

? 1.50 of 1900

Archival

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Ponds

BEGINNERS' PACKAGE  
R.A.S.C. OTTAWA CENTER  
OBSERVERS GROUP

R7 A6

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## INTRODUCTION

1

This package has been prepared in the hope that it will give the new member or interested non-member an insight into the various fields of activity present in the Observers Group, and prompt him to either try some of these projects on his own, or with the group as a whole. The articles have been written with comprehensive detail yet simplicity in mind. We hope that, as a result, they are easy to understand for the newer person, yet contain ideas perhaps useful to the more experienced observer as well.

If you should ever wish to exchange any information about the various fields of activity, please give one of the coordinators a call. They would be more than glad to talk to you, offer you suggestions, and discuss observations. That is why they are coordinators - to coordinate!

## GENERAL INFORMATION

12<sup>50</sup>  
47<sup>2</sup> The Observers Group is a subdivision of the Ottawa Center of the Royal Astronomical Society of Canada (R.A.S.C.). It holds its meetings on the first Friday of every month (except July and August) at 8:15 p.m. in the Geophysical Building near the Dominion Observatory. Membership is \$10/yr. for adults and \$5/yr. for students. This fee includes 10 issues of "Astronotes" put out by the Observers Group, 6 issues of the R.A.S.C. Journal, a copy of the R.A.S.C. Handbook, and a membership card. "Astronotes" is now available by itself at \$2/yr. If interested, contact the current editor.

Interested non-members are welcome to come to any meetings. Each month, the coordinators of the various fields discuss recent observations and happenings in their particular field - be it solar, lunar, planetary, meteors, aurora, deep sky, comets, variables, novae, or grazes. Guest speakers are welcome - please contact the chairman. Films or slides are shown regularly.



## COORDINATORS (1973)

Solar: Mr. Barry Matthews, 133 Woodridge Cres., Apt. 1 829-7237  
Lunar: Mr. Barry Matthews, 133 Woodridge Cres., Apt. 1 829-7237  
Planetary: Mr. Rolf Meier, 77 Meadowlands Dr. 224-1200  
Meteors: Mr. Ken Hewitt-White, 2456 Beaver Ave. 733-4949  
Aurora  
Deep Sky: Mr. Robert Dick, 1855 Wembley Ave. 722-5809  
Variables: Mr. Jon Buchanan, 14 Kirkstall Ave. 825-2636  
Comets  
Novae  
Grazes: Mr. Karl Poirier, 53 Spruce St., Stittsville 836-2848

## FOR GENERAL INFORMATION, CONTACT

Chairman: Mr. Ken Hewitt-White, 2456 Beaver Ave. 733-4949  
Vice-Chairman: Mr. Ted Bean, 399 McLeod St. 233-8856  
Secretary: Miss Cathy Hall, Box 420, R.R.2 Ottawa 825-1628  
Librarian: Mr. Stan Mott, 2049 Honeywell Ave. 722-0957  
Astronotes Editor: Mr. Tom Tothill, 22 Delong Dr. 749-4723

Flares are the source of the strongest radiations from the sun. They are extremely bright clouds that appear above the chromosphere, differing from prominences in brilliance, size, and duration. They reach intense brightness in 10 to 15 minutes and fade within several hours. Flares are usually found in the midst of very active sunspot areas. The scientific interest in flares is due to their effect on radio communications, which are greatly disturbed during a "flare period".

The corona is the uppermost layer of the solar atmosphere, visible to the naked eye during a total eclipse of the sun. It resembles a pearly halo of intricate design surrounding the body of the sun, and is roughly a million miles thick. Its shape varies from eclipse to eclipse, changing with the sunspot cycle. At sunspot maximum it is circular with a few pronounced rays protruding, but at sunspot minimum it is elongated with enormous, long streamers or rays extending from the sun's equatorial regions outward, and brush-like rays adjacent to the poles.

The limb effect is a change in perspective which causes the penumbra of a sunspot to appear to change width as the spot moves toward or away from the limb. The penumbra nearest the center of the sun becomes narrower in appearance when the spot is near the limb, whereas that portion nearest the limb remains unchanged. This can be explained if one thinks of a sunspot as a saucer-shaped depression, with the outer edge at the bottom and the penumbra its sloping sides.



The following, in order of increasing complexity, are the various types of photographs that can be taken:

- 1) star trails
  - camera with time exposure
- 2) meteor trails
  - camera with time exposure, fast film
- 3) aurorae
  - camera with time exposure, fast film
- 4) guided constellation fields
  - camera with time exposure, drive
- 5) projected image of sun
  - camera with scope (know eye protection methods!)
- 6) whole disc of moon
  - camera with scope, drive
- 7) guided star fields
  - camera with time exposure, scope, drive
- 8) guided prime focus shots of deep sky objects
  - camera with time exposure, scope, drive
- 9) close-ups of moon and planets
  - camera with time exposure, scope, drive

The best type of camera to use is a 35mm reflex, although for many purposes any type of camera can be used.

The best films for all purposes are the fast ones, such as Kodak tri-x (black and white) and Kodak high-speed ektachrome (colour).

For a more complete picture, see Sam Brown's "All About Telescopes" or selected issues of "Astronotes". Kodak puts out several very good pamphlets: "Astrophotography with Your Camera (AC-20)", "Lunar Eclipse Photography (AM-18)", and "Solar Eclipse Photography for the Amateur (AM-10)", available at 15 cents each by writing to Eastman Kodak Company, Dept. 841, Rochester, New York 14650, U.S.A.

## ASSOCIATIONS

40

R.A.S.C. (Royal Astronomical Society of Canada),  
252 College Street,  
Toronto 130, Ontario, Canada.

B.A.A. (British Astronomical Association),  
Burlington House, Piccadilly,  
London W1VONL, Great Britain.

A.L.P.O. (Association of Lunar and Planetary Observers),  
University Park,  
New Mexico 88001, U.S.A.

A.A.V.S.O. (American Association of Variable Star Observers),  
187 Concord Avenue,  
Cambridge, Massachusetts 02138, U.S.A.

A.M.S. (American Meteor Society),  
c/o Dr. Charles Olivier,  
527 N. Wynnewood Avenue,  
Narberth, Pennsylvania, U.S.A.

## FOR ASTRONOMICAL SUPPLIES

Edmund Scientific Co.,  
600 Edscorp Building,  
Barrington, New Jersey 08007, U.S.A.

A. Jaegers,  
691 Merrick Road,  
Lynbrook, N.Y. 11563, U.S.A.

University Optics Inc.,  
2122 East Delhi Road,  
Ann Arbor, Michigan 48106, U.S.A.

Bredberg Optical and Scientific  
400 Don Park Road  
Markham, Ontario (416) 499-0353.

## BOOKS

41

R.A.S.C. Handbook  
by R.A.S.C. <sup>3</sup>  
paperback, \$2.00

The Sky Observer's Guide  
by Mayall and Wyckoff  
paperback, \$1.50

All About Telescopes  
by Sam Brown  
paperback, \$3.50

B.A.A. Handbook  
by B.A.A.  
paperback, \$2.25

A Beginner's Guide to the Skies  
by Mayall  
paperback, \$1.50

## MAGAZINES

Sky and Telescope  
c/o Sky Publishing Corporation,  
49-50-51 Bay State Road,  
Cambridge, Mass. 02138, U.S.A.  
publ. monthly, \$9.00 per year

Modern Astronomy  
c/o 18 Fairhaven Drive,  
Buffalo, N.Y. 14225, U.S.A.  
publ. bimonthly, \$3.00 per year

## OTHER PUBLICATIONS

Astronotes  
c/o R.A.S.C. Ottawa Center  
c/o current editor  
publ. monthly, 10 issues/yr., \$2.00

Meteor News  
c/o Astro-Gator Astronomy Club,  
1025 Gulf Life Drive,  
Jacksonville, Florida 32207, U.S.A.  
publ. 5 times/yr., \$1.00



ACKNOWLEDGEMENTS FOR ARTICLES

Jon Buchanan

Robert Dick

J.U.Gunter, M.D.

Cathy Hall

Ken Hewitt-White

Mrs. Jean Knapp

Barry Matthews

Rolf Meier

COMPILATION, EDITING

Cathy Hall

# MINES and SURVEYS



# Bulletin

November

-1957-

December



## HISTORICAL MEETING AT GEOGRAPHICAL BRANCH

The Senate Committee on Land-Use met at the Geographical Branch early in December, the first time a Senate Committee had met in a government department.

The Committee heard talks on land-use by Deputy Minister, Dr. Marc Boyer, extreme right and Dr. Norman Nicholson, standing.

# THE CHRISTMAS PARTIES





IN RETROSPECT.....



AROUND THE DEPARTMENT

Seven Departmental personnel have received awards from the Suggestion Award Committee. **SURVEYS AND MAPPING:** A brief case to Gordon Prince for developing a waxed coloured cellophane for production of mosaics; a writing case to Henry Mindak for simplifying use of daily labour cards; \$150 to Gerhart Dohler for a tidal predicting machine; a brief case to Arthur Willis for a marking instrument used for correcting nautical charts. **MINES BRANCH:** \$30 to Raymond Landry for modifying the globe water vacuum valve; \$25 to Robert Huot for modifying the Watkin cutoff saw; \$25 to William Warren for attachment to asbestos processing machine.

\*\*\*\*\*

Only 300 tickets will be sold to the ANNUAL MATS DANCE to be held in the CONVENTION HALL, LANSDOWNE PARK, MONDAY, FEBRUARY 17, from 8:30 to 1. Tickets \$1.50 each. Door prizes, spot dances, refreshments. DRESS IS OPTIONAL. Karl Boringer's Orchestra.

\*\*\*\*\*

Hans Klinkenberg of the Geodetic Survey will play the leading role in the RA's presentation of "The Mikado" February 19-22.

# THE HONOUR ROLL



Five members of the Department have received outstanding awards since the last issue. At the left, Sol F. Gertsman, right, Chief, Physical Metallurgy Division receives The Award of Merit of the Steel Castings Institute of Canada from G.L. McMillin, Chairman of the Institute.

\*\*\*\*\*

Don McNeill, mineral economist with the Mineral Resources Division was named Rhodes Scholar for Newfoundland. Don, who has been working with the Division for about a year will enter Oxford University in August.



Mr. M. F. Goudge, Chief, Industrial Minerals Division, was awarded the McCharles Prize, carrying with it a medal and \$1,000, from the University of Toronto for his development of a new process for the production of magnesia.



Two members of the Fuels Division received the Bituminous Coal Research Incorporated award at the November meeting in Ottawa of the Northern New York Section of the American Chemical Society for their joint paper on coal and derived products. Left to right, Miss F.E. Goodspeed, Dr. D.S. Montgomery and Dr. C.L. Gage, Chairman of the Section.

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## RETIRES AFTER 47 YEARS



During a special ceremony in December marking his retirement from the position of Dominion Geodesist, J. Earl R. Ross was presented with a telescopic lens, a retirement certificate and a special scroll. At the ceremony which climaxed Mr. Ross's 47-year career with the Geodetic Survey are, left to right: J. Edwin Lilly, successor to Mr. Ross; Dr. Marc Boyer, Deputy Minister; Mr. Ross; Mrs. Ross; Mrs. Lilly and W.H. Miller, Director, Surveys and Mapping Branch.

## OTHER RETIREMENTS

"THE HIGH STANDARD OF YOUR WORK, BOTH IN THE OFFICE OF THE CHIEF CARTOGRAPHER AND IN THE GEOGRAPHICAL BRANCH, WILL EVER REMAIN A MONUMENT TO YOUR NAME; YOUR TRUE SENSE OF DUTY AND YOUR MANY OTHER STERLING QUALITIES WILL EVER KEEP OUR THOUGHTS OF YOU AGLOW. IT IS OUR SINCERE WISH THAT YOU MAY ENJOY AN ABUNDANCE OF HEALTH AND HAPPINESS IN THE LEISURE WHICH YOU HAVE SO FULLY EARNED." So read the scroll presented to S.H. Gooday by Dr. N.L. Nicholson during a retirement ceremony in November at the Geographical Branch.

\*\*\*\*\*

REUBEN J. YOUNG, chemist with the Fuels Division is on the retirement list this month. Mr. Young worked in the Solid Fuels Testing Laboratory. Mr. Young joined the Department in 1929.



C.J. "Pete" Stewart, right, receives a Certificate of Achievement, signed by the Honourable Paul Comtois, during a ceremony November 8th in the Calgary Office, Geological Survey of Canada. Presenting the Certificate is Dr. R.T.D. Wickenden, Geologist in charge of the Western Office. "Pete" retired after 15 years as manager of the former Wartime Oils Limited and its successor under the Mines Branch.



## *Welcome Newcomers*

Your colleagues are glad to welcome you to the staff and hope you will have a long and happy association with the Department.

### Minister's Staff

Jensen, Mrs. A.  
Piche, Mrs. Y.S.  
Poirier, B.E.

### Departmental Administration

Comrie, Miss M.E.D.  
Halpin, F.J.  
MacFarlane, G.W.  
Beahen, M.J.  
Burke, P.

### Mines Branch

Belanger, Mrs. V.M.  
Hall, W.A.  
McKenzie, A.R.  
Robson, W.B.  
Zoldners, N.G.  
Stone, W.J.D.

### Dominion Observatories

Bräzeau, A.J.  
Bunyan, T.C.  
Chmilar, T.E.

### Topographical Survey

Box, S.R.

### Map Compilation and Reproduction

Boulrice, J.P.

### Geological Survey

Adams, Miss P.K.  
Balfour, A.F.  
Baragar, W.R.A.  
Cameron, Miss E.H.C.  
Quillian, R.G.  
Roach, R.A.  
Smart, A.D.

### Geographical Branch

Brochu, M.  
Fay, B.C.  
Jost, Mrs. I.  
Leduc, Mrs. M.G.M.  
Richard, S.H.  
Taylor, A.  
Wellington, Mrs. E.M.  
Rayburn, J.A.

### Hydrographic Service

Carr, G.L.  
Coutu, J.  
Dobson, D.  
Hagelin, E.R.  
Kilroy, D.A.  
Miller, A.R.  
Morrison, I.E.  
St. Pierre, H.  
Williams, G.T.

September 3, 1968.

Attention Mrs. M. W. Grey:

The following 8 x 10 black and white glossy prints  
are required for the Dominion Observatory leaflets.

From Lick Observatory:

# C27, D1, D4, N1, N5, <sup>N29</sup>S12, U2.

From Mt. Wilson & Palomar Observatories:

# 29, 32, 34.

See reverse side for details regarding ordering.

*MSB*

M.S.B.

*Above prints ordered by Mary Sept. 4*

Data re purchase of prints:

Lick Observatory,  
University of California,  
Santa Cruz,  
California 95060,  
U. S. A.

Cheques to be made payable to "The Regents of the University of California".

Prints in black and white, size 8 x 10 are 90¢ each.

All orders must include packing and mailing charges as follows:

Foreign shipment	surface mail	\$1.50
"	air mail	3.00

\* \* \* \* \*

California Institute of Technology Bookstore,  
1201 East California Street,  
Pasadena,  
California,  
U. S. A.

All prints from Mount Wilson and Palomar Observatories should be ordered from the Bookstore, and cheques made payable to them.

Prints in black and white, size 8 x 10 are 75¢ each.

Add 75 cents per order for postage and packing.

\* \* \* \* \*

In both the above cases prints should be ordered by catalogue number.

Prices are subject to change from those given in catalogue.

September 3, 1968.

*MSB*  
M.S.B.



September 3, 1968

Attention Mr. Geher:

ART WORK REQUIRED FOR DOMINION OBSERVATORY LEAFLETS

MARS:	(1) Cover design (2) Diagram - Oppositions of Mars
JUPITER:	(1) Cover design (2) Diagram - Planetary Configurations
SATURN:	(1) Cover Design (2) Diagram - Saturn's Rings seen at different angles
COMETS:	(1) Cover Design (2) Diagram - Orbit of Halley's Comet
STAR MAPS & CONSTELLATIONS:	(1) Cover design

Rough sketches for diagrams are attached.

*MSB*  
Miriam S. Burland.

*Discussed above with Geher on Sept 4*

516 Tweedsmuir Avenue,  
Ottawa 3, Ontario,  
August 22, 1968.

Dr. D. A. MacRae,  
Director,  
David Dunlap Observatory,  
Richmond Hill,  
Ontario.

Dear Dr. MacRae:

I am currently completing additional leaflets for the Observatory - sample enclosed - and require some photographs. Some of these will have to be obtained from Lick or Mt. Palomar, but if possible I would prefer to use photographs taken at our Canadian observatories. I wonder if you could help me out. I am also writing to Ken Wright to see if the D.A.O. have any that would help.

The following are among those required:

- A comet
- A globular cluster - perhaps M13
- A galactic nebula - M42 ?
- A spiral galaxy

Does the D.D.O. have suitable photographs of any of these? Should they be available from you, 4 x 5 glossy prints suitable for copying will be fine. Credit will naturally be given for any prints used.

Thank you for any trouble this may involve. I look forward to your reply and hope a couple of prints will come with your letter

With kindest regards,

Yours sincerely,

*MSB*

Miriam S. Burland.

*Enclosed copy of Leaflet - The Sun  
Solar & Lunar Eclipses*

516 Tweedsmuir Ave.,  
Ottawa 3, Ontario,  
October 26, 1969

Dr. Donald A. MacRae,  
Director,  
David Dunlap Observatory,  
Richmond Hill,  
Ontario.

Dear Dr. MacRae:

Many thanks for your letter and the photographs which I requested some time. No need to apologize for the delay - we all do these things some times. Indeed if I am not mistaken I did a similar thing to you one time. You had asked for some eclipse slides and somehow the letter got to the bottom of a pile on my desk, and it was during my final clean up at the office that it came to light. The slides were send to you eventually; so now we are even!

There has been some delay in getting additional leaflets printed and at least one of the prints you sent will be used. It is the one of the Pleiades. I like that one very much and am naturally anxious to use as many Canadian pictures as possible. No further information will be required regarding this, but naturally the D.D.O. will be given a credit line.

Many thanks again,

Sincerely,

Miriam S. Burland.



516 Tweedsmuir Avenue,  
Ottawa 3, Ontario.  
August 22, 1968.

Dr. K. O. Wright,  
Director,  
Dominion Astrophysical Observatory,  
R. R. # 7,  
Victoria, B.C.

Dear Ken:

I am currently completing additional leaflets for the Observatory, similar to those sent to you some months ago, and require some photographs. Some of them will have to be obtained from Lick or Mt. Palomar, but if possible I would prefer to have prints from our Canadian observatories. I wonder if you could help me out. I am also writing to Don MacRae to ascertain what is available at the D.D.O.

The following are among those required:

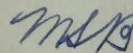
- A comet
- A globular cluster - perhaps M13
- A galactic nebula - M42 ?
- A spiral galaxy

Does the D.A.O. have prints of any of the above, taken at Victoria ? Should any of them be available, 4 x 5 glossy prints, suitable for copying will be fine. Naturally credit will be given for any prints used. I would appreciate hearing from you about the above and hope the reply will be accompanied by a print or two.

Do hope the A.A.S. meetings were a great success, for I expect all the activities will be over by the time this reaches you.

Thanks very much for any trouble this letter may involve, and kindest regards to all.

Yours sincerely,



Miriam S. Burland.

Antony

For Archives (2 binders)

Prepared by Mim Berland  
an astronomer at the Dom. Obs  
from c. 1930 - 1970 & friend of  
Mory Grey. She also donated  
artifacts for UMET collection.  
The 1st Binder for McGill course  
in Ast was given by A.R.  
Vilbert Douglas a well known  
Can Ast later at Queen's.  
These were collected by Mory.G.

Randall







Success or failure at school or college supply  
no standards by which the promise of the  
future may be estimated. . . . A student may  
possess many examination certificates & yet be  
only a kind of text - book gramophone.

## Explaining the Einstein Theory

Let us imagine that the world instead of being 3 dimensional as we usually conceive it, is only 2 " , first that it is a plane & that we are perfectly flat, also 2 dimensional & cannot move out of the plane.

Two dimensional euclidean universe is a  
" " plane,

" " non euclidean universe is our  
" " universe warped in a third  
dimension

Engrcl.  
Brit.

R. Moulton  
Int. to  
Astronomy

Brussels, May 24<sup>th</sup> 1935  
14 Boulevard de Waterloo

Dear Miss Burland;

How is everything at the Dominion Observatory? I have been thinking of writing you as well as to Mr Stewart for some time. As I think that Mr Stewart will probably have left for the Paris meetings of the I.A.U. it seems better to wait until later before writing him.

You probably know that I have been in London and then in Brussels for some time. I feel quite a stranger in Belgium but I must say that both Mr Henrotteau and myself enjoy life to the fullest. In the first place everything is much cheaper here and in the second place the Brussels world fair is most attractive.

I also believe that the critical period I have gone through since I left the Dominion



(Ottawa)

Observatory is at an end. We have sold my United States television patents to the R.C.A. for 150,000 dollars and from my share of the proceeds which I will convert into life annuities I will have an immediate income of about 5000 dollars a year for the rest of my life. Besides this we still have to sell these patents in Canada and in various European countries.

Also I have just been appointed an astronomer at the Institut d'Astrophysique de Coïnte of the University of Liège. I will have two assistants and at first I will work mainly in the physics laboratories of this Institut, which are very well equipped. We are starting on my electronic stellar spectrograph; we have everything to make the tube and all the accessories. Would you care to come and work with me for a year?

I found a nice castle, all furnished, with beautiful gardens and a tennis court to rent about ten miles from Liège but I have not quite decided whether I will go there or not.

In July I will go to the Paris meetings with Mrs Hemmestan.

Lara Centre, July 29-33, 2nd

Please present my kind regards to all my  
friends at the observatory and believe me

Yours very sincerely,

François C. Henroteau

Department of the Interior  
DOMINION OBSERVATORY

STEWART  
Director  
DE LURY  
Assistant Director

OTTAWA, 28 December, 1934  
CANADA

Dear Miss Burland,

I just received a phone call from Mr. Handley, who is in charge of leave at Head Office. This is a summary of your sick leave as given to me by Mr. Handley:-

Credit 136½ days ✓

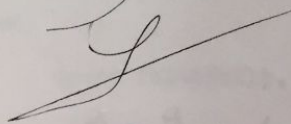
Taken 126 " to end of December 1934

Balance 10½ days

Should you return to the office on the morning of the 15th, ½ day will have to be charged to annual leave, leaving one day A.L. to your credit. He also asked me your address saying that he wanted to communicate with you, so I gave it to him. I told him that I understood you were convalescent in some home in St. Lambert, but forgot to tell him that it was your own home.

I suppose we will be seeing you on the 15th of Jan.

Sincerely



W. H. L. Stewart

I have not heard from the Department in regard to my recent request.



From R.O.Spreckley,  
512 Bay Street,  
Ottawa, Ont.  
Please return if unaccepted.  
Stamp enclosed.

About 500 words.

PHOTO CAN BE SUPPLIED  
IF REQUIRED

### Canada's Only Lady Astronomer.

Miss Miriam Seymour Burland B.A. of the staff of the Dominion Observatory, Ottawa, can be said to be the only honest to goodness lady astronomer in Canada, and on Saturday nights when that institution is open to the curious star gazing public, she can often be found on duty pointing out the wonders of the heavens to their interested gaze.

It is also her duty on these occasions to "answer questions that are of general interest concerning astronomy and kindred subjects", no light task from the layman's point of view, but one in which Miss Burland by reason of her training and experience is well qualified to do.

Possessing a slight, dainty figure with a becoming boyish bob, Miss Burland looks very different from the popular conception of the lady scientist, but nevertheless she is thoroughly satisfied with her unusual vocation. Not infrequently she derives amusement from the nature of some of the questions

propounded to her, when explaining the wonders of the firmaments through the fourteen inch telescope.

On one occasion when showing Saturn to some interested spectators, that planet did not appear sufficiently clear, and she remarked that she would have to change the magnification of the telescope, which she proceeded to do. She was much amused when a small child chimed up "Oh, mama, she's magnetising the planet".

Miss Burland's favourite story is that of the children who were asked by their teacher to name the Signs of the Zodiac. One child named correctly "Taurus the Bull", and another contributed "Cancer the Crab". After this came an embarrassing pause when one bright youngster suggested "Mickey the Mouse", which goes to show that the stars of the films are more popular with the younger generation than are the stars of the firmament.

Miss Burland recalls that the most amusing request received was from a lady asking to borrow the Observatory telescope. Anyone aware of the size and importance of that instrument, will understand that that sort of thing is not done in the best astronomical circles.

Miss Burland had the privilege of being one of a party sent to observe the Total Eclipse at Alexis in the hinterland of Quebec in August 1932, when unfortunately

clouds came

clouds came up and spoilt things somewhat from a scientific viewpoint. Although the expedition was unsuccessful, however, Miss Burland recalls that the nearest French Canadian farmer, from whom the party obtained their butter and eggs, thought sufficiently of the event to name a new offspring opportunely delivered by the stork about that time as Joseph Eclipse Morin.

Miss Burland was born at St Lambert, near Montreal. After passing through the Longueuil High School, she took a mathematics and physics course at McGill, graduating in 1926. It was while at the University that she first developed the unusual ambition to be an astronomer, and with this in view, after graduation, she took a special course in astro-physics.

She qualified by open competitive examination for her position, which she has held since 1927.

For four years Miss Burland was secretary of the Ottawa Centre of the Royal Astronomical Society of Canada, and she is a keen member of the Zonta Club, where she is of course the only lady member with her unique classification. Her hobbies apart from mathematics and astronomy have been hockey and philately.



Handwritten: Mr. W. T. Curran, 100 St. James St., Montreal.

Dominion Observatory,  
Ottawa,  
Jan 23rd 1934

Mr W. Tees Curran,  
Royal Empire Society,  
Sun Life Bldg.,  
Montreal.

Dear Mr Curran:-

Thanks for your letter, I feel that perhaps a word or two of explanation would not be amiss - though this letter is written in quite an unofficial capacity.

It is quite true that "the Dominion Observatory and all that goes with it, belongs to the people of Canada", but also it must be remembered that it is the people of Canada who have demanded economies through their parliament in order to avoid further taxation, and to effect these economies, estimates of this institution as well as many others have been cut and recut. Perhaps you are unaware that we have lost several members of our staff just to meet the demands made necessary through this economic program, and most branches of the service have suffered in the same way.

With regard to the Royal Astronomical Society of Canada, it has no official connection whatsoever with the Observatory, though it so happens that many of its officers are also members of our staff. Incidentally Mr M.M. Thomson is now the secretary of this centre. Hence the idea of enlargement of membership is of little concern to the government and a lecture given by a member of this staff would have no connection at all with the R.A.S.C.

There is a branch of the R.A.S.C. in Montreal of which you might avail yourself. They have some excellent lectures from time to time and Dr A. Vibert Douglas of the Dept. of Physics at McGill University, could give you any information regarding these.

I am glad that you enjoy the little booklets issued by the Observatory, and I trust that they will continue to reach you regularly.

Yours sincerely,

*mdB*

Let me assure you again of our appreciation of your interest in the Observatory and the interesting information

Dominion Observatory,  
Ottawa,  
Jan. 23rd 1934.

Dear Miss Pope:-

Many thanks for your letter and good wishes.

As I am no longer the Secretary of the society, I have handed over the money to the treasurer and your receipt should be sent in due time. Mr M. M. Thomson, of the Observatory, is the new secretary.

It has been extremely cold here too with an unusual amount of cloudy weather.

With very best wishes for your happiness in the New Year.

I am,

Yours sincerely,

*mlb*

With kindest regards,

Yours sincerely,

*mlb*

January 22nd 1934

Dear Miss Ross:-

Please pardon the delay in replying to your letter. This year we have a new secretary in the society, and as he is away at present, your letter has not reached him.

We regret that you are resigning from the society and I shall see that Mr Thomson notifies Toronto about it.

There is no need to return the booklet and if you wish to receive these in future, I think that can be arranged. The Saturday Evening Programs are purely publications of the Observatory, though through the courtesy of our Director, members of the Ottawa Centre R.A.S.C. are included in the mailing list.

With kindest regards,

Yours sincerely,

MSB



*Boird*

GENERAL ELECTRONICS CORPORATION

SEVENTY BROOKLINE AVENUE :: BOSTON, MASSACHUSETTS

TELEPHONE  
COMMONWEALTH 3520

CABLE ADDRESS  
"TELEVISION"

December 11<sup>th</sup> 1933

My dear Miss Burland;

I wonder how you are getting along? Personally I have worked with you so many years that I kind of miss you. I hope you will be coming to the meetings of the American Astronomical Society in Cambridge. I will be there to present a paper entitled "The Electronic Telescope". At present I really have something practical.

Our television model will soon be finished and we expect to be on the air within two or three weeks. It is thrilling work and I am at it with five other men working from 8:30 a.m. to 7 p.m. and sometimes evenings and Sundays.

Let me hear from you and especially let me know if you are coming to Cambridge because I would like to have a good long talk with you.

Yours very sincerely,

François C. Henrotteau.

70 Brookline Avenue,  
Boston, Mass.

MC GILL UNIVERSITY  
MONTREAL

1933 November 22

Dear Miriam,

So very many thanks for the data.  
It is just what I needed.

I did not know that Dr. H. had  
gone. There were two pieces of work - one  
on L. Mrs. Maj. & one on R. Taniguchi that  
would have been well worth publishing  
at the time - 1930? but now that some  
work on Cepheids has been done on calibrated  
plates I do not feel so sure that the  
curves I obtained are worth very much.

It does seem a pity for all that work on  
those many graphs to go for nothing &  
perhaps if you are in town some time  
& could bring what data of mine  
there is up there, we could go over it  
together & see if anything can be  
saved from the wreck! It is good  
of you to suggest resurrecting it. & I  
would like nothing better than to collaborate  
with you in bringing out any of it that  
still may appear valuable.

Sir Arthur has been very seriously ill.

has improvement in reported, but we seem  
to know just how bad a state  
it was. Very bad. Our department  
has on as usual. I have three  
R.C. students doing cartography in  
4-5 hr. very keen. Jack Hunt who  
is in London with me last time  
tells where he is in 1851 - at Imperial  
Division where he is working is  
making outside. This heavy H. who is  
done let yourself be measured in  
warmest feelings

W. H. H. H.



*but no one  
of the*

AMERICAN ASSOCIATION  
FOR THE ADVANCEMENT OF SCIENCE

SMITHSONIAN INSTITUTION BUILDING  
WASHINGTON, D. C.

OFFICE OF  
THE PERMANENT SECRETARY

October 5, 1933

Miss M. S. Burland,  
Dominion Observatory,  
Ottawa, Ont., Canada.

Dear Miss Burland:

On behalf of the American Association for the Advancement of Science we, the undersigned, request permission to nominate you for fellowship in the Association. Hitherto scientific workers have been invited to become members, but have been elected fellows, if at all, at a later period. The council of the Association, at the Atlantic City meeting, decided that it would be desirable to elect as fellows those who are professionally engaged in scientific work and have advanced science by research. The entrance fee will be remitted and the annual dues are only \$5. These include receipt of SCIENCE (or THE SCIENTIFIC MONTHLY), as well as all the privileges of the meetings and of membership.

There are now about 18,000 members and fellows of the Association. It is only by the cooperation of the larger part of American scientific men that it is possible to maintain our low membership fees and at the same time to do so much in the way of advancing science and the interests of those engaged in scientific work. All profit by the activities of the Association, and we hope that you will wish to share the privileges and responsibilities by accepting this invitation.

Faithfully yours,

*J. M. Cattell*

Chairman, Executive Committee

*Henry Norris Russell*

President

*Benton E. Livingston*

General Secretary

*Henry B. Ward*

Permanent Secretary

In reply to  
Biographical Directory of  
American Men of Science

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Name etc. - William (Seymour) Burland  
Dominion Observatory, Ottawa, Canada.

Dept of Investigation - Astrophysics.

Place & date of birth - St Lambert, P. Que. Sept 24<sup>th</sup> 1902.

Education etc. - B.A. McGill University, 1926

Post-graduate course in Astrophysics, 1926-27.

Pos<sup>ns</sup> held etc. - Engineering clerk, Dom. Obs. May 1927-  
April 1929, Astronomer, Dom. Obs. April 1929 -

Memberships etc. R.A.S.C. S. A. de France, A. Ast. Soc.,  
Can. Geog. Soc. A. B. A. S. Lacy Ottawa Centre,

R.A.S.C. Jan 1929 -

Chief subjects - Astrophysics, popular astronomy,  
publ<sup>ns</sup> or in  
progress.

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Biographical sketch of Miriam S. Burland

Birth place: St. Lambert, P. Que.

Education: Longueuil High School and McGill University (B.A.)

Positions: To the Dominion Observatory as a summer assistant, following university. Appointed as an astronomer at the end of the summer, and later to astrophysicist.- Present classification.

Outline of Work: This has included observational work with the telescopes, measuring spectrograms to obtain orbital motions of the stars, microphotometric work, and the reduction of observational data. This is accomplished by an analysis of stellar spectra, using various methods and equipment to aid in that analysis. The purpose is a search for more information about the physical conditions of stars and their surrounding atmospheres. Visual observational work on the combined radar, photographic and visual program of meteors. This program has been undertaken to learn more about the upper atmosphere. Current research is a study in detail of meteor spectra.

Organizations: Member of the American Astronomical Society.  
Member of la Societe Astronomique de France.  
Member of the Royal Astronomical Society of Canada, and have held the offices of President and secretary in the Ottawa Centre, also on the Council a number of years.  
Member of the Professional Institute  
Member of the Zonta Club of Ottawa, and have held the offices of president and secretary, and chairman of various committees.  
Member of McGill Graduates Society.

*Died Ottawa  
1993/94*



Clippings 1930

## SAYS PLANET X AND NEW OBJECT WERE ONCE ONE

Disintegrated Millions of  
Years Ago, Dr. Henro-  
teau Believes.

ARE NOW CONVINCED  
TWO NOT IDENTICAL

Observatory Officials Still  
Delving Into Old Photo-  
graphic Files.

The theory that the Planet X. and the object photographed here six years ago but only identified this week, are pieces of the same large planet that disintegrated millions of years ago, was advanced yesterday by Dr. F. Henroteau, an official of the Dominion Observatory.

It was Dr. Henroteau who superintended the photographing of the body and has been engaged in attempting to identify it.

### Proved In Motion.

The Planet X. was discovered through the work of the Lowell Observatory at Flagstaff, Arizona, three months ago. Like the Ottawa object it is beyond Neptune or about 40 times farther away from the earth than is the sun. Both are about the same magnitude and have been proven to be in motion. In this latter respect, they differ from the ordinary fixed star.

Dr. Henroteau said yesterday that between Mars and Jupiter there once was located an exceedingly large planet. Millions of years ago, it suddenly broke into pieces, each of which has since functioned as an individual planet. He believes that such a disintegrating process attacked a planet that once was located beyond Neptune. It was in 1801 that the Italian astronomer, Piazzi, discovered the first of more than 1,000 pieces of a single planet that exist between Mars and Jupiter.

Under the direction of Dr. Meldrum Stewart, officials of the local observatory are delving through files of photographic plates taken as far back as 1906 in the hope of finding additional traces of either the Planet X. or the Ottawa object. They have abandoned the theory that the two objects are identical and have come to the conclusion

Concluded on Page 19, Col. 4.

Ottawa Journal  
April 25

## Says Planet X

Continued from Page One.

that the latter object is a distinctive planet.

In a statement given to the press at noon yesterday, Dr. Stewart said:

"It appears that the object discovered at the Dominion Observatory can scarcely be identical with that found at the Lowell Observatory (Planet X).

"When the announcement of its discovery was made it was suspected that the two objects might be identical. Information received since as to the inclination of the orbit of the Lowell planet appears to establish the fact that in 1924, when our plates were made, the position of that body would be slightly farther to the south than the object found here. The distance of the two objects appears to be of the same order and their brightness not widely different. The latest one may be taken tentatively as another new planet or some similar object."

The object photographed here in February 1924, is a trans-Neptunian object of some category, Dr. Stewart said. From preliminary investigations it first was suspected it was the newly-discovered Planet X as that object would have been relatively in the same area in the heavens at that time.

When the announcement was made of the discovery of Planet X, officials of the observatory here began systematic search of old photographic plates in the hope of discovering an

earlier record of it and thus assist in tracing its orbit.

Plates made in February, 1924, were examined and it was found an object beyond Neptune had been recorded. Its position was plotted on two different dates, 22 days apart. It was found the object was in motion, setting it apart from a fixed star. This information, which included the results of the plotting, was forwarded to Harvard University and resulted in the announcement Wednesday that an earlier trace of Planet X had been found.

### No Life Possible.

If the object discovered here proves to be a planet, there need be no supposition made that life could exist there, Dr. Stewart declared. Situated as it is, 40 times further removed from the sun than the earth, the temperature there would be several hundred degrees below zero. The object re-

ceives only one-sixteenth-hundredth of the sunlight received on earth.

Dr. Stewart and his associates now are engaged in further tracing the discovery. If it is not a planet it might be a comet, they say, although that is not as likely as the other supposition. That the object might be an asteroid is not entertained by Dr. Stewart because all of the known objects of that nature there are over 2,000 of them—are situated much closer to the sun.

In size the new planet, if such it proves to be, is probably slightly smaller than the earth, Dr. Stewart said. On the plates it is very faint, almost bordering on the invisible.

Dr. Stewart is continuing his investigation of old plates taken at the observatory. He intends going back as far as 1906 in the hope of finding further trace of the object.

## Observatory Director



Dr. R. Meldrum Stewart, director of the Dominion Observatory, stated yesterday that the object discovered here in 1924 is not the Planet X, but either a new comet or another planet.

## Took Planet Pictures



Dr. F. Henroteau, of the Dominion Observatory, in 1924 photographed the celestial body which at first was thought to be the new planet.

Research, Dominion Observatory Newspaper Clippings 1927-30



EDITORS: THIS STORY WAS WIRED TO THOSE CLIENTS REQUESTING IMPORTANT SPOT NEWS BY WIRE.

SECOND PLANET BEYOND  
DISCOVERED AT OTTAWA

(Copyright 1930 by Science Service)

Ottawa, April 24.--Another new trans-Neptunian planet has been discovered by astronomers of the Dominion Observatory here in the capital of Canada.

This tenth planet of the solar system, if further observations bear out the planetary nature tentatively assigned to it, will make this year notable in astronomical discovery. When on March 13, Lowell Observatory announced the finding of the ninth planet, far beyond Neptune, then the farthest known outpost of the planetary system, the world was startled. Now arises the possibility that there are two planets beyond Neptune, both about four thousand million miles from the sun or forty times the earth's distance from the sun.

Dr. F.C. Henroteau, astrophysicist of the Dominion Observatory, and Miss M. Burland, his assistant, about ten days ago were looking over the photographic plates made in 1924 in the hope of finding on them the image of the Lowell Observatory planet X. They rejoiced when they found a faint object in about the proper position. But further study convinces them and Dr. R. Meldrum Stewart, director, who described the discovery to Science Service today, that they had thus discovered another hitherto unknown planet, which may be called planet Y.

So far planet Y is known to science on only three photographs taken in 1924. It has not yet been photographed or seen this year. In 1924 it was in the portion of the sky described astronomically as right ascension six hours thirty-six minutes and declination north twenty-three degrees forty-two minutes. This is a little west of but close to where the Lowell planet X should have been at that time. But the position of the heavenly object on the Dominion Observatory plates was enough different to cause Drs. Stewart and Henroteau to announce the probability

clippings 1930

Dominion Observatory Newspaper Clippings 1927-30

Ottawa Journal + Toronto Star

clippings 1930.



A heavenly drama in which a girl astronomer played a major role had its setting in the Dominion observatory at Ottawa. Information received from Harvard college photographed by them Dominion authorities to believe planet photographed by them in 1924 was new planet and not the planet "X," reported from Lowell, Mass. Study of photographic plates and the discovery of the minute speck by Miss M. S. Burland strengthened supposition. (1) Miss M. S. Burland, young astronomer, who discovered tiny speck of supposed new planet on photographic

plate. (2) Photograph of planet. (3) Meldrum R. Stewart, director of Dominion observatory, under whose direction search for planet was made. (4) Diagram showing position of supposed new planet in universe. (5) The telescope in the dome of the Dominion observatory. The short cylinder to the right is the camera, which took the photograph. A clockwork attachment to the telescope revolved it to offset the motion of the earth, and (6) Dr. Francois Henroteau, the Belgian-born astronomer of the Dominion observatory, who took the original photograph, not supposing that he had snapped a planet

Wm. L. 26.

Burland of Montreal and a relative of



*Clippings 1930*

#### **WOMEN IN ASTRONOMY.**

Apropos of what has been written at various times regarding the advances being made by women in the field of Science, it is interesting to note that in the discovery of the new planet by the Dominion Observatory, Dr. Francois Henroteau was assisted by Miss Miriam S. Burland, who did valuable work in scanning photographic plates leading to the discovery.

Miss Burland, who is an Astronomer Grade 1 attached to the Dominion Observatory, is the daughter of Mr. and Mrs. Benjamin Burland of Montreal, in which city all her life has been spent. She graduated in Arts from McGill University in 1924, and became attached to the Dominion Observatory as Engineering Clerk on June 1st, 1927. On the 1st of April, 1929, Miss Burland was appointed Astronomer Grade 1. Both positions she obtained as a result of open competition.

Miss Burland is a little lady of pleasing personality, whose thoroughness in scanning photographic plates made at the Observatory since 1906, resulted in the discovery of the tiny speck supposed to indicate a new plant.

*Civil Service News (May)*

#### **St. Lambert Woman Assisted in New Comet Discovery**

The news of the discovery of a new planet will be of interest to residents of St. Lambert inasmuch as one of the chief assistants of Dr. Francois Henroteau, is Miss Miriam Burland, the second daughter of Mr. and Mrs. Benjamin Burland of Victoria Avenue.

Miss Burland was appointed to the Dominion Observatory staff at Ottawa on graduating from McGill two years ago. Residents of the South Shore and St. Lambert particularly, will be interested in the future work of Miss Burland and will undoubtedly wish to offer the her parents their sincere congratulations.

*Montreal Herald May 11*



O'CLOCK EDITION

THE OTTAWA EVENING CITIZEN

FINAL MARKET CLOSING QUOTATIONS. ALL LATE NEWS OF THE DAY. SPECIAL FEATURE SERVICES.

OTTA OBSERVERS PHOTOGRAPHED NEW PLANET X

Crown Attorney and City Solicitor Confer on Suggested New Charges Against Latham

Plates Taken in 1924 Reveal Body Recently Announced by Lowell

Judge Will Have To Review Term Given to Latham

Desire Radios For Manitoba Schools

Estimate Costs New Approaches About \$253,550

Improvements in Roadway to Chandler Bridge Requested of Board of Trade Council

Hop Parties Concerned Will Not Get Together

Engineers Go Into Matter at Request of Special Committee

Many Ottawans to Europe This Year Bookings are Heavy

Flagstaff Observatory Recently Made Claims

Some City Fathers Not Impressed With Matter

Lieut. Woodring Again Has Very Narrow Escape

Aviator Who Was Involved in Fatal Collision With Leth. Thad Johnson Here Saved by Parachute

Engaged in Mock Fight When Machine Failed

R-100 Removed From Hangar for 10-Hour Flight

Convict Gets Check For Fire Broadcast

Holiday Jaunts By Air Latest Fad in Britain

Guards Fought 600 Negro Convicts Housed in Unlocked Cells Would Have Met Death

Give Divided Impression They Are Merely Trying to Satisfy Public Opinion

Leaped From Disabled Plane in Parachute and Borne Gently to Ground

Great British Dirigible Will Probably Not Enter Its Second Year

Weather by Wireless is Proving Practical

Visitors at Gardington With Two Air Monsters in Close Proximity

F.D. Commission To Get \$600,000

Creation of Park Area at Ontario Approach to the

Must Walk on Paths in Confederation Square

Passengers Shaken

Steamship Movements

Feature News of Today's Markets

Biting Parliamentary Words Gone as "Auld Lang Syne" Replaces "Red Flag"

Tears Roll Down Cheeks of "Jimmy" Maxton, Leader of the Independent Labor Party as He Moves to Reply to Voice of Thanks

King and Queen to Attend Performance

"Little Annie" Has Returned

Today's Official Weather Report

Wheat prices advanced about two cents per bushel on Winnipeg market.

General upping at close of New York exchange.

Wright-Whitcomb leads gold market.

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