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BULLETIN

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du Canada

Reflections — Where are the Women?

Mary Lou Whitehorne
Halifax Centre

Have you ever wondered why there are not more women in the R.A.S.C.? I have. The R.A.S.C. is a collection of some of the best people this country has to offer. No matter what their background, it has been my experience that R.A.S.C. members are intelligent, tolerant folk with a much wider perspective than most. So where are all the women?

I should begin by saying that I do not regard myself as a "typical woman", whatever that may be. Oh, I have done the pink-collar job ghetto thing, the motherhood thing, the neighbourhood coffee-klatch thing, the aerobics, the swimming lessons, the Tupperware parties, the sewing circle, and so on. No matter what group of ladies I was with, I never really fitted in. I was never part of the group, but more of an appendage than anything else. Nowhere did I feel as though I belonged until I fell in with "the rest of the oddballs in the R.A.S.C." - as one former Halifax Centre president phrased it.

From the very beginning, I was made to feel welcome in the R.A.S.C., but I had to wonder why there were not more women in the group. Granted, there is a long history of science being seen as a male activity and "too hard" or "inappropriate" for women. Girls have, in the past, been discouraged from the pursuit of science both in school and as a career. Surely, though, by now, we are starting to see a difference, are we not? Should not we at least be seeing an increase in the numbers of younger women joining the R.A.S.C.?

The R.A.S.C. is still something of an elitist men's club. This is surely not intentional but is a reality. Just look around at your next centre meeting. The Halifax Centre, for example, has only a few female members and they rarely come to meetings. I have asked them why they do not come and the response follows these general lines: "Oh, they are too erudite; I feel uncomfortable and stupid around all those highly educated men."

I reply, "But I do not feel that way. Why should you?" The answer to this question is invariably, "Well, you are DIFFERENT!". Now, my education is nothing out of the ordinary, but as to the "different" - I guess I have to plead guilty. I had to learn the hard way (from bitter experience with sexual harassment) to be assertive and not be intimidated by a male dominated society. So now I am probably seen as a "pushy broad", sexist terminology if ever there was any!

There are probably plenty of women who would like to be involved in the R.A.S.C. but they must work for a living. They also bear most of the burden of raising children and homemaking in addition to bringing home the bacon. Is it any wonder that there is no time or energy left for anything else? Add to that the subtle (and not-so-subtle) sexism that infiltrates society in general and we have a very nice men's club indeed.

It is not that the R.A.S.C. does not welcome women, for it does. However, society makes it nearly impossible for a woman to participate actively in organizations such as ours. For example, how many "male egos" would take kindly (and trustingly) to their wives going out observing at all hours of the night, in remote places, with a bunch of men? How many will offer to

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Charting a Course for the Society's Future - III

The Society Today

Derek Baker
Hamilton Centre

Every astronomical organization, at all levels, must provide support for the amateur astronomer's essential needs: knowledge, information, equipment, motivation and attitude. Readily available and specialized references, and up-to-date sources of news enhance the amateur's knowledge and supplement the information they get from other sources. The value of belonging to a society will be seen if equipment above and beyond the average person's means is provided and their skills are developed with the assistance of others.

By working and discovering together with peers, the amateur astronomer will generate the necessary energy and perspective to push forward and meet new challenges. That same organization must provide the organs that support the amateur astronomer's learning process. Opportunities to share events, receive new ideas, plan activities, share equipment, and reflect on experiences all promote the hobby and enhance learning activities. The question remains: what specific activities bolster these crucial needs? Consider the following points:

- By far the majority of the personal contacts that an amateur (especially the novice) experiences occur through the local centre. As such, all of the needs of the amateur must be addressed, to some degree, through the centres.

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BULLETIN

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Letters to the Editor

In the Best Possible Way

As both a former national president of the R.A.S.C. and editor of the *Journal*, I have followed the discussions in your columns about the society and the *Journal*, with interest and dismay. The two matters are certainly linked: the *Journal* is one of the most obvious manifestations of the national society and, in the minds of many members, the symbol of all that is wrong with that society. At the same time, the *Journal* and the national organization are distinct issues. We could conceivably change one without greatly affecting the other.

Let us look first at the society. To many, the local centre is an "astronomy club", where people go for fellowship with those having the same interests, to learn, and to have access to instruments and books that they might otherwise not have. All of this is well put by Derek Baker in his series of articles. Undoubtedly, these "club" functions are a legitimate, and perhaps the most important, part of a centre's activities. If, like our neighbours across the border, we had only a loose umbrella organization coordinating the many local clubs, that might be the end of the matter. History, however, has given us a different kind of national organization, more centralized, and before we rush to discard it and imitate our neighbours, let us at least ask if our system has some advantages that theirs does not.

Local clubs have their cycles. The Victoria Centre, to which I belong, is at present flourishing and active, but that was not always so, even in the somewhat more than thirty years that I have known it. An active centre needs a nucleus of committed and knowledgeable members, and only in the larger communities will there be a sufficient pool of local talent to ensure a continuously active group. It is the growth of Victoria that has rejuvenated our centre. Those in smaller cities might well look to the national council for more help than they are actually getting, but in my experience, criticisms of the national society tend to come from the larger centres that are and should be in many respects self-sufficient. Dare one suggest that the roots of the dissatisfaction that many members of those centres feel are closer to home than the national society?

At the national level, the R.A.S.C. is more than a club; it is a society "devoted to the advancement of astronomy and allied sciences". Part of the advance is through services to members, the Observer's Handbook being an outstanding example, but services to the national and worldwide astronomical communities are also important. Historically, the R.A.S.C. has been asked (and agreed to) support initiatives by the country's professional astronomers, and has spoken out on astronomical matters. Sometimes this side of the society's work benefits individual members, as when we succeeded in getting import duty removed from astronomical telescopes.

Our chief international service is the *Journal*. This has never been, and probably never will be, a front-rank research journal, but it is a respected part of the international literature in astronomy. It publishes papers of a type that most of the research journals will not accept and that only few other journals in the world will. I am not worried that Canadian astronomers do not submit much of their research output to the *Journal*; they and people from many other countries give us other kinds of work. These papers

are not much cited, so our "impact factor" is always low, but they are read and appreciated. As editor, I was more than once cheered by an unsolicited letter of appreciation for some article that appeared in the *Journal*. Such letters come from both inside and outside Canada. Look at the article by de Robertis and Delaney, in the February *Journal*, on the attitudes of university students to astrology. It will probably be cited more than average for a *Journal* article, but still well below the average for a paper containing "hard science". It is undoubtedly a useful contribution to the "advancement of astronomy". During my editorship, we published the first modern paper on liquid-mirror telescopes, which are now beginning to produce results. The paper is largely forgotten, but it played a role in getting such projects started.

All this is not to argue that neither the *Journal* nor the national society can be improved. Of course they can and should be. I wish, rather, to point out that the matter is a bigger one than whether or not you want to join your local astronomy club. An amateur is a lover, and all astronomers (including professionals) are, at heart, amateurs. If you love astronomy, you surely want to help in its advancement as well as your own. The national organization of the R.A.S.C. helps to make it possible for you to do so. The question to ask is whether or not we are doing it in the best possible way.

Alan H. Batten

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Help Share the Fun

To help centres who wish to make a speakers exchange, all centre executives are invited to submit a list to the editor of their members who would be willing to share one of their talks with another centre. Along with the member's name, include their address and/or phone number, the topic of their talk and any other pertinent details. A list will appear in a future issue. ☎

Is the New R.A.S.C. Member a Client?

Alister Ling
Edmonton Centre

I have been following, with much interest, Derek Baker's thought provoking series of articles concerning the society's future. My own recent experience forces me to conclude that the new member should indeed be regarded as a client. Peter Broughton's attitude is to see members as colleagues. Unfortunately it is rather difficult for a beginner to see him or herself as an equal to such a knowledgeable person as our national president, let alone a centre president. We can play with words, but the situation is still one of provider/client or mentor/student or facilitator/learner. At Edmonton's April Astronomy Workshop, some beginners, along with myself and notable amateurs Ken Hewitt-White and Alan Dyer, touched on this problem of today's beginner.

Fifteen years ago, many beginners such as myself entered the R.A.S.C. with a reasonable amount of knowledge in astronomy and a basic familiarity with telescope operation. Today, many arrive with little more than "Astronomy seems interesting. Tell me more." Even in a friendly meeting room, new members can be "scared" to insert themselves into small conversational groups. The explosion of accessories, basic telescope designs and computerized gadgets is bewildering to the newcomer compared to the standard 6-inch f/8 Newtonian with Kellner eyepieces available in the sixties and early seventies. Oddly enough, newcomers are frequently unaware of the popular magazines and even balk at the \$30 cost of introductory books.

In Edmonton, we have a new member advisor who invites both new members and visitors to have a chat with them after the meeting. Those who do not show up often at the meeting are sometimes contacted by letter or phone. Still, it appears that some people keep to themselves. I am not sure what the solution is, but perhaps each of us has to redouble our efforts in making the first move by introducing ourselves to a new face: "Hi! I'm Alister. Do you have any questions about astronomy, telescopes, or our group? Can I help? Did you know about the great selection of introductory books in our library?" In effect, these words are reminiscent of "Are you being served?"

At future monthly observing sessions and star parties the Edmonton Centre plans to have a

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Perseids 1993 - Shower or Storm?

Peter Brown

After many years of speculation, the parent comet of the Perseid meteor stream returned to the neighbourhood of the Sun in the last months of 1992. The original predictions for the comet placed its perihelion passage in the first years of the 1980's. Much anticipation surrounded this event and many people reported noticeable increases in Perseid activity, particularly in 1980. In all likelihood, the counts from 1980 were ordinary, the few observers who noted high activity became the "standard" quoted zenith hourly rates (Z.H.R.'s) for many years and therefore a self-fulfilling prophecy developed with respect to high Perseid activity. Also, these years saw vastly different methods of reduction and analysis of visual data so that comparisons between different groups and even individuals with varying perceptions were unrealistic.

The counts after 1980 and 1981 were generally quoted as weaker in activity in direct proportion to the interest in the stream and the belief that P/Swift-Tuttle had either arrived unseen or not at all. Beginning in 1988, the International Meteor Organization implemented global analysis of the stream using standardized reduction techniques and from data with uniform collection parameters. Additionally, the I.M.O. introduced computer calculated Z.H.R. procedures allowing flexibility to researchers in choosing the methods of reduction and permitting accuracy checks of the final results. This initial global analysis produced a surprise - a double maxima!

This result was widely criticized as the statistical significance of the new structure could not be objectively determined and the reduction procedures, though based on the best available techniques at the time, were still somewhat new. The new peak appeared to be some twelve hours before the "normal" Perseid peak. Initial explanations ranged from differences in perception between different groups of observers to a simple statistical "blip" in the data. Considering that more than 53 000 meteor observations had been used in the analysis, the latter explanation seemed doubtful.

The same double peak structure was found in the 1989 data at the same temporal location, separated by twelve hours from the primary "stable" maximum. The data from 1989 were of even higher quality than in 1988 with about the same number of meteors. The analysis techniques had been refined through experience with other shower global analysis and the con-

clusion seemed inescapable - a double peaked structure for the Perseids existed. The double peak profile had not been conclusively observed previously and a few explanations for the structure were given. The earlier peak was felt to consist of younger particles than the main one (a conclusion that was to ultimately prove true) and the authors of the 1989 analysis speculated that the material might be from a passage of P/Swift-Tuttle in the early 1980's.

The 1990 counts were destroyed by the full moon and no reliable analysis could be attempted with such poor data. In 1991, observers around the world had been alerted to the possibility of enhanced activity due to the new peak. In 1991 the new peak would favour observers in Japan - and favour them it did! The Japanese observers witnessed one of the strongest displays of the Perseids in the last century with a Z.H.R. of over 400. This was clearly stronger activity than had been witnessed in the past few returns and it seemed that the stream was changing. Shortly after the Japanese announced the heightened activity, Brian Marsden pointed out that in a paper he published in 1973, he had discussed the possibility that P/Swift-Tuttle might actually return in 1992 if it was the same comet as one observed in 1737. While he had ranked the possibility as slight that the 1737 comet was P/Swift-Tuttle in his 1973 paper, the enhanced Perseid display in 1991 revived the remote chance that the comet might return in 1992.

The telling sign would be Perseid activity in 1992. Unfortunately a full moon would compete with the meteor show and make data analysis very tricky. As the data from the previous returns showed that Europe would be the best place to observe the early peak, much preparation was made there to capture the event. Unfortunately, meteor showers, unlike eclipses, have an inherent unpredictability resulting from our lack of knowledge regarding the dust distribution about the parent comet. The 1992 display showed this maxim perfectly; the new peak shifted some two to three hours earlier than had been observed in past years. As a result, Asian and Russian observers were in the best locations to witness the display. After much analysis of the available observations it appears that the 1992 activity was higher than in 1991 - perhaps with a peak Z.H.R. on the order of 500, though this peak value will remain highly uncertain due to the effects of lunar interference.

This brings us to the next logical stage of the "act"; the 1993 display. With P/Swift-Tuttle recovered shortly after the 1992 display (and with elements close to those predicted by Marsden in

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Venus Comes Close — March 1993

Michael S. F. Watson
Second Vice-President

Among the thrilling spectacles for watchers of planets in the night sky is the plunge of Venus toward the western horizon in the evening as it approaches inferior conjunction, and its dramatic and speedy reappearance in the morning sky in the east two weeks or so later. This is always a startling event, partly because Earth's so-called "twin planet" gleams prominently in the evening sky for six months or more before it begins its dive toward conjunction, and partly because of the great speed of its movement from night to night.

Venus circles the Sun in a period of about 7.4 Earth months, but this period, in combination with the Earth's own motion about the Sun, results in a lengthy period of about 19.2 months from superior (or inferior) conjunction to the next same conjunction, as seen from Earth. Typically, after superior conjunction, Venus wends its way slowly around its orbit toward Earth and from week to week rises higher in the evening sky after sunset until, about two months after superior conjunction (depending on the time of year on Earth), it becomes reasonably well placed for observation.

Venus then dominates the evening sky as a brilliant, magnitude -4 beacon for several months, its altitude and azimuth varying due to its orbital position, the season on Earth (with its impact on the angle that the ecliptic makes with the western horizon at sunset), and the observer's latitude. During this lengthy period, Venus' elongation from the Sun lies in the narrow range of 30° to a maximum of 47° for months on end. As an example, at the most recent appearance of Venus in the evening sky, from July 1992 to March 1993, the planet lay within this range of elongation for over five months, between October 5th and March 10th.

Suddenly, and as if without warning, Venus reaches that part of its orbit in which it swings around to move between Earth and the Sun, where its motion is virtually at right angles to our line of sight to the Sun. Venus then quickly reverses its apparent direction of travel in the sky, and its elongation from the Sun can decrease by up to 1.6° (or three Sun diameters) each day! During a typical apparition, after sunset, Venus moves too close to the Sun for easy naked eye observation about ten days to two weeks before inferior conjunction. Thereafter the planet swings through conjunction to the

west side of the Sun, and draws quickly away so that, again, one or two weeks later, it becomes visible very low in the morning eastern sky, rising just before the Sun.

This spring, observers in the northern hemisphere had an especially favourable opportunity to watch this spectacle, for two reasons that always coincide when Venus reaches inferior conjunction near the beginning of April every eight years (at least, in this century). First, the "Venus plunge" took place in the last two weeks of March, just at the time of the spring equinox, when the ecliptic rises at its steepest angle up from the western horizon. Thus Venus appeared as high as possible in altitude for its elongation from the Sun (for example, on March 10th Venus had an elongation of 30°, and also stood 30° above the horizon at sunset, as seen from 45° north latitude).

The second reason for this especially favourable elongation was that the planet's tilted orbit (3.4° out of the plane of the ecliptic) had carried it to a declination that was significantly to the north of the ecliptic (and the Sun). The 3.4° orbital inclination of Venus, measured from the Sun, actually results in Venus appearing to lie almost 8° to the north of the Sun as seen from Earth, because near inferior conjunction Venus lies so close to Earth. This effect further raised the planet to virtually the maximum altitude possible in the evening sky after sunset as it approached inferior conjunction.

In the last week of March, the weather over much of southern Ontario cleared after a February and early March of cloud and unusually heavy snowfalls. For three successive evenings, Thursday March 25th through Saturday March 27th, I had the chance to spot Venus in an exceedingly clear western sky. It was dramatic how quickly the planet sank lower in altitude from night to night, as it approached inferior conjunction on April 1! On the first evening, I happened to be on a flight from Sudbury to Toronto that left at 19:00 and arrived an hour later. By request, I had a right (west) side window seat, and spotted Venus, below the waxing crescent moon, just as we took off. The residual atmospheric effects of the Mount Pinatubo eruption in June 1992 seared the horizon with a deepening orange glow, in the middle of which the bright (but quickly fading) Venus gleamed at magnitude -4. I had my portable computer with me, and as we flew south and each minute passed I entered the new time and our rough geographic co-ordinates into the planetary position program that I use most often and find reliable. To my astonishment, as the clock passed 19:20, then 19:30, then 19:40, the program told me that I was watching Venus sink to altitudes of

4.7°, then 3.0°, then 1.3°. Finally the gleam disappeared at 19:51, with the planet by calculation lying 0.5° below the horizon! I realized that, at the aircraft's altitude of 3 000 metres, the western horizon dipped substantially below its theoretical level as seen from the ground below, so that I was seeing "over" or "beyond" the true ground level horizon. This observation certainly gave new meaning to the phrase so familiar to evening observers, "a low western horizon"!

On the next two nights I was at our family cottage near Huntsville, about 230 km north of Toronto. On the Friday evening, March 26th, I found a high rise along one of the local roads, and started a scan with 10x50 binoculars at 19:00 along a low western horizon. With increasing frustration, I swept back and forth with no luck, until finally I scanned further to the north than I had expected, and a surprisingly white Venusian gleam popped into view at 19:12. This I followed for the next nine minutes, until the planet disappeared at an altitude (by later computation) of 2.8°. What delighted me was that, in ten power binoculars, the razor thin (1.2% illuminated) crescent of the planet, which Galileo first saw through the newly-invented telescope 385 years ago, was very obvious. This was not really surprising, because the planet's angular diameter was 59.1 arc-seconds, within 2% of its maximum size as seen from Earth. What was even more striking, however, was that the orientation of the crescent with respect to the horizon was markedly different to the orientation of the crescent moon, some 32° away.

The Venusian crescent was turned to the lower left (south southwest in the sky), while the lunar crescent faced to the lower right (west southwest); their orientations differed by 30° to 40°, even though they were in a similar phase, and, of course, were lit by the same light source. The explanation, of course, is that Venus lay so far north of the Sun that, at its small elongation (in right ascension) of only 9°, the crescent had already started to swing around to the south, and then to the west, as it would do more quickly as it approached and then passed inferior conjunction in the week that followed.

This is similar to the phenomenon of a solar eclipse seen from just outside the path of totality, where the thin uneclipsed crescent of Sun swings around in orientation very quickly as the Moon passes over the Sun. I had never seen this phenomenon as clearly and obviously before, and it was striking and very dramatic.

The next evening, Saturday the 27th, was a repetition of the night before, except that Venus had fallen another 1.6° closer to the horizon at the same time after sunset. How difficult it was becoming to find, even in binoculars! I watched

Venus in the binoculars and with the unaided eye from 19:11 to 19:23, as its altitude diminished from 3.2° to 1.3°, and Venus finally disappeared behind the distant trees. I knew that I had seen the last of our closest neighbour for several weeks, until its reappearance very low (because of the very shallow ecliptic-horizon angle) in the morning sky. Adding to the spectacle was a brilliant Jupiter rising majestically in the east, almost 180° away from Venus, and Mars near Castor and Pollux at the zenith.

It will not be until the spring of the year 2001 that we will again have this favourable evening elongation of Venus approaching inferior conjunction. Make your reservations early, and remember that this kind of observing requires very little equipment, but rather only a favourable apparition of Venus, some thought and planning, a low horizon, and clear weather! ☼

Look THAT Up in Your Observer's Handbook!

Alister Ling
Edmonton Centre

In the past I have extolled upon the incredible amount of information in the *Observer's Handbook*. It is not just the handy tables, but also the clear and concise explanations that go along with each section. As before, I encourage everyone to READ it - it's quite the education.

Just recently, I stumbled upon yet another section that is useful - Double and Multiple Stars. A few months ago I had observed some double stars (γ Andromedae for one) and was keen to check whether or not I saw the companion in the right place.

My first line of enquiry was the Sky Catalogue 2000.0. It contains page after page of double star data and also lists the orbital elements of the binary stars (where one does orbit the other). However, the time of periastron, eccentricity, inclination, and semi-major axis doesn't tell me anything if I don't know where to find the formula into which to plug them!

I was searching for something else when I accidentally opened up the handbook on the double star section, and before my eyes was a list of the orientations and separations of the most popular double stars, including the binaries! I had guessed an elongation of southeast for the fainter components of γ Andromedae, and the real answer is east-southeast. Given the difficulty of accurately finding east with a Dobsonian, this is a hit!

Does the R.A.S.C. Observers Handbook have the answer to everything? Almost! ☼

Bicycles, Bubble Gum and Astronomy

Alister Ling
Edmonton Centre

A couple of months ago I prepared a presentation for an elementary school class on the topic of telescopes. The question in my mind was how to communicate the finer points of what to look for in purchasing one. I do not know how well I succeeded, but you may find some of my analogies useful.

The first point I wanted to make was that telescopes are different and that what is good for me might not be good for you. This is where bicycles enter the picture. A \$1,500 12-speed racer is a great bike - but can you reach the pedals? A more suitable choice might be a second-hand mountain bike of the right size at \$300. In a similar vein, an 8-inch SCT is simply too heavy for kids, and will end up in the closet.

My next challenge was explaining why the Sears 60 mm special was not a good telescope. Aperture is more important than magnification. Enter the bubble gum. Imagine taking a hunk of gum and stretching it two hundred times its size. What do you think the flavour would be like? Would this thin sheet be good to chew? The same thing happens with light: the small-aperture telescope spreads the light out so much there's little left to see.

To reinforce the concept of light spread, I set up a 400 mm telephoto lens (63 mm aperture) and with a 4.8 mm eyepiece focused it on the blackboard across the room. Next to it was an 8-inch f/4.5 scope with a 28 mm eyepiece focused at the same spot. The light level disparity was fantastic!

It is difficult to gauge how much of this sunk in on the kids, but it is a start. Here is one thing I would recommend to those of you who do mall displays for Astronomy Day: set up a 60 mm beater scope at relatively high power (with those wonderful Huygens eyepieces) next to a quality 80-100 mm refractor or reflector and let people compare the images for themselves. You can preach all you want about not buying the 565 power scope for \$119, but there's nothing like a demonstration to prove your point. ☼

A science cannot be played with. If an hypothesis is advanced that obviously brings into direct sequence of cause and effect all the phenomenon of human history, we must accept it, and if we accept it, we must teach it.

Henry Adams

American author/historian (1838-1918)

R.A.S.C. Lighting Certificate

Ruth Lewis
Chairperson, Light Pollution Committee

At the February national council meeting, the light pollution committee received approval for a "Certificate of Merit" to be presented by individual centres. We propose to acknowledge businesses, large or small, that have used an environmentally responsible approach to lighting. Each centre will have the opportunity to choose one or two recipients each year. There are probably more who would qualify for an award, but we would like to keep these special, unique and something to be valued.

At the General Assembly in Halifax, I plan on showing examples of good along with the bad, to demonstrate what could be considered for an award. Surprisingly, there are quite a few good examples here in Calgary and very likely in your area as well. We are hoping that we can generate more interest and support by recognizing those in the lighting industry who are making a difference and letting them know that their efforts are noticed and appreciated.

It is heartening to see the number of members involved in the International Dark-Sky Association. It is certainly the best source of information anywhere and supporting them is most worthwhile. I believe we all know that what happens in the U.S., sooner or later, affects us as well. Being able to point to cities and counties south of the border where the use of low pressure sodium (LPS) or full cutoff fixtures is written into the ordinances, can be very useful.

If you happen to be one of those rare individuals who has a bit of free time, we could really use you on our committee. There seem to be many who are concerned about light pollution, so here is one way to help the effort. If you would like to write to me, my address is:

712 34th Street N.W.
Calgary, Alberta
Canada
T2N 2X9.

I will finish off with a tidbit from the March 16th, 1992 issue of the *San Diego Union-Tribune*. "Bill Robinson, San Diego Police Department spokesman: 'When we made the change to amber (LPS), we had concerns regarding getting detailed descriptions of suspects. Those have not been born out in reality.' He could not remember one single instance of an investigation being jeopardized by the LPS lights." ☼

- There are many areas that each centre must deal with. Those that directly impact on the individual member by augmenting the learning cycle and setting the tone for their involvement in the process are the most critical items.

- The centres are best equipped to address the needs of the amateur astronomer. It is the centre which can immediately recognize and respond to the changing needs, interests, and goals of its particular group of amateurs. It is the centre which must work with the new members and set a tone of friendliness, excitement, and professionalism within the organization via formal and informal activities.

To meet the essential needs of the typical amateur astronomer and to support the learning processes of the active learners in the organization, every centre must:

- a) hold meetings at least every month,
- b) provide services for the novice amateur (i.e. instruction for beginners),
- c) publish a newsletter for the dispensing of information and sharing of ideas, experiences, and expertise,
- d) provide a library of common and specialized references,
- e) have an awards/recognition system to reward significant contributions and accomplishments in a variety of activities,
- f) provide a regular observing location,
- g) own several telescopes that can be accessed by members who do not yet own one,
- h) own and operate instrumentation which is beyond the means of the typical amateur astronomer
- i) provide forms of assistance to groups of members involved in larger scale research projects, and,
- j) educate the public and advertise its activities to the community.

The national society must have as its main goal the supporting of these core activities of the centres and expediting the communication between members of the R.A.S.C. on a country-wide basis. As such, it must set up mechanisms that guarantee that every centre in the R.A.S.C. is meeting the needs and supporting the processes inherent to amateur astronomers. The national organization is in the best position to be a facilitator, coordinator, and supporter of the grass-roots interests and activities in the centres. It cannot view the centres as franchises serving its goals, rather, it must serve the purposes of the centres. The national society must also link the R.A.S.C. with large organizations on the outside. All endeavours through the national society must be appropriate to a national

audience. All financial and resource decisions must be justified in these regards. Remember, the individual member (and all centres) are looking for materials and monies that empower them to be more knowledgeable amateur astronomers.

Is it absolutely necessary to have a national society? Yes! Some of the support activities required are standard across the country, or are too large in scale for individual centres to tackle. Situations will arise where group projects extend across the country, and discourse on a topic will have a national scope.

Using the "essential needs" and "learning cycle" models as checklists, let us now examine some of the individual items currently offered to all members of the society at the national level.

The Observer's Handbook

This is, by far, the best thing one gets out of the R.A.S.C. It contains much of the information required for one to remain an active observer and successfully enjoy the sky from year to year. The "Sky Month by Month" is well done - detailed yet still convenient to use. This section, and others, provide the stimulation of ideas and motivational instruments for the amateur astronomer to investigate astronomical phenomena. The information in the Observer's Handbook also enables the amateur to research and prepare for their activities. It is clear to me that the Observer's Handbook empowers the individual to become an active learner in the field of astronomy.

There are areas which should be more detailed such as the occultation section, comet section, asteroid section, meteor information, and more finder charts for asteroids and comets. These areas are good for kindling the interest of amateurs. These specific topics encourage studies that are good for developing important skills in observational astronomy. Other sources, such as *Sky & Telescope* and *Astronomy* magazines, do provide good information, but they do not provide information with enough lead time to plan large group efforts, and they lack a Canadian perspective.

I would like to see a new section called "Projects and Priorities For The Year" which would include special events and areas of particular interest for the year. (e.g. a list of high priority variables, meteor showers requiring special attention, etc.). This section could highlight areas that professionals and amateurs may want to organize activities around, such as an attempt to recover a returning comet as early as possible. This would benefit each centre's observing chairperson, and assist amateurs requiring ideas for research projects.

Some of the data tables and certainly the star charts are unnecessary. This basic set of facts and information does not change from year to year. The amateur doing research can access it elsewhere and it need not be included in the Handbook. Many centres and intermediate level amateurs possess sources such as Burnham's Handbook, the Webb Society references, Uranometria atlases, etc.

I have noticed that a large number of our novices are intimidated by the Handbook and do not use it, despite its excellent organization and good content. Each section should be supplemented with descriptions on how to use the Handbook for the welfare of new members and novices. This should contain working exercises that any member can work through and understand. Its details could be further fleshed out at each centre's meetings so our novices get their money's worth out of the Handbook.

The Journal

Every R.A.S.C. publication should reflect the activities and interests of the members of the society. Each issue must contain some material accessible to every member. Finally, a national publication should be able to motivate and interest the reader and encourage further activity and learning amongst the membership. A national publication provides a forum for the sharing of each amateur's experiences and spurs on further dialogue.

I feel that the *Journal* does not meet the membership's need when the stages in the learning cycle are used as a checklist. I note a number of problems. The bulk of the papers are not aimed at a majority of our members, therefore it does little to motivate most of them. It does not provide research material that is appropriate to their activities. It does not deal with observations that are within the means of the membership, and it does not provide an appropriate forum for the amateur astronomer to share their findings. It is viewed as too complex and intimidating.

The inappropriateness of the *Journal's* place in the R.A.S.C. is exemplified by its use and popularity. During my seventeen years in the R.A.S.C. I have met very few members who read the *Journal* on any sort of a regular basis. Most people just file it away somewhere. I am fortunate that I have a background that helps me understand and appreciate some of the papers, and I make an effort to read something from each issue. In my experience, this does not apply to most members. When one factors in the characteristics of the amateur astronomers who have recently joined the R.A.S.C., the *Journal* does little to meet their essential and immediate

needs. Given a limited amount of leisure time, most would rather spend their time reading *Sky & Telescope*, *Astronomy*, *Mercury*, or some other publication more in line with both their interests and abilities.

In the eyes of the professionals, the *Journal* is one of the least important publications of its type in North America. It is quoted quite infrequently as a reference in other journals. As such, I would say that it is not meeting the needs of the professional astronomical community as well. It is argued that the R.A.S.C. should support research in the Canadian astronomical community. I will agree that Canadian research should be supported, however we are not the ones best suited for the job. Canadian graduate students publish in many other periodicals - they do not desperately depend on our journal.

A few words regarding the society's stature and status within our own communities. Personally, I do not think that the R.A.S.C. is more respected because it publishes the *Journal*. A society earns respect for what it does and what its members accomplish. To bolster our status we must concentrate our efforts on publishing our members' exploits. The *Journal* does little to advertise what the great majority of amateurs accomplish. This contrasts with most centre newsletters, popular astronomy magazines, the *B.A.A. Journal*, and publications in the province of Quebec, Europe, and Japan.

When one first joins the R.A.S.C., wanders up to a centre's observatory, or takes in a meeting, the first and lasting impressions are generated by the professionalism of the people, the accomplishments of the group, and the overall atmosphere of enthusiasm, energy, and accessibility. Tradition and names do not keep amateur astronomers active in the R.A.S.C.; programmes and support do. We should not hang on to the *Journal* solely for tradition's sake.

The BULLETIN

The BULLETIN approaches the needs of our membership by keeping everyone up to date with the goings on around the R.A.S.C. It is accessible to each and every amateur because it has articles at a variety of levels. These have the potential to address many stages in the amateur's learning cycle. Sadly, it does not have the budget to effectively do every job. What the members need is a magazine more akin to *Sky & Telescope*; intermediate between the *Journal* and the BULLETIN. It should emphasize projects and results from around the R.A.S.C. and have articles at the beginner, intermediate, and advanced level. Some *Journal* level articles would be appropriate. The number of articles at each level of difficulty should be proportional to the

number of members in the R.A.S.C. at that level. Several distinct topic areas should make up the bulk of each issue.

- "Personal comments": R.A.S.C. politics, humour, opinions, editorial
- "In and around the R.A.S.C.": centre activities, noteworthy people, awards, new members, obituaries, upcoming events, classified ads
- "Astronomy updates": discoveries, current professional research, projects under way in centres, upcoming phenomenon, book reviews, assessment of commercial items
- "Results and proposals": ideas from professional and amateurs, articles emphasizing accomplishments of observers, historical research papers, equipment designs and evaluations, drawings, photographs, charts, etc.

There are many very talented and knowledgeable members in the R.A.S.C. who could write monthly columns on planetary astronomy, deep sky observing, astrophotography, CCD work, computer software, historical inquiry, plus book and product reviews - with an emphasis on what is going on in Canada. These are all areas that interest the majority of amateurs. These topics would act as a catalyst for increased learning and more active research in the R.A.S.C.

Detailed product reviews certainly have a place in our society's publication because our members need this sort of information and guidance, and we would not have any advertising pressures producing any bias in the reports. The modified BULLETIN could concentrate on upcoming celestial events not fitting into the Handbook (e.g. the ephemeris for a new comet). Perhaps the greatest emphasis could be placed on reports of the results of observing projects, optical experiments, and historical research, and the like.

What we need is a national publication that reflects the membership and generates a dynamic organization. It must be accessible, entertaining, and not intimidating. There is a great amount of fantastic work going on across the country. Why do we rarely read about it?

Fundraising

This is something that both the centres, and the national society must actively pursue. Mechanisms must be set up whereby fundraising can be coordinated on a national level. Long-term campaigns aimed at securing money for purchases of equipment, etc. require a consistent public awareness programme. The national society can assist the centres in this manner. I must emphasize that when funds are raised, the membership needs to see something concrete being purchased or done. Money should not be put away in emergency funds and the like.

Fundraising efforts should be preceded by a commitment of the funds towards explicit goals that the membership can use as thermometers of success.

Allocating Funds

There are many areas of interest and need that are common to all R.A.S.C. centres, but may be beyond their means or ability. The national society needs to identify these areas and actively support them. Some activities that require national coordination are most appropriately done at the national level. The recent R.A.S.C. sponsored eclipse trip to Mexico is an excellent example of the type of thing that can be done nationally to the benefit of members across the country. It was well organized and financially successful.

It is my feeling that the national society should support the acquisition of equipment by the centres by operating an equipment fund. This could be used for purchasing telescopes, accessories, computers, and other capital purchases. It should not supplement the operating costs of any centre. Such a fund could be set up to provide some percentage of the purchase price, given that fundraising was done by the local centre for the remaining amount.

Another fund that should be set up is a "newsletter fund". Many small centres have difficulty affording the postage/printing costs. Perhaps some of the small centres could receive assistance in order to guarantee that a higher quality newsletter is published by every R.A.S.C. centre on a regular basis (e.g. photographs included in every publication). The "speakers fund" which the national society manages is a great example of money well spent, because it impacts directly on the membership by supporting communication between centres. This should continue!

All of the elements that I have discussed must be connected so that the entire organization is dynamic and self-perpetuating in its activities. Making decisions 'at the top' that will encourage and facilitate active involvement by amateur and professional astronomers in all levels of the R.A.S.C. will be best accomplished using, what I will call, an activity response based approach. This system puts the onus on the membership to define the spending priorities of the national society, defines where the national organization can promote the advancement of astronomy in Canada, and guarantees that the essential needs and learning processes of amateur astronomers are integral to the R.A.S.C.'s focus. We will look at this proposed system in the final part.

[In the August issue: *The Society of the Future?*] ☺

Reflections — Where Are the Women?

(continued from page 1)

mind the crying child, clean up the mess, do the laundry, etc.? Get serious, folks! That is “women’s work” and certainly beneath a man’s dignity, right? Wrong!

Even in an enlightened organization like the R.A.S.C. sexism can occasionally rear its ugly head. Most of it is completely unintentional and springs from unthinking and ill-considered words and actions. We are so used to it that we seldom even acknowledge its presence. Even the women tend to ignore it so that they do not “rock the boat.” However, we should not disregard it and hope that it will go away. We need to draw attention to it and raise awareness to just how hurtful and demeaning careless words can be. We must consider the impact our words and actions may have on others. We have to learn to engage our brains before putting our mouths into gear.

Awareness of sexism is something that is best developed early in life. The broader the education the better. It is still a very significant problem in schools today. It is so insidious that even female teachers, no matter how hard they try to resist, still find themselves perpetrating and assisting male dominance in many ways. My daughter’s grade six class is doing a study of sexism in the classroom and in the schoolyard. The prevalence of the problem is surprising and disturbing.

Is it no wonder why there are not more women in the R.A.S.C.? Regrettably, at present, the R.A.S.C. remains an elitist men’s club, not by deliberate intent but by lack of attention. Many of us do not realize it simply because we have not thought about it. I think that time has come. ☘

Is the New R.A.S.C. Member a Client?

(continued from page 3)

“borrow an expert” program in effect. The idea is to have a few members roving the telescope field in search of those needing help with any aspect of setting up their scope, collimating, aligning finders, getting oriented in the sky, using star charts, right down to locating objects. Since the roving “experts” also want to do their own observing, some reasonable time limit can be put on this “service”. Obviously, the more volunteers the better.

It is not uncommon to have a knowledgeable amateur present at a star night without their own instrument, planning to do some “parasitic observing”. Such a person would be an ideal rover. The beginner is always appreciative of being

shown what is accessible in their instrument, along with suggestions of magnifications and techniques. (“You would get better dark adaptation if your red flashlight drew less than 25 watts. Murray makes these fantastic variable L.E.D. lights. I can introduce you to him.”)

Another program we will start in September (we have no summer meetings) is called “back to the basics”. Every meeting will contain a ten minute presentation on the fundamentals of telescopes and observing. At one of our post-meeting pub sessions we had eight volunteer speakers! If the idea proves to be popular we will have to double up a couple of mini-talks for the September and October meetings.

Many council members throughout the society are concerned about the turnover of new members. We have all heard about those members who wallowed for years and almost gave up. It is time to begin to actively approach new members to see if their needs are being addressed. “Welcome to the universe! Our selection is vast - may I assist you along the aisle of discovery?” ☘

Perseids 1993 – Shower or Storm?

(continued from page 3)

his 1973 paper) it became apparent that the geometry between the comet and the Earth could make the 1993 display very strong. Indeed, our geometry with the comet is very similar to that between the Earth and P/Tempel-Tuttle in 1833. This is suggestive that a strong return is in store for observers in 1993. However, P/Tempel-Tuttle is not P/Swift-Tuttle and the dust distribution about the latter is unknown. While there is much circumstantial evidence favouring a storm, nothing can be certain.

Keeping these cautionary notes in mind, what might be predicted for 1993? Based on the node of the comet and the maximum activity in 1992 one would expect peak activity to be at 1:00 U.T. on August 12th. Some have suggested that the shift in activity between the 1991 and 1992 displays suggest that we can expect another 0.1 day advancement of activity in 1993, closer to 22:00 U.T. on August 11th. While this is possible, I consider the shift unlikely - meteor storms usually occur very close to the node of their parent comet as the 1992 display did relative to P/Swift-Tuttle. Basing an estimate of this sort on two data points (the 1991 and 1992 maxima) is a bit questionable, to say the least, so I see little reason to suppose the prediction that a further 0.1 day shift will occur.

What sort of display are we likely to encounter? The past meteor storms for which reliable

observational data exist suggest that newly ejected cometary material is rich in faint meteors. This seems to be the best guess of what will be seen in 1993. That is not to say that there will be little or no large particles encountered, but the proportion of faint meteors to bright meteors will be higher than in regular Perseid displays. The central questions, how long will the display last and what will be the maximum activity, are very difficult to answer. Meteor storms generally last for a few hours at most - some historical records suggest that large displays can carry on for days, but these records are very open to interpretation. Data from more recent storms seems to suggest that several hours (two to six) is a good guess for the longest time for which unusually high activity might be observed. The 1833 Leonids, for example, showed strong activity for nearly six hours.

The peak rates are complete unknowns. The largest meteor storms on record for the last few centuries produced activity on the order of 100 000 meteors per hour for intervals shorter than about one hour. Ancient records do little to pin down peak rates of meteor storms earlier than about 1800. Everyone’s guess is equally valid in this instance. Whatever the 1993 display produces it will go down in history as one of the most anticipated showers ever.

The International Meteor Organization would be interested in receiving your observations, whether you see unusual numbers of meteors or not. Please follow the techniques outlined in the August, 1993 issue of *Sky & Telescope* and send the completed summaries to the addresses given therein. ☘

*Stars in your multitudes
Scarce to be counted
Filling the darkness
With order and light.
You are the sentinels
Silent and sure
Keeping watch in the night
Keeping watch in the night.*

*You know your place in the sky
You hold your course
And your aim
And each in your season
Returns and returns
And is always the same.*

*And if you fall
As Lucifer fell
You fall
In flame!*

*Javert
From the opera “Les Misérables”*