of Davey's character that he acquired a remarkable catholicity of close friends, and it was while he was slaving over dusty baselines in the desert that he made a friend of that strange mystic, General 'Chinese'Gordon, later to be so brutally murdered at the hands of the Mhadi during the siege of Khartoum. But Gill's greatest geodetic work lay in the future at the other end of Africa.

Back home in Scotland with Isobel, Davey began to lay plans for his further pursuit of the solar parallax. In 1877 there would be a particularly close approach of Mars to the Earth, and Davey resolved to attempt his single-observer method again. However, in order to get as large a baseline as possible it would be necessary to make the observations from close to the equator, so Gill invoked the help of the Royal Astronomical Society in funding an expedition to the island of Ascension. This time Isobel would accompany him. Their experiences are informally documented in Isobel's little book "Six Months in Ascension", a charming volume full of delightful

insights into the way in which the Victorians viewed the world around them. Davey, incidentally, contributed an introduction that is one of the best histories of solar parallax determinations up to that time.

There was a near-disaster right at the start, when Davey was making a last-minute check of the sacred heliometer (loaned by Lindsay) in the rooms of the RAS. The instrument was accidentally knocked off its base, and only by a miracle suffered no major damage in falling to the floor. Not that they didn't have back-up; Isobel tells us that their equipment "made up about 20 tons measurement of baggage", but the heliometer was the heart of it all.

It was a leisurely voyage out, visiting Teneriffe, where their old friend Piazzi Smyth had made astronomy's first real infrared measurements, then down to St. Helena, where they located the ruins of old observatories (those of Halley, Maskelyne, and Johnson) and reflected at Napoleon's grave. Isobel's description of life there would as well fit the St. Helena I visited in 1958, the quiet dignity of a forgotten corner. But then it was aboard another ship and back north to Ascension.

There was no harbour, and getting ashore meant going in on a lighter handled by skilful (one hoped) Kroomen, who brought the little boat right under the towering rock face. Then, as the enormous swells of the South Atlantic crested, the Kroomen shouted, and one leaped desperately for the slippery steps cut into the rock. Isobel noted that Davey seemed to worry more about the equipment than about her ("I wished myself a chronometer...."), but she was soon up the steps and staring about aghast at the "abomination of desolation" that was to be their home for the next six months.

Ascension was part of the bric-a-brac of the British Empire, acquired solely to deny any possible French rescue mission a base for access to St. Helena. By the 1870's it was a coaling station, run by a small garrison of the British Navy strictly as a ship; its population in fact appeared on the books of the Admiralty as the 'crew of the Flora Tender', thus permitting the administration of that lifeblood of the British Navy, the daily tot of rum. Naval parlance was de rigueur, and Isobel soon learnt to speak of getting dinner 'under-weigh' in the 'galley', and so forth. The presence of women was the main anomoly, and on occasion this called for Solomon-like wisdom on the part of the Captain. Isobel relates how two officers' wives became embroiled in a bitter feud over who had the senior social rank and was thus entitled to a pew in front of the other in church. The Captain, called upon for a decision, reflected, and then pronounced that age would have to take precedence: "Let the younger lady give way to the elder!" The following Sunday both ladies were firmly esconced in the last pew.

The Captain was most courteous towards the Gills, providing them with help, and they and their 20 tons of baggage were soon set up in a cottage just outside the little village. The Captain even graciously permitted the erection of Davey's observatory on the garrison's croquet 'lawn', actually an expanse of powdered lava, for there was no greenery anywhere to be seen, and exempted them from the ship's rule of lights-out at 10 p.m., "no doubt",says Isobel, "on the ground that an astronomer, being a species of lunatic, is not amenable to laws". There were a few contretemps,

and we sympathize with the Victorian gentlewoman's horror at finding what difficulty there was in hiring even the bare minimum of two servants "to wait at table". There was the strict water rationing (much of the cooking was in seawater), and milk, meat, and vegetables ("potatoes at 4$^{d}$ a pound!") were a sometime thing. Only fish and turtle were plentiful, while the bread provided by the Ship's Canteen was best used for fishbait - if you had the strength to break it.

Yet "somehow it all came right; and sitting after sunset in the verandah which looked upon the croquet lawn, we could think of nothing but the beauty of the heavens. The stars shone forth like living fire, Jupiter blazed in the intense blue sky now guiltless of cloud, and later, thrown across in graceful splendour, the Milky Way seemed like a great streaming veil woven of golden threads and sparkling with gems."

Isobel had a way with words; her descriptions were rather different once the troubles began.

J.D.F.