

NATIONAL NEWSLETTER

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Deadline is two months prior to the month of issue.

The AAVSO and Margaret Mayall

We are pleased to welcome Dr. Helen Sawyer Hogg as the author of this month's feature article. Dr. Hogg is Research Professor of Astronomy at the University of Toronto. She is well known to the members of our Society, having been an active member for about forty years. She has served in numerous capacities including that of National President.

Dr. Hogg has also been a long standing member of our sister organization, the American Association of Variable Star Observers and served as its president in 1940-1941. We have held several joint meetings in the past with the Association, the most recent in connection with the General Assembly in Winnipeg last summer. In the following article Dr. Hogg relates some of the history of the AAVSO.

The letters AAVSO are familiar to most of the members of the RASC. Perhaps if asked what the letters stand for, not all could reply that it is the American Association of Variable Star Observers. The two Societies have worked closely together for several decades. Joint meetings have been held, the last in Winnipeg, July 1974, as reported in our National Newsletter last October. Many members of the RASC are also members of the AAVSO, and have contributed thousands of observations. The immediate Past President of the AAVSO is Charles M. Good of Montreal. And the *Journal* has carried *Variable Star Notes* from the AAVSO beginning in 1952.

The autumn meeting of the AAVSO in 1974 was held in Williamstown, a small town in the northwestern corner of Massachusetts. Some sessions were held at Williams College where the beautiful campus was New England at its best with the coloured leaves and brilliant blue skies of October. The Hopkins Observatory of the college is one of the oldest in America.

It was a nostalgic time. The Saturday evening banquet was planned as a surprise party in honour of Margaret Walton Mayall who had retired as Director of the Association a year earlier. She had become Recorder in 1949, a title later altered to Director. Mrs. Mayall still gives generously of her time as consultant to the new Director, Mrs. Janet Akyuz Mattei. Mrs. Mayall received her B.A. from Swarthmore College in 1925 and her A.M. from Radcliffe in 1927. She has devoted her life to astronomy, working for nearly two decades with Miss Cannon on the Henry Draper Extension, and later shaping the AAVSO to its present importance. Her attendance at astronomical meetings, national and international, constitutes an enviable record. At the banquet, old photographs and anecdotes recaptured the past. Mrs. Mayall was presented with an enormous scrapbook, the leaves of which were letters sent in by many friends recalling happy and amusing incidents of the past. Mrs. Mattei announced that a Margaret Mayall Assistantship would be established by the AAVSO, with donations from friends. Not the least of the joys of the meeting was that Mrs. Mayall's husband and collaborator in many books, Newton, was able to be present after a long hospitalization.

The origins of the AAVSO really go back to the great German astronomer F.W. Argelander. In 1844 he wrote "An Appeal to the Friends of Astronomy", urging observations of the stars which vary in light. In the 1880's a group of amateurs in the U.S. began such observations. And in 1911 William Tyler Olcott with the help of Edward C. Pickering, Director of the Harvard Observatory, got together a group for systematic observing of variable stars. The first report appeared in *Popular Astronomy* in November 1911, and the first actual meeting was held in New York City in 1914. The history of the AAVSO has been published by R. Newton Mayall, who has been closely associated with it for five decades, in *The Review of Popular Astronomy*, nos. 513, 514, 1961.

From small beginnings of a dozen interested people the AAVSO has progressed to a membership of nearly 900 who have made more than 3½ million observations. Members of the organization have constructed thousands of charts for reference in the estimating of magnitude of the variables. They have also branched out into observations of sunspots, occultations, and various sky phenomena.

During the first half of this century the AAVSO headquarters were at the Harvard Observatory, and the guiding spirit was the popular Leon Campbell, the devoted Recorder of the organization aided by the enthusiasm of the Director, Harlow Shapley. After Dr. Shapley's retirement as Director, the orientation of the research emphasis at that observatory was changed drastically. The part of the endowment fund which Harvard had allocated for support of the AAVSO was withdrawn. In addition the ancient building which had always housed the AAVSO was torn down.

These circumstances might very well have forced the AAVSO out of existence. The way in which its members met this challenge should serve as an example to all amateur organizations. Margaret and Newton Mayall, Clinton Ford and other dedicated members pursued a determined course to build up an endowment to make the AAVSO financially independent, while temporarily receiving grant support from the National Science Foundation. The endowment project culminated in the magnificent half million dollar bequest of Walter B. Ford, Clinton's father, in 1971. The AAVSO will be around for many decades to come.

HELEN SAWYER HOGG

Following is the second half of Dr. Fernie's article reprinted from the *David Dunlap Doings* by kind permission of the Editor

The Carpenter's Chronometers. II

As described last time, the problem of determining longitude at sea had become so urgent that in 1714 the British Government offered a prize of £20,000 to anyone who could provide a method for obtaining longitude to within half-a-degree. Despite a flood of imaginative schemes, the prize went untouched for fifty years. In fact, the long-suffering Board of Longitude became so used to rejecting everything put before it, that when eventually John Harrison laid legitimate claim to the prize, the Board couldn't really bring itself to hand it over. Surely there had to be a catch somewhere.

John Harrison was born in a Yorkshire village in 1693, the son of a carpenter, and was brought up to follow his father's trade. His interests lay elsewhere, however, and without any training in the subject at all, he had soon taught himself enough about clocks to be able to repair and even construct them while he was still a teenager. Before he was twenty he had made two important contributions to horology: the invention of a temperature-compensated pendulum, and the invention of a remarkably efficient escapement known as a 'grasshopper'.

At twenty-one, hearing of the newly-offered £20,000 prize, Harrison set to work to build a seaworthy clock that would meet the necessary specifications. He soon had plans drawn up, but needed financial assistance to build the instrument. Since the Board of Longitude was empowered to advance money for likely schemes, Harrison went to London to see Edmond Halley, a member of the Board. Halley told him flatly that the Board would not advance him money since they had no idea whether the clock would work or not, and that he would be better advised to consult George

Graham, London's leading clockmaker. Graham was impressed by the young man and generously gave him an interest-free loan to build his clock.

Harrison, being a craftsman, took seven years over the job. The completed instrument hardly looks like any modern clock; it weighs 72 lbs., has four dials, and occupies an entire table-top. But it worked, and the Board arranged for a trial at sea. The clock was sent off on a voyage to Lisbon and back, with Harrison in attendance. Unfortunately, the trial was inconclusive because the ship's captain, who was conducting the test, died in Lisbon without leaving any report. However, the ship's navigator gave Harrison a statement to the effect that on the voyage home both he and Harrison made an estimate of their expected point of landfall, and that he was 90 miles out while Harrison was correct. (Such was the state of navigation: even on a short, well-worn route that a navigator could unblushingly admit to being 90 miles out in longitude.)

Things looked promising, but before another trial could be arranged, Harrison's inventiveness overtook him and he announced that he would now build an even better clock. No. 2 was completed in a mere two years, and looked even less clock-like than its predecessor, weighing in at an impressive 102 lbs. By this time, though, Britain was at war with Spain, and the Board declined any sea trials on the grounds that the valuable instrument might be captured by the enemy. Always foreseeing further improvements, Harrison started on No. 3. This one, however, took him no less than seventeen years to complete, bringing the date to 1757.

By now Harrison had made a name for himself, and on the strength of clock No. 1, the Board was prepared to advance him small sums of money from time to time for development purposes. His reputation reached such heights that the Royal Society awarded him its Copley Medal, an unheard of thing for a relatively uneducated village carpenter to achieve.

While No. 3 was in the making, Harrison realized the need for a much more compact timekeeper, and so simultaneously built No. 4. This was a very large watch, about five inches in diameter, and was the first true marine chronometer. Harrison was so pleased with it that when they finally got around to sea trials again in 1761 he withheld No. 3 and went for broke with No. 4.

This trial would be no less than a trans-Atlantic voyage to Jamaica and back. John Harrison himself, by now 68, decided to wait at home, sending in his place his son William. No sooner were they out of port than the longitude reckonings of Harrison and the ship's navigator began to diverge; who would be right in getting them to the first port of call, Madeira? The entire ship's company anxiously awaited the outcome, for to the horror of all hands it had been found that the beer had spoilt, over a thousand gallons of it, and as the captain put it "the People obliged to drink water". Happily the captain put his faith in Harrison's watch, which soon delivered them to Madeira and "3 Pipes of Wine for the Ship's Company". They reached Jamaica with the watch giving their position only 1' in error. The conditions had been well and truly met, the prize won!

With provincial optimism the Harrisons applied for their £20,000. Ah no, said the Board of Longitude; so excellent a result could only be a sheer fluke. They'd better have another trial. So off went William with No. 4 again, this time to Barbados. There William was outraged to find that Nevil Maskelyne, arch-rival for the prize, had been sent ahead as one of the judges. But despite Maskelyne's sneering attitude the watch proved its worth, even to the length of still being within the specified limits after the voyage home. Surely the prize must now be handed over. But no, the Board would only offer half the prize money, and that only upon receipt of all the timekeepers and full drawings and plans. For the rest Harrison would have to build two more chronometers, show that other clockmakers could duplicate them, and the whole lot would have to undergo new stringent tests. While John Harrison, now 78 and going blind, set to work on No. 5, Maskelyne tested the others at Greenwich, doing his best to report poor results. (This even included an initially un-reported dropping of one of the timekeepers.)

The Harrisons began to get the hang of the game, and when No. 5 was completed they gained an audience with the King prior to submitting the watch to the Board. The King listened with growing incredulity to their story. At the end Farmer George, as he became known, roared "By God, Harrison, I'll see you righted!". No. 5 was tested at the King's private observatory at Kew, His Majesty personally attending the daily readings. The Board didn't care; it wasn't their test. Aloofly they proposed sending

the watch on a voyage to Hudson Bay, then possibly with Cook to the Pacific (which it eventually did, proving a godsend to Cook), and topping it off with a few months bucking around the North Sea.

The Yorkshireman wouldn't give up. He petitioned Parliament. The King offered to appear at the Bar under a lesser title to plead the case. When the Board heard that Parliament would likely investigate the case they finally capitulated. But with sneaky meanness they had the last laugh: in giving Harrison the remaining £10,000 they (illegally) kept back the small amounts of money they had previously granted him. Harrison let it go; he had only three years of life left.

Finally, what became of the first four timekeepers? For many, many years they were left in neglect at the Greenwich Observatory. In the 1920's a Commander Gould found them broken, corroded, with parts missing, and as a labour of love and at his own expense he was allowed to restore them to working order. (So intricate were they, it took him 13 years.) Today, if you find yourself in London, take a trip down to Greenwich. There, in the beautiful Maritime Museum you will find John Harrison's timekeepers, quietly ticking away the hours as accurately as they did 200 years ago, while outside on the river ships set forth on voyages first made possible by them.

J. D. FERNIE

Sam Litchinsky Honoured

The late Sam Litchinsky, a long-time member of the Calgary Centre and one of the initiators of the Calgary Centennial Planetarium, has been honoured by a plaque in the Planetarium's Pleiades Theatre, according to the Calgary *Herald*. The plaque was unveiled on October 13. Mr. Litchinsky is the first person to be listed on an honour roll which the planetarium is initiating to recognize individuals who have helped in various areas of the Planetarium's development.

Mr. Litchinsky was one of the initiators of the planetarium idea, and helped set up the Pleiades Theatre through his origination of the piano fund in 1967.

Program Problems—People

Mr. Franklin Shinn is Assistant Planetarium Director of the Museum of Man and Nature. He has had a distinguished career as an amateur astronomer, and is a very active member of Winnipeg Centre, having served as President for several terms. A musician of note, Mr. Shinn is a graduate of the Royal Academy of Music, London, England, and established, and for many years directed, the Shinn Conservatory of Music in Winnipeg.

About a week after the Planetarium at Winnipeg closes a summer-long presentation of a program relating to Flying Saucers, someone can be counted on to stop at the console as he exits from the new program dealing with some astronomical matter and remark: "I enjoyed the program though I found it a bit technical for me. Don't you ever do something about things everybody's interested in like Flying Saucers or something?"

One season we did a program about that subject in which we "flew", without comment, at the beginning of the program, a movie of a mythical saucer that our animation department made for us. At the end of the program, to get that now-considered-all-important "Audience Participation" into the act we flashed on the dome several questions regarding the number of windows, the duration of the apparition, etc., and asked the audience to call out what they thought were right answers. Then we gave the correct one. One member of the Winnipeg Centre spoke to me after attending the program with the remark, "There I was, just enjoying myself and all of a sudden they started asking me questions about what I'd seen nearly an hour before. Gee! How did they expect us to remember it? We didn't come here to STUDY anything."

I also remember a program we entitled *Technicolor Universe* in which we talked about various ways in which color enters into our experience and knowledge of our surroundings. One visitor I bumped into a year after he'd been at the program said: "I just got nicely relaxed, settled back in the seat. There was this beautiful rainbow in the sky, the music was lovely, and all-of-a-sudden some guy started explaining how the rainbow was caused! Gees!"

I am sure your program director at your centre has had the experience of having somebody come up to him and say: "We should do more programs that explain how to read that *Handbook*," or "We should have a program about the Planets. I'm sure many of our younger members need to be filled in on these things." The latter usually comes from an older member who has just joined. When you assure him that a program on the planets took place last June 3rd, presented by the Junior Members, he remarks "Oh, well I guess I missed it! But I don't miss many programs, and anyway it wouldn't hurt to repeat it, because there are lots of people who miss them too, I notice!" If you repeat it you get the "Why-are-we-always-going-over-the-same-stuff?" routine from someone else.

One of my Latin teachers had me memorize a phrase: "Tot Homines, Tot Sententiae", which I was assured was said by a Great Roman Philosopher when he really meant to say "There are as many minds as there are men." Somehow when you lump a group of minds together into an audience they all seem to come out of one opinion: they know better than the guy doing the planning what he ought to have programmed for that meeting.

Now I know this should conclude with a solution, but as far as I am concerned it joins the other unsolved astronomical mysteries of the Universe.

B.F. SHINN
Winnipeg Centre

Observing a Synchronous Satellite

The following article is a copy of a report that Mr. Roy Bishop sent to Dr. Brian Marsden of the Smithsonian Astrophysical Observatory concerning his most unusual set of observations.

I wish to report the observation of a synchronous satellite. If possible, I would like to know the identity of this satellite.

I located the satellite quite by accident at 2334 ADT September 27, 1974. I was observing Jupiter with an 8-inch Newtonian reflector when the satellite passed by a few minutes of arc north of Jupiter. If my telescope had had a clock drive the satellite would have drifted across the field and I would have passed it off as just another satellite; however, without a clock drive it was apparent within a few seconds that I did not have to move the telescope to keep the satellite stationary in the field. I at once lost all interest in Jupiter and for the next few days left the telescope fixed relative to the Earth. Each clear evening when I opened the dome, there was the satellite still near the centre of the field.

Before about 2300 ADT (0200 UT) each evening the satellite is not visible, but by 2310 ADT sunlight reflected toward my location is sufficient to bring it into view. It is apparently four-sided since it usually shows four equally spaced brief flashes (about 8th or 9th magnitude) in a ten second interval. Occasionally it is continuously visible between the flashes at about magnitude 12 or 13. There is enough asymmetry in the flash pattern to establish a rotation period of 10.05 ± 0.05 seconds. This period is also supported by an interesting phenomenon which occurs each evening at approximately 0010 ADT: every 10 seconds for about 2 minutes it reflects an intensely bright flash toward my location. During this brief interval it resembles an electronic flash, is easily visible in a small pair of binoculars, and is just detectable to the naked eye (perhaps magnitude 5). At least one panel on the satellite must have a mirror-like finish.

Over several days the satellite wanders a few minutes of arc. For instance, during early October it passed by the same background stars about $4^{\circ}01'$ earlier each day, but by mid-October this interval had decreased to about $3^{\circ}56'$. A drift a minute or two northward or southward is also noticeable over a few days.

The satellite is a few degrees east of my meridian and must be in the equatorial plane of the Earth approximately above the 60th meridian (directly over the northern Amazon basin). A fairly accurate position could be computed from the following information:

My location: 45° 06' 28" N
 64° 13' 56" W

On 13 October 1974 the satellite passed about 6' N of the star ϵ Ceti at 23^h 59^m 07^s ADT

However, its approximate location and/or the 10-second spin period may be sufficient to establish its identity.

ROY L. BISHOP
Maktomkus Observatory
Avonport
Nova Scotia

The Old Dominion Observatory

The transfer of the 15-inch refractor with its pedestal from the old Dominion Observatory to the National Museum of Science and Technology on July 9th, 1974, may arouse feelings of strangeness in some of us who have enjoyed glimpses of the heavens with it or have just thought about it. The work of the Observatory since 1905 is well documented in the early volumes of our *Journal* and was summarized in a report prepared by R. Meldrum Stewart, which only appeared in 1971, Vol. 65, 206. Although the forefront of astrophysics had moved to Victoria with the 72-inch reflector, the refractor represents an old working model which will not be made again. The pier and dome of the observatory building which housed it, form the centre of the design, and two of the functions of the building are reflected in the orientation of the two diagrammatically opposite office wings; one has the centre line aligned with the geographic E-W line while the other is oriented to the magnetic E-W line. Other fields of activity of the early observatory besides astrophysics and magnetism are solar research, meridian work, time service, photometry, gravity, and seismology. When the astronomical functions of the observatory were terminated in 1970, the unique instrument was left in working condition and provided the core for a small but exceedingly high quality historical museum. The dome can be seen for many miles and certainly invokes an occasional thought about astronomy and the heavens, and when one ventures near, the small crenelated building near the entrance is found upon inquiry to be the South Azimuth marker. It is the surviving one of two which could be taken as the first approximation for the prime meridian of Ottawa. In the Nautical Almanac the Dominion Observatory is given latitude 45° 23' 38.1" N, and longitude 75° 43.0' W, along with other parameters. This is just one historical asset in the building complex which should be considered as part of our astronomical inheritance from the founders of the Observatory.

I first became aware of the possibility of the transfer for the telescope through newspaper accounts, and a few enquiries indicated to me the seriousness of the reports. I expressed my concern to various members of Heritage Ottawa, a group I had joined when the threat of demolition of the Billing's residence in our neighbourhood became imminent. They were very helpful, and their advice and active interest at a time when there were other crises is much appreciated. Correspondence was established, and through this, somehow or other I am pleased to report that the recently created Canadian Engineering Heritage Record became aware of the complex of observatory buildings. I believe this group became interested since I had stressed the importance of surveying in the early work of the Observatory and had indicated that the South Azimuth marker was an important Surveyor's monument which should be made more visible. I was urged to fill in a standard form used to register any engineering artifact considered important for preservation. I have been informed that an identification code 3501010601 has been assigned and that a staff member is preparing a submission for the board meeting to be held sometime in November. The Record is the concern of the Engineering Institute of Canada, and the National Historical Parks and Sites

Branch of the Department of Indian and Northern Affairs. Although the idea of heritage is now shared by a great number of organizations, Heritage Ottawa and other groups are separate organizations.

In other countries, National Trusts have been in existence for decades to save what is best from the past before it is too late. The interest in conservation in Canada was greatly strengthened by the many centennial projects in 1967. Our own Society, for example, prepared a special issue of the *Journal* "Astronomy in Canada, Past, Present and Future". The government recognizes this growing interest and created Heritage Canada in March 1973 in order to come to grips with the many aspects of administering such a trust. This group is particularly concerned with buildings, street scapes, and areas, and is thus distinct from the National Museum Board and the Public Archives.

A.E. COVINGTON
From Ottawa Centre's *Astronotes*

JAMES KEMP

At rare intervals a dynamic, tireless individual emerges on the Canadian amateur astronomy scene. In only a few years his enthusiasm leaves a permanent impression and the history of a Centre, or the entire society is affected. Jim Kemp's enthusiasm was experienced by many members, especially those in Toronto and Vancouver. But even beyond our membership, thousands of others might recall the "eloquent gentleman" who, when surrounded by a crowd of total strangers in Toronto's Allen Gardens or Vancouver's Stanley Park, would share his telescope and paint verbal pictures in the sky. He would bring the stars to anyone that asked. Perhaps Jim's most significant contribution to the RASC was his compilation of the history of Toronto Centre – a task that required over a year of evening and week-end research. Generosity and enthusiasm were Jim's abundant gifts to his contemporaries. We will miss those gifts and the "eloquent gentleman".

TERENCE DICKINSON

Kodak Publications

I happened to acquire an index to Kodak Technical Information publications and discovered a large number of leaflets related directly and indirectly to astronomy. Although the index is dated 1970, the code numbers are, as far as I know, the same, and prices unless otherwise stated are 15¢ each.

Orders and inquiries should be addressed to: Department 6, Canadian Kodak Sales Limited, Toronto 337, Ontario.

AC-20	Astrophotography with your Camera
AM-b	Solar-Eclipse Photography for the Amateur
AM-18	Lunar-Eclipse Photography
E-1	Making Long Exposures with Kodak Color Films
0-2	Reciprocity Data: Kodak Professional Black-and-White Films
M-9	Kodak High Speed Infrared Film
P-9	Kodak Plates and Films for Science and Industry, \$1
B-3	Kodak Wratten Filters for Scientific and Technical Use, \$1
P-185	Kodak Solar Flare Patrol Film
U-752	Scientific Photography Literature Packet, \$5
L-5	Index to Kodak Technical Information

CATHY HALL
From Ottawa Centre's *Astronotes*

Royal Astronomical Society of Canada 1975 General Assembly

The 1975 General Assembly will take place on the Atlantic Coast of Canada. It will be hosted by the Halifax Centre and will be held at St. Mary's University, Halifax, from Friday, June 27 through Sunday, June 29.

The Local Planning Committee is putting together a program which will combine astronomy with a touch of the sea. One feature of the program, which was popular at the 1974 Assembly in Winnipeg, will be an exhibit display. All members and centres are invited to display photographs, telescopes, accessories, items of historical significance, and any other items related to astronomy which may be of interest to other members of the Society. Awards will be presented for the best displays. If you wish to participate please contact the Exhibits Committee chairman: Mr. Peter Edwards, P.O. Box 201, Bedford, N.S. B0N 1B0.

Members are particularly reminded of the technical sessions. Papers on all aspects of observational, theoretical, or instrumental astronomy will be welcomed and considered for inclusion in the program. Abstracts of about 150 words in length must be sent before May 15 to: Dr. David DuPuy, Department of Astronomy, St. Mary's University, Halifax, Nova Scotia B3H 3C3. Presentations should be about 10 minutes in length in order to allow time for discussion.

Since the holiday weekend will extend for two additional days beyond Sunday, June 29, we hope that the dates selected will encourage many members to attend the Assembly, and to stay a little longer to have a closer look at one of the oldest and most picturesque parts of Canada.

ROY L. BISHOP, President
Halifax Centre, R.A.S.C.

HALIFAX CENTRE
Invites you to come to the
ROYAL ASTRONOMICAL SOCIETY OF CANADA
1975 GENERAL ASSEMBLY
to be held at
ST. MARY'S UNIVERSITY
on
JUNE 27,28,29

To assist in planning for events and accommodations, as well as to receive registration forms, please fill out this form and send to: RASC Assembly, c/o Dr. Peter Reynolds, Department of Physics, Dalhousie University, Halifax, Nova Scotia, B3H 3J5.

I plan to attend } Number in my party

I may attend }

I desire the Local Planning Committee to make arrangements for me

Accommodation desired on campus hotel motel

I will make my own arrangements

NAME

ADDRESS

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