NATIONAL NEWSLETTER

The Amateur Astronomer in the 1970's*

Remember the 1950's when you (the amateur astronomer) were the community screwball? The neighbours would see a bulky mass of boots and parka performing some religious rite with that "spy-glass" on frigid evenings. In summer a whole group of "weirdo stargazers" would gather in your backyard for some significant sky event. The neighbours and friends would talk and ask a question like "how far can you see with that thing?" and then before you could answer they would quietly steal away never to return when the telescope was out. Then, in 1957, Sputnik gave you new prominence – now the *entire* neighbourhood was talking about the "nut with the telescope"!

Slowly though, things changed. The scientific community became interested in the amateur's favourite targets – the moon and planets. For decades the amateur had reigned supreme in his surveillance of Earth's companions. During the 1950's an amateur with a 6-inch reflector recorded his observations of Jupiter, for example, in a pencil drawing. Today that same drawing may be the only record of the visible features of Jupiter that exists for that specific date.

When the U.S. Space Agency decided that lunar exploration was inevitable, amateurs were recruited to work at Lowell Observatory, and other first class locations. Their task was to map the moon in greater detail than ever before. The results – the Air Force Lunar Charts – are the standard for near-side lunar study. These charts and the subsequent Lunar Orbiter photos removed the moon from the amateur's domain.

In the 1960's, NASA established the Lunar and Planetary Laboratory in Arizona for specific study of the moon and planets. Photos of Mars, Jupiter and Saturn are taken there almost every night. The high resolution and systematic nature of these studies have eroded the amateur's prominence in this area. Other major observatories are equally preoccupied with solar system studies in sharp contrast to two decades ago.

The amateur astronomer of the 1970's may look back with envy to the 1950's or earlier (beyond this writer's memory) to the green pastures of "real" amateur astronomy. This attitude is only partly justifiable. The manned landings on the moon in 1969 have greatly strengthened the amateur astronomer's hand among his fellow men. Everyone now *knows* that the moon has no air; is a real world with soil and rocks; is a long way away but much closer than everything else, and so on. The astronomy class has been called to session and it is much easier to share astronomy as a hobby today than it was only a few years ago.

This is no minor hurdle! Another is the number of Canadian and U.S. amateurs that have been absorbed into the planetarium business – a medium that has mushroomed in the last decade. Thousands of amateurs teach astronomy and telescope-making classes in museums and planetaria across both countries. And, best of all, they are no longer referred to as the community "screwball".

What is the future of amateur astronomy? Undoubtedly many amateurs will be, as always, content to study Messier's showpieces, our cratered moon and the dance of Jupiter's satellites. Some will ferret out areas still untouched by their professional brothers, but the 1970's will probably see these dedicated observers dwindle. A far larger portion will be digesting the torrent of new astronomical information that will dwarf the standards of today.

The 1970's should see a much more accurate estimate of the age of the Universe.

*Based on a lecture delivered at the 1970 Stellafane Convention, Springfield, Vermont.

New evidence will likely confirm the "Big Bang" hypothesis for the origin of the present state of the cosmos. Quasars will be more fully understood and their nature will give insight into the evolution of the Universe.

Closer to home the evolution of the Milky Way galaxy may be revealed by interpreting data from orbiting telescopes capable of receiving all wavelengths of the electro-magnetic spectrum. Photographs taken through those same telescopes will show craters on Mars and features less than 100 miles across on Jupiter's moons.

Perhaps the greatest new knowledge will come from the information relayed from instruments on board interplanetary probes. Two of these probes will be orbiting Mars by late 1971. A detailed globe of Mars will join ones of the moon in many an amateur's study during the 1970's. Mars will be visited by landing craft in 1975. The search for life on Mars is perhaps the single most exciting project for this decade.

During the next few years two Jupiter probes and a multiple planet mission to Venus and Mercury will push back the mists of ignorance. The Venus-Mercury fly-by will return photos similar in quality to those of Mariner 6 and 7. Of equal or greater interest are the "Grand Tour" missions planned for 1977 and 1979. Both will utilize a close pass to Jupiter to obtain a "gravity assist" to boost them on to the outer planets. The '77 probe will pass Jupiter, Saturn and Pluto during its 10 year mission. The '79 vehicle will visit Jupiter, Uranus and Neptune during a similar period.

Although all these missions are not yet fully funded, NASA is looking forward to their realization. It is pleasant to dream of seeing photographs of Saturn and its rings from a vantage point only a few thousand miles away. The amateur astronomer can appreciate these new riches more than almost anyone else on this planet. Through his understanding the amateur astronomer is in a position to help all men to look up and to see.

STRASENBURGH PLANETARIUM
ROCHESTER, N.Y.

R. TERENCE DICKINSON
ASSISTANT DIRECTOR

More on Lunar Occultations

Interest has been growing, both among amateur and professional astronomers, in the use of lunar occultations to determine fundamental astronomical data. In addition to the two articles in the August NATIONAL NEWSLETTER, an excellent non-technical article on "Occultations and their Uses" appears in *Leaflet 494* of the Astronomical Society of the Pacific, c/o California Academy of Sciences, Golden Gate Park, San Francisco, California.

Lunar occultations of radio sources have long been used to determine accurate positions and structure of such sources. Now a series of three papers in the June issue of the *Astronomical Journal* describes how lunar occultations of stars, observed with a photometer, can be used to determine the diameter and other properties of single stars, and one component of the separation of close double stars. At the 1970 RASC General Assembly, Drs. Burke, Cumming, Hube, Lin and Pinnington, of the University of Alberta, described work on lunar occultations being done there.

It was also deeply satisfying to receive the following report from Mrs. Dora Russell of the St. John's Centre of our Society.

Double Graze, June 1970

It was a deep-seated thrill for the beginning Newfoundland amateur astronomy group to feel they may have been the only people on earth watching the double graze occultation of two Pleiades stars by the moon.

In the wee hours of the morning of June 30, 1970, the members of the St. John's Centre of the Royal Astronomical Society of Canada, along with other interested persons, took up their positions along the Trans-Canada Highway, near Whitbourne, Trinity Bay, to observe the graze occultations of Alcyone and Taygete, a rare and significant astronomical event.

A successful double graze would have made possible a more accurate measurement of the moon's diameter, and would have provided data for lunar positions. It would have been an aid to mapping the southern Cassini area, where the mountains of the moon cannot be accurately seen. And, of course, it would have recorded occulted stars reappearing from the dark side.

The combination of data would have been an amateur triumph, and it was to this end that Harold Povenmire drove from his home in Titusville, Florida, all the way to St. John's, Newfoundland, to organize an observing team.

Less than five minutes may have prevented their making astronomical history. Heavy clouds obscured the first graze, which occurred at 3.31 A.M. Newfoundland Standard Time. The seeing conditions for the second graze, which occurred at 4.08 A.M., were good, and excellent observations were made, the results of which have not yet become available.

ST. JOHN'S — MRS. DORA RUSSELL

The Moon that Never Was (Maybe?)

After reading about the "Planet That Never Was" in the last issue of the NEWSLETTER, I thought that our readers might be interested in a satellite which was photographed 13 times near the turn of the century but has never been seen since. This was Themis, a supposed tenth moon of Saturn.

Shortly after the discovery of Phoebe in 1898, W. H. Pickering announced that he had discovered another moon of Saturn, which he named Themis. The satellite was present on 13 plates taken with the Bruce telescope at the discovery of Phoebe. However, as Saturn was in the rich starfields of Scorpio and Sagittarius at the time, it was impossible to follow the satellite or distinguish it from the myriads of background stars. When Saturn arrived at a more suitable position for observation of its fainter satellites, Themis was no more to be seen. It has never been seen since.

Some orbital elements were released, based on measurements of the photographic plates. Themis' period was 20.85 days and it's mean distance from Saturn was approximately 900,000 miles. This, in fact, is quite similar to that of Hyperion, but whereas the eccentricity and inclination of Hyperion's orbit are 0.0283 and 0.6° respectively, the eccentricity of the orbit of Themis was 0.23 and the inclination was 39°, which put the orbit in a far different plane from that of Hyperion.

If Themis was not a moon of Saturn, then what was it? The most reasonable theory is that it was an asteroid whose orbit brought it into the line of sight between the Earth and Saturn. Whether moon or asteroid, the story of Themis is another of the unsolved riddles of the universe that make the study of astronomy such an interesting pursuit.

HAMILTON — K. E. CHILTON

News Items

Congratulations to Tom Tothill and Fred Lossing of the Ottawa Centre, whose telescopes won awards at the 1970 gathering of telescope makers at Stellafane. Several members of our Society, including National President Henri Simard and JOURNAL Editor Ian Halliday, gave informal talks to the several hundred assembled there.

Bulletin 14 of the Planetary Observing Section of the RASC reports on possible magnitude variations of Saturn's satellites, and on methods for observing such variations. Interested observers can obtain a copy of Bulletin 14 by writing to Ken Chilton, 93 Currie St., Hamilton 57, Ontario, or to the RASC National Office.

The Chairman of the Instrumentation Committee of the International Union of Amateur Astronomers (IUAA) would like to hear from active amateurs who are available to participate in IUAA scientific observing programs. Send information (and photographs if possible) about your equipment, your interests and your level of competence, to Robert E. Fried, 4610 Orkney Lane, Atlanta, Georgia, 30331, U.S.A. The RASC is a corporate member of the IUAA.

Mrs. Inez N. Beck, a member of our Society, and Lunar Co-ordinator of the IUAA, publishes the *IUAA Lunar Newsletter*. Any members who are interested in serious lunar observation and study should contact Mrs. Beck at R.D. 1, 7317 State Rd., Wadsworth, Ohio, 44281, U.S.A.

The Niagara Frontier Council of Amateur Astronomical Associations held its sixth semi-annual meeting in Buffalo on April 25, 1970, with 30 delegates from 8 societies present. The Council sponsors a number of co-ordinated activities, principally an exchange of speakers and a semi-annual joint meeting. Ken Chilton and John McDonald of the Hamilton Centre will serve as Chairman and Secretary-Treasurer, respectively, for the coming year.

Rick Lavery of the Ottawa Centre has accomplished the difficult feat of recording eclipse shadow bands on a photograph. The evidence, along with an impressive array of other astronomical photographs, was shown to your Editor on Aug. 13, at a small informal gathering of Ottawa Centre observers.

A new publication, *Meteor News*, is published five times a year by the Astro-Gator Astronomy Club, 1025 Gulf Life Drive, Jacksonville, Florida, 32207, U.S.A. A year's subscription costs $1.00 in North America. The publication contains news of forthcoming showers, and notes from active meteor observers around the world.

From the Library

For the first time, a complete catalogue of all the books in the National Library has been prepared. There are three card catalogues – one by author, one according to title, and the third which lists the books in their Dewey number order. This latter list which gives the books in the order in which they are placed on the shelves, has also been prepared in booklet form for distribution. In addition to listing the author, title, and date of publication of over 1000 different books, there is a brief subject index giving the main topics to which users may most frequently wish to refer. It is intended that copies will automatically be sent to the secretary of each centre, but if you expect to make use of the library and have a serious interest, you may obtain a booklet for yourself by writing to the Executive Secretary, Mrs. Marie Fidler, 252 College St., Toronto 2B, Ontario. We hope that this service will provide a means for members, particularly those unattached to any Centre, to benefit more directly from the Society, although unfortunately, customs difficulties make impractical the mailing of library books to members outside the country.

TORONTO R. PETER BROUGHTON