

## NATIONAL NEWSLETTER

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### **General Assembly at Vancouver, May 19-22, 1972**

Registration for the 1972 General Assembly in the brand new Walter Gage Residences of the University of British Columbia kicked off an excellent round of meetings of the Society. Twelve of the Centres were represented and all those present agreed that it was one of the most successful Assemblies held, on the most beautiful of campuses. The excellent meals, available in the Student Union Building, were included in the cost of the "package deal".

On Friday, May 19, Council members and their guests were honoured at a dinner hosted by the University of British Columbia, held in the impressive Faculty Club. Dr. V. J. Okulitch welcomed the delegates on behalf of the University. Afterwards, back at the Residences, a jolly wine and cheese party gave members the opportunity to become acquainted or renew old friendships. The displays were well presented but too few of the Centres took advantage of the chance to dramatize the areas of their interest.

The Papers Session, held on Saturday morning in the Residences, carried on the high standard set by previous Assemblies. The first half of the program was chaired by Dr. J. L. Climenhaga and, after a coffee break, Mr. Jim Wright took over for the balance of the session. Approximately 80 members enjoyed the following:

"An Experiment to Determine Spacing and Direction of Travel of Shadow Bands at the Total Eclipse of the Sun, July 1972" by B. Franklyn Shinn, Winnipeg Centre.  
"A Large Amateur Observatory for the London Area" by J. L. Livingstone, London Centre (read by George Ball).

"An Investigation into Meteor Rates and Shower Classifications – a Problem of Statistical Reduction and Interpretation" by Ken Hewitt-White, Ottawa Centre.

"A Note on the History of Gravitational Theory and its Observational Verification" by C. Muses, California.

"Amateur Astronomers Assist the Apollo Missions" by F. John Howell, Calgary Centre.

"In Praise of an 8-inch F/7 Newtonian" by Peter Andraea, London Centre (read by Ken Hewitt-White).

"The Astronet – Rapid International Interchange of Astronomical Data by Amateur Radio" by Donovan Fallows, Vancouver.

"Time and Its Measurement in Fredericton" by J. E. Kennedy, Saskatoon Centre (read by F. A. Holden).

“Observations of Quasi-Stellar Sources with the Ottawa Centre 16-inch Telescope”  
by Rick Lavery, Ottawa Centre.

Unfortunately, because of technical difficulties, it was not possible to show the film “A New Method of Education in Astronomy” sent in by K. E. Chilton, Hamilton Centre.

The group photograph was taken on the steps of the Residence immediately afterwards and copies distributed later the same day.

After lunch, the Council meeting was held as well as meetings of the COCOCA group, the Variable Star Committee and the Solar Eclipse Committee. For those who did not attend any of these, a very interesting series of tours were made available. A visit to the Physics Building under the direction of Dr. A. M. Crooker, gave an insight into atomic spectroscopy while Mr. A. J. Barnard introduced the mysteries of Line Broadening by Electron and Ion Collision to a group in the Lab. Unfortunately, time did not permit more than a glimpse into these fascinating studies. The subject of molecular spectroscopy under the tutelage of Mr. I. Ozier gave a tantalizing insight into viewing the spectrum of the molecule. Line broadening by atomic collisions shown by Mr. G. Copley gave just a sufficient hint to make you want to explore the subject further. Afterwards a short bus trip took the group to the new 15-foot Radio Astronomy telescope, erected in October 1971. This “dish” faces south and the bush was cleared only in this direction. The instrument can also be put under computer control; it uses the Cassegrainian system. The next stop was at the TRIUMF installation — which will be a marvellous achievement when completed. It is to pioneer a new field of science: the use of mesons for nuclear physics, nuclear chemistry and radiotherapy. It is owned and will be operated by four universities (U.B.C., Victoria U., U. of Alberta and Simon Fraser U.). Originally only three universities were going to be involved, hence the “Tri”.

Cocktails were served on the patio of the Faculty Club prior to the Annual Banquet where 98 members and guests were welcomed most warmly. The President of the Vancouver Centre, Dr. D. W. Smellie, then introduced the head table and took the opportunity at this time to present the ex-Executive Secretary with a (most appreciated!) token of the esteem of members of the Society. After a delicious repast, M. Henri Simard gave his illustrated Presidential Address on “Amateur Telescope Making”. Dr. Smellie thanked M. Simard for his vivid portrayal of the hopes, problems and successes of ATM’s. The retiring President paid tribute to the people who had organized the General Assembly, echoing the thoughts of all of us who realize the monumental task of coordinating such meetings. The members and guests then retired to the Residence Building for the Annual Meeting of the Society (see Minutes in this JOURNAL, p. 172). After the scheduled meetings, members got together in the various lounges to chat over old times and new experiences.

Bright and early Sunday morning, as guests of the Victoria Centre, two sightseeing buses transported us to the ferry via Tsawwassen, landing at Swartz Bay on Vancouver Island. During the delightful two-hour boat trip we were entertained with an impromptu concert by a choral group made up of youngsters from California. Luncheon at Oak Bay Marina, Victoria, was tendered by the Government and the people of the Province of British Columbia. Fresh Pacific Salmon was a gourmet’s choice of the perfect meal. The President of the Centre, Dr. Alan H. Batten, was official chairman and as such introduced the head

table guests. His warm welcome was acknowledged by the newly-elected national President, Dr. J. L. Locke, who thanked the hosts on behalf of the members and guests.

Afterwards we were treated to an unforgettable stroll through Butchart Gardens—a fabulous picture of nature’s accomplishments when aided by dedicated man. Time did not permit an extensive visit as we were awaited by the staff of the Dominion Astrophysical Observatory. There, under the direction of Dr. David Crampton, we had the opportunity to examine the 72-inch telescope; the 48-inch Schmidt was demonstrated by Mr. Murray Fletcher, the 16-inch instrument by Mr. F. Younger and the mirror grinding and figuring room by Dr. E. H. Richardson. A box luncheon was provided and enjoyed, with coffee being served by members of the Victoria Centre. The weather was good and displayed to advantage the fantastic scenery from atop Saanich Mountain. The tour was so interesting that the proposed return by the 8 o’clock ferry had to be postponed until 9 p.m.

Monday dawned bright and fair and the Department of Science of the University hosted a “western” breakfast—and what a meal! Bacon, meal balls, sausages, potatoes and scrambled eggs all were included in this hearty fare. Because of a strike of civic employees, the planetarium show had to be cancelled although we were allowed to browse around the excellent gift and book store in the lobby, where we were welcomed by Mr. Dave Rodgers. Then on to Stanley Park and the Aquarium and the antics of the trained whales and dolphins—a real treat! The zoo and other parts of the park were also closed. After a short bus tour of the city, we returned to the Residences and the General Assembly officially ended at 5:00 p.m. although arrangements had thoughtfully been made for guests to stay on longer if they wished. Quite a few took advantage and continued to enjoy Vancouver for an extra time.

Thanks are most sincerely extended to the organizing committees of the Vancouver and Victoria Centres for the excellent arrangements so well and quietly carried out. Special mention must be made of the efforts by the two Davids from Vancouver—Dodge and Hurd—as well as Jim Wright and also Dr. Batten from Victoria. Attending meetings such as this whets the appetite—and there is no doubt that all members and guests of the 1972 Assembly are already looking forward to 1973 when they can again get together for knowledge and good fellowship. May the writer inject a personal note? The “bridal suite” was well and truly enjoyed and a special “thank you” goes forward to all concerned from Marie and Sam!

MARIE (FIDLER) LITCHINSKY.

### **Welcome, Rosemary!**

The Society extends a warm welcome to Miss Rosemary Freeman, our new Executive Secretary at 252 College Street in Toronto. Miss Freeman is a native of Sydney, Australia, a world traveller, who tries to see a new part of the world each year on her holidays. She comes to us from Canadian Pacific Telecommunications, where she worked for the past twelve years.

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Miss Freeman is looking forward to meeting and working with our members, either in person or by mail, in her new capacity.

### **Observations Planned Near the Edges of the Path of the July, 10, 1972, Total Solar Eclipse in Canada**

Observations made near the edge of the path of totality for the March 1970, solar eclipse showed that, while totality lasted typically about a third of the central line time, the limb phenomena (such as Baily's beads, shadow bands, and the flash spectrum) were prolonged by a factor of ten or more (see *Sky and Telescope*, August 1970, p. 90). Baily's beads lasted for nearly a minute before second contact and a similar length of time after totality, while the chromosphere remained visible throughout totality.

Ronald Abileah, my wife Joan, and I plan to lead expeditions to locations between 3 and 10 miles in from the northern and southern edges of the predicted path for the July 10th eclipse, after applying appropriate corrections for beads appearing in deep Lunar valleys. We plan to make accurately timed movies and photographs of the Baily's beads phenomena, supplemented by timings of second and third contact by visual observers at many locations, in order to determine the relative diameters, shapes, and positions of the Sun and Moon to high precision. In the next few years, we will be able to considerably improve the orbital constants of the Moon from photoelectric occultation, grazing occultation, and laser ranging data. Then, the eclipse observations (past and present) can be used to improve the constants of the Earth's orbit about the Sun and quantities such as the obliquity of the ecliptic.

Anyone interested in making observations near the edges of the path of totality on their own, or interested in joining our expeditions to locations in Quebec, New Brunswick and Nova Scotia, can obtain more information from the undersigned.

DAVID W. DUNHAM  
Department of Astronomy  
University of Texas  
Austin, Texas 78712 U.S.A.

### **A Change of Emphasis!**

At the Council meeting, held in Vancouver in May, discussion took place regarding future policy to be followed by the Newsletter Committee. Mr. Terry Dickinson, acting on behalf of COCOCA submitted the following motion:

The National Newsletter Editorial Sub-Committee of the R.A.S.C. JOURNAL be

empowered to provide an expanded information service, via the existing JOURNAL insert, and that the main vehicle for gathering this news be through the Centre Newsletters and personal telephone interviews with Society members. The budget for long distance telephone calls should not exceed \$200 per annum.

Since the objectives of COCOCA will be met with the above proposals, the Members of COCOCA, at their Annual Meeting on Saturday, May 20, 1972, recommend that COCOCA be dissolved, and that the Members of COCOCA serve as resource persons. It is also recommended that Mrs. Marie Litchinsky be added to the present Editorial Sub-Committee.

This motion met with unanimous approval from the Council. Thus the future content of the Newsletter will be broadened to include information formerly disseminated through the COCOCA bulletins. All members of the R.A.S.C., and especially former contributors to observational activity bulletins, are hereby alerted to send in a steady flow of information on individual or collective observational efforts. Through these pages of the Newsletter your hopes, aspirations and finished works will find their way into print!

### **The Tenth Planet?**

Over the last week, several reports have appeared in newspapers and Time magazine (May 8/72) regarding the discovery of a tenth planet in the solar system. These reports are based on the research of Joseph L. Brady of the Lawrence Livermore Laboratory, University of California, which was published in the Publications of the Astronomical Society of the Pacific, Vol. 84, page 314.

The search for distant members of the solar system is not new to astronomy. Neptune was discovered after Leverrier and Adams predicted its existence from irregularities in the motion of Uranus. The discovery of Pluto in 1930 was a result of a long search, but even this planet does not fully account for the motion of Neptune. Although the Sun's gravitational force is the dominant controlling force on the planets, each planet is affected slightly by the gravitational forces of all the others. These perturbations may be small, but over long periods they can be detected. The motion of Neptune indicates the existence of an unknown perturbation, but because Neptune requires 165 years to orbit the Sun, it has not even been observed for a complete orbit since discovery. Many more years of observation would be required before the effects produced by a planet beyond Pluto would be large enough to be useful in determining its position.

Brady realized that the orbit of Comet Halley might be a more sensitive indicator of the presence and position of the trans-Plutonian planet for several reasons. First there are observations of the return of Comet Halley going back to 295 A.D. Secondly, because of its highly elongated orbit, a comet will be affected far more than a planet. Comet Halley spends considerable time beyond the orbit of Neptune where it could be subject to considerable perturbation. Furthermore, in a 1971 paper dealing with the orbit of Comet Halley, Brady had to introduce an unexplained term or factor to bring the theoretical calculations

more closely in line with observation. Astronomers call this a secular term; science students refer to such things as “fudge factors.” Could this physically unexplained term be the gravitational effect of an unknown planet? Brady sets out to show that he can reduce the discrepancies between the observed time of return of Comet Halley and the theoretical determinations by including a tenth planet. As well, by complicated computations and successive approximations, he is able to determine values for the key physical parameters of the proposed planet and its orbit.

The planet and orbit are defined as follows:

Mass = 0.0009 Times the Mass of the Sun

Period of revolution about Sun = 464 years

Mean distance from Sun = 59.9 astronomical units (Earth-Sun distance = 1)

Eccentricity (elongation of orbit) = 0.07

Inclination to planet of ecliptic =  $120^\circ$

Because the inclination is greater than  $90^\circ$ , the planet is in fact, in retrograde orbit, or moving backward with respect to the rest of the solar system. The mass of the supposed planet is 300 times the mass of Earth. This would make it just slightly smaller than Jupiter, the largest known planet.

The whole argument for the existence of this planet lies in the fact that inclusion of its hypothetical effects allows better reproduction of the times of past returns of the comet. In particular, Brady claims to have reduced the discrepancies (called residuals by astronomers) in the time of perihelion passages for the appearances of Comet Halley between 1910 and 1756 by 93%. As well, two other well-observed comets, P/Olbers and P/Pons-Brooks have improved orbits when ten planets are included. The effect of the tenth planet on the other planets would be fairly small except in the case of Neptune and Pluto. It is suggested that alterations in the starting positions of the planets in the calculations could maintain the present level of agreement between theory and observation of planetary positions. As pointed out previously, Neptune and Pluto have not been observed long enough to attach great significance to their discrepancies.

A planet of this size, and at this distance, possessing the albedo (or reflectivity) of Pluto (a very conservative assumption) and a reasonable diameter, would be thirteenth or fourteenth magnitude — well within the brightness range of the search which led to the discovery of Pluto. However, because of its high inclination, it happened to be outside the area of sky searched at that time. At this time, the planet lies in the direction of the Milky Way, where it might be difficult to find among the immense population of stars of a similar brightness.

Addition of a tenth major planet to the solar system will have to await its actual discovery rather than this prediction.

DR. THOMAS CLARKE  
Assistant Curator  
McLaughlin Planetarium  
Royal Ontario Museum

## Wernher von Braun Lectures in Toronto

Dr. Wernher von Braun, deputy associate administrator of the National Aeronautics and Space Administration (NASA), gave a comprehensive description of NASA's achievements and future goals in a lecture delivered at Toronto's Ryerson Polytechnical Institute on May 11 as part of the *Toronto Daily Star's* "Other Voices" series of public lectures. He began by reviewing the Apollo 16 mission and noted that the recent increasing public disinterest and disenchantment with the space programme was "a most natural process" in that people had come to take space exploration for granted.

"It shows we have arrived in the space age," said von Braun.

The main part of von Braun's lecture dealt with Skylab, proposed to be the first American space station. Since Skylab will not leave earth orbit, only two of the three stages of the Saturn 5 rocket will be needed for propulsion and the third stage will be converted into the Skylab module which will be equivalent in size to a three bedroom home. This module will have two parts. The first will have laboratory, crew, and toilet facilities while the second will contain garbage disposal facilities together with an attached solar observatory and ecological sensor laboratory.

In the first part of the module, the crew will participate in and conduct a variety of experiments. Three crews will be involved, according to Dr. von Braun. The first will arrive a day or so after Skylab achieves orbit and will stay for a month, while the second and third crews will follow in succession and will stay up for two months each. Medical data, such as cardiovascular reaction to the space environment, will be collected for each member of the crews. Other experiments will deal with materials processing (including foam metal) and the isolation and control of certain kinds of viruses.

An important part of Skylab's work will deal with the sun and with sun-earth relationships. The solar telescope will be able to observe the sun in the ultraviolet and the infrared-parts of the spectrum unobservable from the surface of the earth. Other work will deal with such sun-earth relationships as the Van Allen Belts, the aurorae, and radio interference. Experiments are even planned to determine what, if any, effects the sun has on human moods and plant and animal behaviour.

Dr. von Braun also described how a new programme of NASA's will help meet the needs of underdeveloped nations where communication and education on a national scale are very real problems. NASA will be orbiting several satellites that will transmit educational television programmes to areas having a minimum of receiving equipment.

The proposed space shuttle was dealt with next. The shuttle is a new priority in space travel that features reuseable spaceships which will look very much like supersonic jets. This system promises to reduce the cost of sending one pound of equipment from \$500 return to \$140, and to as low as \$50 in the future; and will be efficient enough to be used for both manned and unmanned flight. Imagine satellites purchased F.O.B. or with service-man warranty! High-energy orbits will also be reduced in cost when the shuttle acts as a space tugboat.

The sortie modules will be a new form of space lab. Delivered to the doorway of interested

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and approved parties, these vehicles will contain the private individuals with their experiments, while NASA pilots the ship.

Von Braun concluded with a look to the future of lunar exploration. He noted that the Apollo programme had been stretched to its technological limits, which is why it would terminate after Apollo 17. However, he expressed the opinion that the next time the United States goes to the moon, it will do so "in style." He suggested that plans were being made to establish on the moon a colony housed under large acrylic domes with a quality-controlled environment and food a-plenty, free from the infestations of earth.

DENIS J. HALLEY  
Toronto

### **Angus Smith (1931-1972)**

With the sudden and unexpected death of Mr. Angus Smith on Tuesday, June 6, the Edmonton Centre lost one of its most popular and active members. Although he was interested in astronomy and had built his first telescope earlier than this, Angus first joined the Society in 1962. During the following ten years he held, at one time or another, most of the executive offices in the Edmonton Centre. Many members of other centres will remember having met Angus in May, 1970. At that time he was president of the Edmonton Centre, and he was largely responsible for the success of the Klondike General Assembly. His home and observatory became a popular meeting place, particularly for the younger members of the Edmonton Centre, many of whom obtained their first telescopic view of the heavens through Angus's 12-inch reflector and built their own instruments with his guidance and generous assistance. He is survived by his wife Margaret and children Barbara, Donald, Norman, and Lorraine, to whom we extend our sincere sympathy.