



EDITORIAL

The Radcliffe Observatory 1772-1972

There has recently come to the library a copy of a 56-page booklet commemorating the bi-centenary of the Radcliffe Observatory. Unhappily, it also sounds the death knell of this famous observatory. It is now on lease to the Science Council and presumably in 1974 when the lease expires it will cease to exist, with the sale of the 74-inch to the Council, the retirement of Dr. David Thackeray as Radcliffe observer and the proposed removal of the telescope to a superior site at Sutherland in Cape Province. Inability of the Radcliffe Trust to provide the necessary funds for continuance is given as the reason.

The Radcliffe Observatory, originally at Oxford University, owes its existence and its name to Dr. John Radcliffe, a famous and eventually wealthy physician who practised in London between 1684 and 1714. By his will he founded two medical fellowships and left Oxford £40,000 for a library, certain extensions to his College and "charitable purposes" at the discretion of his Trustees.

Thomas Hornsby, Savillian Professor of Astronomy at Oxford, in 1768 conceived the idea of appealing to the Radcliffe Trustees for funds to build and equip an Observatory. His appeal was successful; he was appointed first "Radcliffe Observer", the first instrument (an eight-foot transit) was delivered in 1772, observations (of star and planet positions) were begun in 1774, and the building itself was finally completed in 1793. Hornsby was succeeded by Robertson & Rigaud, the three having bequeathed well over 100,000 observations (never published) to their successors.

The choice of Rigaud's successor involved a disagreement between the University and the Radcliffe Trustees which resulted in the separation of the posts of Savillian Professor and Radcliffe Observer

so that, commencing with the appointment of Johnson to the latter position in 1840, the Savillian Professor was specifically prevented from being Director of the Radcliffe Observatory. Succeeding Radcliffe observers were Main, Stone, Rambaut and (in modern times) Knox-Shaw. It was Knox-Shaw who engineered the move of the Radcliffe Observatory to South Africa in the 1935-48 period -- a move which was first agitated by Astronomer Royal Sir Frank Dyson and supported by Eddington, Plaskett, de Sitter and Shapley, and opposed by Lindemann and Einstein.

The Oxford site of the Observatory was to be purchased from the Trustees for the purpose of extending the Radcliffe Infirmary at a price which would build and equip the new Radcliffe Observatory at Pretoria. The time set for vacating the old site was June 1935. Dr. Frank Hogg, who visited Oxford at about this time, used to paint a vivid word-picture of the feverish activity of the astronomers attempting to complete second-epoch proper motion observations with the steam shovels snorting impatiently at the edge of the property.

Difficulties beset the installation of the 74-inch telescope (the first successor to ours in the famous Grubb Parsons line of two-metre reflectors). The casting of the mirror blank at Corning failed twice and the eventual blank reached Newcastle only in 1938. Then the outbreak of war in the following <sup>year</sup> required the burial of the partially figured disk under sandbags until 1945. Eventually in 1948 it was completed and installed. Meanwhile, however, Knox-Shaw and his assistant, Redman, did valuable photometric work with the 7-inch finder and a pair of borrowed photometric cameras, both mounted on the empty 74-inch tube.

Upon the retirement of Knox-Shaw in 1951 David Thackeray was appointed last (as it turns out) Radcliffe Observer. The success of his work and that of his assistants, Michael Feast, and A. J. Wesselink and a succession of visiting astronomers is well known to readers of modern astronomy. Among the visiting observers at Pretoria were Canadians Crampton, Fernie, Hube, Hutchings and Sher, while Joan Hube is listed as a one-time computer.

It surprised me to read that the average annual number of clear dark hours at Pretoria has been 2400 - exceeding those of the California sites. And it calls for admiration of the small staff to realize that frequently three and sometimes even two observers have maintained the observing as well as their own other research efforts over long periods of time.

We may well echo the stiff-upper-lip final sentence in Sir Fred Hoyle's Introduction to the Bi-Centenary booklet, commenting on the decision to wind up this famous observatory: "The situation, although dictated by objective facts, is one that cannot fail to arouse an accute regret."

J.F.H.

## OBSERVING

### At Las Campanas

Dr. Walborn had a successful summertime observing run on Las Campanas during the second half of December. There were only about four cloudy hours during 14 nights on the mountain. Spectrograms with widening 0.8 mm (dispersion 112 Å/mm) were obtained of Wolf-Rayet and of stars as faint as  $B = 12.2$  in the Large Magellanic Cloud with Dr. Garrison's fine image-tube spectrograph. The exposure time is 30 minutes for  $B = 11.0$ . Also, spectrograms and short exposure photographs were obtained of the luminous central object in the Tarantula nebula, and of an object in the Galaxy which may be similar to it.

During the first half of January Rick Salmon observed on Dr. Hogg's globular cluster program. From Jan. 19-29 Dr. Racine has been observing with his photometer, and from January 30 to February 8 Dr. van den Bergh will be observing with the pulse photometer and the image-tube spectrograph. Dr. Racine has written that everything is in good order at Las Campanas.

### At D.D.O.

After horrible observing weather in December and early January there has been recent improvement. Dr. Ahern has his Fourier spectrometer working well and has been busy obtaining outputs from a series of standard stars. Dr. Roeder reports that Bob Hawkins' infrared photometer is also working well and that they are now ready for their photometric nights assigned in February.

## COMINGS AND GOINGS

Dr. Garrison visited the Hale Observatories Dec. 15-19 en route to Hawaii where he remained until Dec. 30, observing at Mauna Kea on ten nights - the first Canadian to observe there under the supposedly difficult conditions of high altitude. He found the observing conditions excellent and encountered only minimal discomfort from the altitude, and early in January was able to give a first hand account to the Associate Committee meeting to consider participation with French Astronomers in the construction and operation of a four-metre telescope there.

Dr. Roeder presented colloquia on "Two Cosmological Problems" at the University of Waterloo on Dec. 1 and at McMaster University on Jan. 17.

Attending the Sixth Texas Symposium on Relativistic Astrophysics in New York Dec. 18-22 were Drs. Bolton, Clement, Kronberg and van den Bergh, as well as students Bob Chambers, Martin Duncan, Charles Dyer, Dave Hanes, Serge Pineault, Chris Pritchett and John Roger.

Dr. van den Bergh and Dr. Christine Coutts attended the AAS meeting at Las Cruces, N. Mex., Jan. 9-12, Dr. van den Bergh presenting a paper on "Resolution of one of the Companions to M31".

Dr. van den Bergh also visited Cornell University Jan. 19-20.

Dr. Bolton spoke to the Hamilton Centre of the RASC on "Dead and Dying Stars" on Dec. 6, at Princeton University on Jan. 25 and the University of Illinois Jan. 30 on "Cygnus X-1".

Dr. Gregory gave a talk on "Recent Observations of Cygnus X3" at the Physics Department, U.B.C. on Jan. 8 and a talk on "The Possible Use of Radio Astronomy Techniques in Animal Tracking" at the Wildlife REsearch Branch, Ministry of Natural Resources, Maple, Ont.

Attending the NRC Associate Committee meeting in Ottawa on Jan. 4-5 were Drs. Garrison, Heard, Hogg, Kronberg and MacRae. At this meeting Dr. MacRae was appointed by NRC as a member of the Interim Board of Directors of the provincial Franco-Canadian telescope project and, as such, attended meetings in Paris Jan. 24-25 for purposes of negotiations.

#### SEMINARS

##### JANUARY

As announced except that Prof. Iwanowska's seminar scheduled for Jan. 30 had to be cancelled and is being replaced by a report on observing at Mauna Kea by Dr. Garrison.

##### FEBRUARY

- Tues. 6th  
DDO 4 p.m. Dr. R. B. Larson, Yale, "Spherical Models of Collapsing Protogalaxies"
- Tues. 13th  
DDO 4 p.m. Dr. D.A. MacRae "The Status and Future of Canadian Astronomy"
- Thurs. 22nd  
McL. 4 p.m. Dr. G.A.H. Walker, U.B.C. "Spectrum Variability in Stars and Galaxies".
- Tues. 27th  
DDO 4 p.m. Dr. Allen Yen, "Computer Techniques in Astronomy"

##### VISIT OF DR. IWANOWSKA

Dr. Wilhelmina Iwanowska, Director of the Institute of Astronomy at the Nicholas Copernicus University in Torun, Poland who during this month has been a guest of the Royal Astronomical Society of Canada, various local Polish community organizations and the National Research Council for a tour across Canada, visited Toronto Jan. 11 to 14. On the 12th she spent some hours here at the Observatory and was a guest of Dr. and Mrs. MacRae at a luncheon at Observatory House. In the evening she spoke to an audience of 200 or more at the Royal Ontario Museum, her title being "Mikołaj Kopernik i Nowoczesna Nauka". This meeting was

arranged by the Canadian National Nicholas Copernicus Quincentenary Committee, which has established, and is receiving contributions to, a fund to purchase a Harvey Richardson spectrograph for Dr. Iwanowska's telescope in Torun. Following her lecture she unveiled a portrait of Copernicus which was a gift from the Toronto Polish Community. On the evening of the 13th she was the speaker at a joint meeting of the RCI and the RASC in Convocation Hall on the subject "Nicholas Copernicus and modern Science. On this occasion she received from the Toronto Centre of the RASC and the RCI a cheque towards the spectrograph fund. Following her talk was a reception at the University Women's Club arranged by Dr. Hogg. Dr. Iwanowska continued her Canadian tour westward with stops scheduled for Winnipeg, Calgary, Victoria, Vancouver, Saskatoon and Edmonton. Earlier she had visited Halifax, Montreal, Ottawa and Kingston. She returns to Poland on Jan. 31.

#### PAPERS SUBMITTED FOR PUBLICATION

S. van den Bergh,	"An Atlas of Supernova Remnants" "Radio Astronomy as Seen from the Prime-Focus Cage"
Wm. Herbst	"Variable Stars Among CaII Emission Binaries"
J.D. Fernie	"Stellar Masses Derived from the Binary HD 217312"
S. van den Bergh, A.P. Marscher & Y. Terzian	"An Optical Atlas of Galactic Supernova Remnants".

#### LETTERS

Sir:

*It is both troubling and encouraging to see that your publication is expanding to become one of the great astronomical newspapers of our day: encouraging because the greatness of our institution can be communicated to more and more people and troubling because DDD is losing the personal touch and becoming as inaccurate as any major news publication. For example, I draw your attention to the report of the annual Christmas Countdown in D.D.D. 5, No. 12, 1 (1972). The correct singing parts in the barbershop quartet were Gretchen Hagen and Martin Duncan as tenors while Chris Pritchett and Bill Harris sang bass. Even graver, however, is the mention of Phil Teillet as triangle player instead of Mike Shara. That, most assuredly, is an affront to both of them.*

G. L. Hagen

Gretchen, greatness grovels under your scrupulous scathing scourge. (Ed.)

Dr. Percy has written some interesting news from Cambridge: Maire Percy received her Ph.D. at Fall convocation and will return to the Hospital for Sick Children next summer to work with Dr. Orange's group. John attended a two-day meeting on the RAS on "Astronomy in Ancient Civilizations", and another RAS meeting on "Optical Observations of X-ray Sources", and hopes soon to visit Herstmonceux, Bochum (Moffats and Sherwoods) and Louvain (to confer with Dr. van Hoof)

#### MISCELLANEOUS

Born To Dr. and Mrs. Anand, a daughter, "Shami", on Jan. 12 in Toronto.

To Dr. and Mrs. George (Ph.D. 1967) Mitchell, a daughter, on Dec. 5, 1972, in Halifax.

To DDD, on its fifth birthday, a column, "Final Item", fathered by J.D. Fernie, in this issue.

#### Resigned

It is with great sadness that we record the decision of Alice Kato to resign her position of Departmental Secretary to accept a position in the Youth and Recreational Branch of the Ministry of Communications and Social Services of the Government of Ontario, as of Feb. 2. Alice's six years with the Department have spanned a period of tremendous growth and development, and much of our success is owed to the calm efficiency and unfailing cheerfulness with which she ran the "downtown office". We thank her and wish her the success in government service which we are confident her talents will bring.

#### Appointments

Esther Salve, who has been assistant secretary in the Department for the past two months, will assume the position of Secretary vacated by Alice Kato, effective Feb. 5.

Dr. Phillip Gregory has accepted an appointment as Assistant Professor in the Department of Physics, U.B.C., as of July 1.

#### Bereaved

Kay Longworth, Gerry's wife, suffered the loss of her mother, Mrs. K. Evans, who died Jan. 17.

#### Moving

The Roeder family have sold their house in Leaside and bought one at 86 Felicity Drive, Scarborough. They will move about mid-February.

### Space Program

Dr. Roeder's program to observe Lyman alpha and CIV 1549 in the spectra of bright, low-redshift quasars and similar objects has been selected for early assignment of time on the International Ultraviolet Explorer Satellite which is to be launched in about 1977.

### Scarborough College

Drs. Kronberg, Martin and Roeder are engaged in planning an astronomical display at the Scarborough College Open House to be held on the first week-end in March.

### Departures:

Hugh Ross, having completed and successfully defended his thesis, is going to Cal. Tech where he will be a Post Doctoral Fellow.

Gordon Falconer, a first year graduate student is leaving because of personal reasons and is returning to Calgary.

### FINAL ITEM

Dr. Heard's recalling of historical anecdotes from time to time in the editorials of this newsletter has brought to mind that there exists a vast wealth of such material which most astronomers only rarely get to know about. More and more books on the historical aspects of astronomy are now becoming available, but with the literature in general expanding at a phenomenal rate, few of us ever have the time to dig into them. Within each of them, however, are usually a few gems that would be of interest to almost everyone.

I thought, therefore, and the editor concurs (without, I hope, too much trepidation), that it might be worthwhile to institute a short column in David Dunlap Doings in which to retell in a fairly lighthearted way some of the goings-on of our predecessors. I intend keeping the column short, because that's the only way anyone will read it, and will usually try to emphasize the anecdotal and human side of things. There will be no pretence at this being original historical research; in fact, many of the stories will be comparatively well-known to some of the old-hands. My idea is to make them available to the new-hands, and since the column will be brief I shall try to indicate where more details can be found for anyone who cares to go into it. Until I think of something better I shall simply call the column FINAL ITEM, because that's what it will be.

Since recent editorials have given prominence to the Transits of Venus, I thought I would begin with two or three columns on the human travails that went with early observations of those Transits. Here's the first!

## The Mason-Dixon Line, Captain Cook, and the Transits of Venus

Transits of Venus occurred in 1761 and 1769 and again in 1874 and 1882. Although all were avidly observed, those of the eighteenth century provided greater human interest, partly because it was much more difficult then to transport observers to and from remote parts of the world, and partly because the two major scientific nations of the world, France and Britain, happened to be at war with one another at the time.

One of the stations to be occupied by British observers was St. Helena in the South Atlantic. Initially the observers were to be Nevil Maskelyne, then a curate in a village church, although already known for his astronomical interests, and the assistant astronomer at Greenwich, Charles Mason. But then another station, Bencoolen in Sumatra, was added to the list, and Mason was offered the leadership of that expedition. As leader, Mason would be better paid and have an improved liquor allowance. He accepted. As his assistant the authorities selected a rather obscure land surveyor from County Durham in Ireland, Jeremiah Dixon, who according to one source had an unusual beginning in life by being born in a coalmine.

Mason and Dixon sailed for Sumatra on January 17, 1761 aboard a Royal Navy ship. Within hours their vessel was engaged in a short but violent battle with a French frigate, and within only a few more hours Mason and Dixon were trailing back to Portsmouth amid 11 dead and 37 wounded. A long voyage to Sumatra seemed rather less enticing even apart from the French, Mason complained of "the sea sickness (which) affected me in an Unusual Manner". In fact, their feelings ran so high that Mason wrote to the Royal Society "We will not proceed thither let the Consequence be what it will". Instead they thought to go to a station in Eastern Europe. The Royal Society, however, would have none of that. Mason and Dixon were told that failing to set forth for Sumatra would "bring an indelible Scandal upon their Character, and probably end in their utter Ruin", and that in any case the Society would, "with the most inflexible Resentment", bring them to court and prosecute them "with the utmost Severity of the Law". They were off again by early February.

This time they got as far as South Africa, where they learnt that Bencoolen had been taken by the French. Happily there was no time left to hear from the Royal Society on the matter, so they set up their instruments in Cape Town, and in due course made highly successful observations of the transit. These observations proved of prime importance, being the only ones made in the South Atlantic area (Maskelyne was clouded out at St. Helena). In addition Mason and Dixon made very accurate determinations of longitude and gravity while at the Cape, and it was perhaps the reputation they so made for themselves as observers that led to their being called two years later to the American Colonies to survey the boundary line that became famous as the Mason-Dixon Line.



Both Mason and Dixon were in on the transit of 1769, but this time no longer as a team. Mason went to Ireland for the event, and Dixon to Northern Europe, their enthusiasm for long sea voyages being somewhat diminished.

The Royal Society decided that observations of the 1769 transit should include a station in the then unexplored South Pacific. One of the Fellows, Alexander Dalrymple, seemed just the man for the job; not only was he a scientist, but his experience in the East India Company qualified him to command the expedition's ship. The ship itself, however, was to be provided by the Admiralty, and the latter decreed that only an officer in the King's Navy could command one of H's Majesty's ships. After some wrangling over this technicality, the Admiralty came up with a young officer who, although he had worked extensively on the St. Lawrence during the Quebec campaign, was otherwise little known. His name was James Cook, and so, through the transits of Venus, began Cook's great voyages of exploration in the South Seas. He didn't always get on too well with some of the scientists on board (at one point he explored "Damn and blast all scientists! Curse the lot!"), but then he frequently had his hands full with the crew as well. Among his midshipmen and officers he numbered Georges Vancouver and William Bligh, one to play his role on Canada's Pacific Coast, the other to become famous during his command of HMS Bounty.

(More in Harry Woolf's "The Transits of Venus", Princeton University Press, 1959, and Alan Villiers' "Captain James Cook", Scribners, New York, 1967.)

J.D.F.