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Membership Survey Results I—The *Journal*

Michael S. F. Watson
Second Vice-President
Chairperson, Long-Range Planning Committee

The results of the membership survey conducted during 1992 have now been compiled, and were distributed on computer disk to various centres and society officers at the General Assembly in Halifax at the beginning of July. The society owes a vote of thanks to Glenn Hawley of the Calgary Centre, who oversaw the survey and spent a great deal of time compiling the results into a useful form. These results provide fascinating reading and examination, and will undoubtedly be of great use to the national council, the centres, and officers and committees of the society in the future.

No member of the society who has been awake for any of the past several years is unaware of the great debate that has been taking place, and continues to rage, concerning the future of the Society's *Journal*. Much of this debate has been caused by concern about (a) the cost of this publication to the membership, and (b) the usefulness of the *Journal* to the average member of the society. Currently the publications committee, chaired by First Vice-President Douglas Hube, is actively examining the future of the *Journal*. As well, in his most recent report as *Journal* editor, Jeremy Tatum advised the national council that, in his opinion, the rate of submission of articles to the *Journal* is, at present, insufficient to allow it to continue in its present form.

The results of the membership survey may be a useful addition to the debate about the *Journal*

that is underway. A copy of the survey questionnaire was made available to the entire membership of the society through the **BULLETIN**, and a surprisingly large number of members, some 447 out of a total membership of about 3 200, responded. In addition to completing the multiple choice portions of the survey, many members took the time to make lengthy comments on many issues. These provide fascinating and useful reading for anyone interested in the future direction and well-being of the society.

Several questions were asked specifically concerning the *Journal*. In question thirty, members were asked to indicate their first, second and third preferences from among the following options for the "destiny of the *Journal*": (A) leave the *Journal* unchanged; (B) find some less costly format; (C) reduce the number of issues from six to four; (D) merge the *Journal* with the **BULLETIN**; (E) unbundle the *Journal* from membership in the society; and (F) cease publishing the *Journal* altogether. I have compiled the survey results into Table 1 that appears below. It shows the total number of responses for each of the six options, broken out to show

first, second and third choices, together with the total number of respondents choosing each of the options as any of their first, second or third choices.

The last row of the table shows that the option that is the least favoured by members is to cease publication of the *Journal* entirely, while the option that is the most popular is to reduce the number of issues from six to four. When only the first preference is considered, the most favoured option by far (27.3%) is to keep the *Journal* as it is at present, with the least favoured being to unbundle receipt of the *Journal* from membership. This last analysis is misleading, however: options B, C and D can be considered to be aspects of the same option; that is, options C and D are merely two methods of achieving the cost reduction proposed in option B. When options B, C and D are considered together, therefore, the proportion of respondents who favour cost reduction by reducing the number of issues (option C), by merging the *Journal* with the **BULLETIN**, or by some other means

(continued on page 6)

	A: Keep as is	B: Less costly format	C: Reduce issues, 6 to 4	D: Merge with <i>Bulletin</i>	E: Unbundle	F: Stop publishing
First choice	127 (27.3%)	78 (16.7%)	79 (17.0%)	85 (18.2%)	44 (9.4%)	53 (11.4%)
Second choice	26	71	94	44	43	21
Third choice	41	73	102	66	45	36
Total (1, 2, 3)	194 (17.8%)	222 (20.4%)	235 (21.6%)	195 (17.9%)	132 (12.1%)	110 (10.1%)

TABLE 1: Future of the Journal Unweighted Responses – First, Second, Third Choices for Options A – F



BULLETIN

is a publication of the Royal Astronomical Society of Canada and is distributed together with the society's Journal. It contains articles on current activities of the R.A.S.C. and its centres across Canada, as well as articles from members and non-members which are of general interest to members of the Society. Manuscripts should be submitted to the editor at the address below. Inquiries about the Society should be directed to its National Office at 136 Dupont Street, Toronto, Ontario, Canada M5R 1V2 (416) 924-7973.

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Editor: Patrick M. Kelly, RR#2 Falmouth,
Nova Scotia, Canada B0P 1L0
E-mail Address: pkelly@watt.ccs.tuns.ca
FAX: (902) 423-6672
Phone: (902) 420-7604(w), (902) 798-3329(h)

Editorial Staff: Diane Brooks
Rédacteur pour les Centres français:
Marc Gélinas, 11 Pierre-Ricard, N-D-Ile-Perrôt,
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Letters to the Editor

Astronomical Versus Society

I have been interested in astronomy for as long as I could remember, which goes back to about 1920. A neighbour introduced me to the president of the Winnipeg Centre and he "invited" me to join. I was flabbergasted! With some nail-biting I attended a meeting and signed up. It was fascinating to spend an evening hearing about astronomical matters and the activities of others with similar interests. It was also most enjoyable and relaxing to find that even professionals in the society were most gracious in talking to me and answering the questions that I tremulously put forth.

Since that time I have had years of similar enjoyment in the society and I am sure that there are young people (and perhaps some not so young) who are joining the society with a similar approach today. We all love thinking and talking about things astronomical.

For the past few months I have been reading up on events in the society in the **BULLETIN**, as it is now named. There have been pages and pages of discussion as to the future direction that the society should take. I just wonder if our new members who are receiving their first editions may not feel that they joined to hear about and learn about stars, galaxies, black holes, the way various people have designed equipment, taken photographs, caught a comet, seen a moon of Jupiter tear across the planet, or found a really dark observing sight. Maybe we should spend more time and space being members on the **astronomical** society and less on the astronomical **society**.

B. Franklyn Shinn
#8 - 4750 Uplands Drive, Nanaimo,
British Columbia V9T 5V1

Decision Time for the R.A.S.C.

I have taken great interest in the discussions in the **BULLETIN** On the future of the R.A.S.C.

It seems to me that for any organization to be successful it must offer the majority of its members what the majority wish and this should indicate in what direction that organization should put its energy. By reading these articles over the past few years it is obvious that members are concerned enough about the current focus of the society to write thoughtful articles seeking to change the society's direction and to alert the executive to that need. Unfortunately, I perceive little change occurring other than higher membership fees.

My own observations of fellow amateurs is that the majority are, like myself, in the novice-to-intermediate level. The experienced amateurs I know of rely very much on information from outside the R.A.S.C. If the R.A.S.C. wishes to survive and grow, then it must offer the information and services most commonly needed by its members. The *Journal* serves a very specific interest group. The **BULLETIN** has not represented the interests of the individual centres specifically enough. The Observer's Handbook is the gem of membership, but to me it is not worth double its individual copy price.

I must regretfully decline to renew my membership until such time that the R.A.S.C. is able to offer more to individuals of my ability and interest level. Alternative groups exist costing a fraction of the cost of R.A.S.C. membership. I believe that over the last few years a clear message has been sent to the executive and the national council. Further debate may not be necessary. They must now seize the moment and forge a new alliance with the majority of the membership.

Darryl Dewolfe
P.O. 873, Wolfville, Nova Scotia B0P 1X0 ☪

You can be absolutely sure that if you have a handful of particles from Greenland material, you've got pieces of Halley's comet, pieces of Kohoutek, and pieces of Swift-Tuttle.

Donald Brownlee
American astronomer (1986)

Across the R.A.S.C

Regina

The astronomical highlight of August was the Perseid meteor shower. On August 11th, approximately thirteen people, packing their lawn chairs and sleeping bags, ventured out to the observing compound at Davin (40 km southeast of Regina) to see the Perseids.

At first, the day did not look too promising for meteor watchers, with rain and overcast skies in the afternoon. However, the skies gradually cleared by sunset with only the odd scattered clouds remaining. The clear skies and waning crescent moon made viewing conditions ideal.

There were several intense displays of fireballs streaking across the sky with long trails remaining visible for ten to thirty seconds. One fireball, a little after midnight, was so intense that it lit up the sky near Deneb like a bolt of lightning. Its blue-white trail, which was almost eight degrees long, remained visible for thirty seconds.

Windsor

Monthly astronomical articles by Randy Groundwater and Bert Huneault, appearing in the *Windsor Star* have been well received by the local community. They have even helped attract some attention to the Windsor Centre. Randy continues to teach an introductory astronomy course at St. Clair Community College.

On the eleventh of August, members and friends of the centre observed the Perseid meteor shower at a dark site near West Lorne, Ontario. Though we did not see an overabundance of meteors as predicted, at least a dozen fireballs were counted and a glorious view of the Milky Way was seen by those present. ☪

Entropy is time's arrow.

Sir Arthur Stanley Eddington
English astronomer/mathematician (1882-1944)

Items of Interest

Spar Publication Available

The *Spar Journal of Engineering and Technology* is available free of charge to individuals who would find its contents interesting and useful. Spar will consider sending it to R.A.S.C. members that write to them indicating their professional/business areas of interest and activities. Inquiries should be sent to:

Spar Aerospace Limited
Advanced Technology Systems Group
9445 Airport Road
Brampton, Ontario
L6S 4J3

Money for Images!

Weldon Owens Publishing is producing a new book called *Skywatching*, which will be a highly visual handbook of amateur astronomy and will feature over 400 full-colour images on 300 pages. They are willing to pay for the use of outstanding colour images in all areas of astronomy. For further details on their requirements, contact:

Gillian Manning
Weldon Owen Publishing
43 Victoria Street
McMahons Point 2060
Sydney, Australia
(02) 929-5677 (phone)
(02) 929-8352 (FAX) ☎

Hypered Film for Astrophotography

Rajiv Gupta
Vancouver Centre
reprinted from *NOVA*

Hypersensitized (or "hypered") film is a definite asset in deep-sky photography. While most users of hypered film purchase it from a supplier (e.g. Lumicon), it is not that difficult to hyper your own film. This will ensure that the film is fresh and allow you to achieve greater consistency.

An article by Kim Zussman on hypering film appeared in the May issue of *Astronomy*. I do not intend to duplicate that article, but rather to expand on it and give my own twist on things. While this article will be self-contained, the interested reader is encouraged to read Zussman's article as well.

Why Hyper?

Hypering is a process which eliminates or reduces reciprocity failure. This is the term applied to the tendency of film to become very

insensitive to faint light levels, such as those encountered in astrophotography.

A grain of film needs to be hit by a certain minimum number of photons for it to be activated when the film is developed. If the photons hitting a particular grain of film do so infrequently, then the grain may "forget" some of the photons. This means that the greater than expected exposure times are required and the film becomes very slow in long exposures.

The process of forgetting photons is enhanced by the presence of water and oxygen molecules in the emulsion. When film is baked in hydrogen gas, the hydrogen replaces the water and oxygen and makes the film less prone to reciprocity failure. For safety, a mixture of 92% nitrogen and 8% hydrogen, called forming gas, is usually used instead of pure hydrogen.

How Effective is Hypering?

Generally, the hypering process is most effective on slower films. An ASA 100 film may have its effective speed increased by a factor of ten by hypering; an ASA 1000 film by a factor of two or three. The faster film will probably still be faster because it was faster to start with.

Hypering seems to only reduce, but not totally eliminate, reciprocity failure in colour films. However, properly hypered Kodak Technical film, which is black and white, exhibits no reciprocity failure and is undoubtedly the best film for use in astrophotography.

Hypered colour film experiences a shift in colour balance. This consideration is especially important for slide film and cold cameras may be a better way to reduce reciprocity failure in these films. Nevertheless, I strongly recommend the use of hypered films once the exposure time exceeds ten minutes or so.

How to Hyper Film

My experience with hypering has been mostly with Technical Pan film, although I have also hypered Ektar 1000, the colour film I recommend for beginners. The same general methods should work for any film.

The equipment I use consists of a cylindrical aluminium tank which has a diameter of 100 mm and a length of 85 mm. The top lid has intake and outtake valves, a pressure gauge and a thermometer. The removable bottom forms a seal with the tank with the aid of an O-ring and is held in place with four screws. Surrounding the tank is a string of resistors connected to a rheostat, which is used to control the temperature of the tank.

My procedure is as follows. First, the film to be hypered is stored in an air-tight container with silica gel for a few weeks to get it fairly dry. When

it comes time to hyper the film, it is loaded onto a developing reel (in the dark) and inserted into the hypering tank. Then, using a 12 volt car tire pump, repeated flushing is done with forming gas to remove most of the water and oxygen from the tank. The tank is then filled with forming gas to 2 p.s.i. above atmospheric pressure, brought to hypering temperature in an oven and then left for the required time with the resistor/rheostat circuit maintaining the temperature.

Film can also be hypered in a cassette, but the hypering time should be lengthened to allow sufficient time for the water in the film to fully dissipate.

Hypering Times

There is no single best time for how long the film should be hypered. My times for Technical Pan are 17.5 hours at 65°C if the film is on a developing reel. For colour film in a cassette, I use a time of 14 hours at 48°C. A table is given in the article by Zussman and it is a good guideline, although I find the times somewhat excessive. The best thing is to do some trials, test film (as described below) and find the best times for your own setup.

Keep in mind that hypering time can be adjusted if the temperature is not exactly the desired one. For each 1°C drop in temperature, you should increase the hypering time by 10% and for a 10°C drop, the time should be increased by a factor of 2.5 or so. There are also other factors that influence time, mainly the pressure that the hypering is done at and the concentration of hydrogen in the forming gas.

What Can Go Wrong?

I have hypered countless rolls of film unsuccessfully, so I am one of the leading experts on what not to do! The most important things to keep in mind is that a dry hypering environment is needed. That is why it is important to pre-dry the film and flush out the tank. How much you need to flush will depend on how good a vacuum you can get in the tank.

It is also important to store the hypered film in a dry container. Storing it with silica gel desiccant works well. Colour film should also be kept frozen, but hypered Technical Pan survives for months in a refrigerator.

Another important consideration is that the temperature inside the tank be fairly even. Aluminium tanks work well, but, for example, plastic tanks do not.

Testing the Film

It is important to have a good method of testing the film after it is hypered, rather than
(continued on page 8)

The 1993 Perseid "Sprinkle"

David M.F. Chapman
Halifax Centre

This year, astronomers were paying special attention to the annual Perseid meteor shower in August, for a couple of reasons. Over the last few years, keen-eyed meteor counters around the world have been reporting a short, intense "storm" of meteors that occurs about a half day before the traditional maximum. Also, the parent comet of the Perseid shower, Periodic Comet Swift-Tuttle, was observed to pass through the solar system last winter. As this only happens every 130 years or so, there was some speculation that there may be an especially strong Perseid shower in 1993 due to an increased density of particles in the comet's vicinity. (A full description of this can be found in the August 1993 issue of *Sky & Telescope* magazine.)

Meteor specialists expected that the passage of the Earth through the thin stream of extra particles would take place very quickly, lasting only about an hour, so it would be important to be in the right place at the right time to observe this event. In *Sky & Telescope*, the storm was predicted to peak at about 22:30 UT, 11 August 1993. This time (if correct) indicated that western Europe would be prime observing territory, as the storm would take place after the end of twilight but before the rising of the last-quarter Moon. Farther west, the sky would not yet be dark; farther east, the Moon would already be up. As luck would have it, on the night of the expected storm I was staying in a house in the countryside of south-west France near the town of Jegun, about halfway between Toulouse and Bordeaux and almost due south of London.

Most years, I try to get out and look for the Perseid meteors, but I have not properly observed (i.e. counted) them in a long time. This year's impending storm suggested a more serious approach, especially as I was to be in a favourable location. I prepared myself accordingly: notepad, red-lensed flashlight, timer, sky transparency chart, chaise lounge, etc. The nights leading up to August 11th were cloudy, so I had no chance to make a dry run. Miraculously, the sky cleared at dusk on the 11th and I started observing, looking towards the south-east when it became dark at 11 PM. (Despite the longitude, the French operate one time zone ahead of UT and were on summer time as well, so the clocks were two hours ahead of solar time.)

I counted the number of shower meteors and the number of non-shower meteors in fifteen

minute intervals, estimating the limiting visual magnitude at the start of each interval. In summary, I saw about six meteors per quarter hour, or about twenty-four per hour, with large fluctuations in the numbers. (Statisticians will tell you that this is to be expected for this kind of measurement.) Even taking into account the pre-midnight observing time, the low altitude of the radiant, and the less-than ideal sky conditions, these numbers do not spell "meteor storm", in my opinion.

I had hoped to observe the very next night to calibrate my observing method, but the weather did not cooperate. I managed to observe four nights later, but the numbers were well down. The observed average on this night was about 1.5 per quarter hour, or six per hour. This rate is about 25% of the 11 August rate, which is consistent with the five day duration of the shower. (The duration is the time interval during which the rate is 25% or more of the peak rate.)

I am not certain how to convert my raw observations into zenith hourly rate (ZHR) to compare with the observations of others, but my gut feeling is that these numbers do not indicate that anything remarkable took place during the Perseid meteor shower in the time interval 2100-2400 UT on 11 August 1993. Perhaps observers elsewhere had more luck. ☺

National Awards

The R.A.S.C. may, from time to time, confer awards on members in recognition of meritorious service or achievement. Recommendations for such awards should, in most cases, be made through the council of the local centre. Unattached members may submit recommendations, if they so wish, to the national council for consideration. Centre councils will, of course, submit recommendations as they see fit to the national council for final approval. Except for the Simon Newcomb Award, all nominations (including citations) should reach the national office by December 31st.

Chant Medal

The Chant Medal was established in 1940 in appreciation of the great work of the late professor C. A. Chant in furthering the interests of astronomy in Canada. This medal is awarded, not more often than once a year, to any amateur astronomer resident in Canada on the basis of the value of the work for which he or she has carried out in astronomy and closely allied fields of investigation.

Recent recipients are: Mary Lou Whitehorne (Halifax, 1993); Jack Newton (Victoria, 1989).

Service Award Medal

The Service Award was established in 1959. This bronze medal is presented to members who have performed outstanding service to a centre or to the national society.

Recent recipients are: David Tindall (Halifax, 1993); Eric Clinton (London, 1993); Jean-Marie Frechette (Québec, 1992); Michael Watson (Unattached, 1992).

Ken Chilton Prize

The Ken Chilton Prize was established in 1977 by the national council in remembrance of the late K. E. Chilton, an active member of the Hamilton Centre. The prize is awarded to an amateur astronomer resident in Canada, in recognition of a significant piece of astronomical work carried out or published during the year.

Recent recipients are: Doug George (Ottawa, 1990); Lucien Kemble (Calgary, 1989).

Simon Newcomb Award

The Simon Newcomb Award is named in honour of Simon Newcomb (1835-1909) who was born in Nova Scotia, and later served for twenty years as Superintendent of the American Ephemeris and National Almanac Office at the United States Naval Observatory in Washington. The award was created in 1978 on the initiative of the Halifax Centre. The intent of the Simon Newcomb Award is to recognize literary ability among members of the society who are not professional astronomers. Submitted articles must be original and should not have been previously published in any substantially similar form (although appearances in centre newsletters is permissible).

Recent recipients are: Peter Jedicke (London, 1987); David Chapman (Halifax, 1986).

Who can enter? Any member of the society who does their astronomy purely as a hobby.

Format: The article(s) should be no longer than 2 500 words in length, be written in proper grammatical form, and be presented typewritten and double-spaced. Diagrams need not be in a finished form but should be complete and ready for drafting. Photographs may also be submitted, if possible, with the original negatives. The author(s) name(s) should appear only on the title page and reference to centre affiliation should not appear in the article.

Submission of Entries: Articles must be received by the national awards committee between January 1st and March 31st. Members of the centres must first submit their entries to their centre executive for its approval before submission to the committee. Unattached members
(continued on page 8)

Shedding Light on WWV Solar Reports

Bert Huneault
Windsor Centre

Radio station WWV, operated by the National Institute of Standards and Technology, and located in Fort Collins, Colorado, is well known to many North American amateur astronomers. It broadcasts time signals on shortwave frequencies of 2.5, 5.0, 10.0, 15.0 and 20.0 MHz. Because of their accuracy (broadcast to within one ten-thousandths of a second!) these time signals are used by astronomers when precise timing of celestial events, such as during occultations or eclipses, is called for.

Less well-known than these time signals are the reports of solar-terrestrial indices and conditions, which WWV broadcasts at eighteen minutes past each hour. These bulletins contain the following information: current value of solar flux, A-index, K-index, solar and geomagnetic activity as well as a forecast of the solar-terrestrial conditions expected in the next twenty-four hours. A typical report might read as follows:

"Solar-terrestrial indices for 24 April. Solar Flux 129; Boulder A-index 7. Repeat, solar flux one-two-nine; Boulder A-index zero-seven. The Boulder K-index at 21 h00 UT on 24 April was 2; repeat two. Solar terrestrial conditions for the last twenty-four hours: solar activity was low, the geomagnetic field was quiet to unsettled. Forecast for the next twenty-four hours: Solar activity will be low, the geomagnetic field will be mostly quiet." Interesting remarks sometimes follow, such as "A major flare occurred at 18h00 UT on 30 October." or "A satellite proton event is in progress."

Solar Flux Density

The solar flux figure indicated the strength of the 10.7 cm microwave emissions from the Sun and correlates with the density of ions in the ionosphere. Usually high flux values mean that higher radio frequencies can be used for communications and better shortwave propagation can be expected. The radio flux is generally related to the sunspot number, which is based on the size and number of sunspots visible on the solar disk. During the maximum activity phase of the eleven year sunspot cycle, solar flux values may reach in excess of 300. Near the bottom of the cycle figures as low as 66 may be observed. We are gradually approaching solar minimum in Cycle 22 and flux figures below 80 have occasionally been observed since late this summer.

A and K Indices

The A-index and the K-index, as observed at Boulder, Colorado, have to do with geomagnetic disturbances which have a profound effect on radio wave propagation. Higher A and K index values correspond to higher absorption of radio waves by the ionosphere and, therefore, weaker reception of high frequency (HF) waves, i.e. shortwave signals.

Under normal (quiet, stable) conditions, the ionosphere does a good job of reflecting shortwave signals back to Earth, resulting in good reception of HF transmissions from distant signals such as the B.B.C., Radio Moscow, Radio Australia, ham operators on various continents, military communications, ships at sea, airplanes flying the polar route—and, you guessed it, even time signals from WWV! However, with higher indices, the ionosphere absorbs shortwave signals instead of returning them back to Earth, resulting in poor reception.

WWV transmits a new K-index every three hours. A typical value is 2 or 3. When conditions are very stable, the K-index may be as low as 0 or 1. When conditions are really awful, such as during a major geomagnetic storm, it may reach 6 or even 7. A change of one point in the K-index is highly significant for shortwave listeners.

The A-index is also a measure of geomagnetic stability, but a change of one point is not very significant. The A-index is based on the K-indices for the previous twenty-four hours and is computed on a different scale. When the K-index is 3, the A-index might be 10. An increase of one or two points on the K-index might send the A-index to 20 or higher. When an intense geomagnetic storm occurs and HF bands die out, the A-index may have reached 40 or higher. For example, it had a value of 72 on September 10th, 1992, during a major geomagnetic storm which had begun the day before.

High A and K indices typically result from either a solar flare or coronal holes. Both may eject protons towards Earth, neutralizing the desirable negative ionization of the ionosphere, and increase the absorption of radio waves. When these geomagnetic storms become particularly severe, the absorption of radio waves may become virtually complete, killing the entire HF radio spectrum. In northern latitudes this may make shortwave reception impossible for periods ranging from minutes to hours. On the plus side, these storms are likely to produce aurora, a phenomenon usually welcomed by amateur astronomers. When a major geomagnetic storm is announced, watch for possible auroral displays in the night skies during the next twenty-four to thirty-six hours.

Epilogue

If you have access to a shortwave receiver, tune in WWV at eighteen past the hour and find out what the Sun is up to. Even during periods of low sunspot activity, a geomagnetic storm is always possible. Monitoring WWV on a daily basis can be fun as well as interesting and informative. You do not need a long aerial—a telescoping antenna or a few feet of wire will usually do the trick (unless you live in an apartment building in which case I feel for you).

When you tune in WWV, the quality of the reception will, of course, depend on the K and A index values at the time. Try the different frequencies listed at the beginning of this article and happy listening! 📻

Unfair Criticism

Alister Ling
Edmonton Centre

In his August 1993 *Sky & Telescope* review of *The Deep Sky Field Guide to Uranometria 2000.0*, Matt Delevoryas gives the false impression that the book contains a large number of flaws. A simple example of the negative bias is his note that the galaxy IC 1194 is plotted incorrectly in a diagram—it is a mere 0.5 mm in error. As clearly stated in its introduction, the Field Guide "does not include everything, but is specific to *Uranometria 2000.0*." Delevoryas is indeed correct that many galaxies are not listed in the work—however this is not a flaw. It contains fewer errors than its primary data sources, and makes note of the sources' deficiencies. Perhaps he skipped over these relevant paragraphs during his review.

The book is certainly not perfect, but it cannot be expected to provide information outside its design criteria! The "many perfectly respectable... open clusters" Delevoryas enjoys, that are not listed in the book nor plotted in the *Uranometria*, have no professionally accepted data, and thus could not be included in the book—to do otherwise would have created more confusion. I have worked with these so-called "non-existent" clusters and NGC errors for more than a decade and published results in amateur magazines such as *Deep Sky*. Delevoryas has never shared his conclusions with others in this manner, a prime rule of science. *The Deep Sky Field Guide* is a fantastic and convenient source of information for the deepsky enthusiast. I invite Delevoryas and her readers to join me in discovering errors, both reference-based and typographical, and to send them to Willmann-Bell so that in the future we can all benefit from continually refined data. 📻

(Continued from page 1)

(option B), in preference to keeping the *Journal* in its present form (option A) is 51.9% as against 27.3%. When the total of first, second and third choices is considered, the proportion of those favouring cost reduction (one of options B, C and D) as against retaining the *Journal* as it is, rises to 59.9% versus 17.8%. The results are similar, although not identical, if the first, second and third choices are weighted in either a 3:2:1 or a 5:3:1 ratio, as is probably appropriate.

Society members were asked several other questions relating to the *Journal*. For example, in question twenty-one members were asked how often they read the *Journal*, on a scale of 1 (always) to 5 (never). The results are shown in Table 2.

	1	2	3	4	5
Number	134	85	99	108	29
Proportion	29.5%	18.7%	21.8%	23.7%	6.4%

TABLE 2: Reading the Journal – scale of 1 (always) to 5 (never).

A total of 48.2% responded with answers 1 or 2, while only 31.1 answered with answers 4 or 5. This should be encouraging to the editor and the publications committee.

Less encouraging are the answers to some of the other questions on the survey. Question twenty-two asked members whether they find the articles in the *Journal* to be useful, on a scale of 1 (very useful) to 5 (not useful). Table 3 shows the results.

	1	2	3	4	5
Number	15	84	148	160	44
Proportion	3.3%	18.6%	32.8%	35.5%	9.8%

TABLE 3: Usefulness of articles – 1 (very useful) to 5 (not useful).

Only 21.8% of members answered with numbers 1 or 2, while 32.5% find *Journal* articles moderately useful (answer 3), and a large 45.3% find the articles of little use (answers 4 and 5).

Interestingly, the responses indicated a somewhat more favourable view of the *Journal* when members were asked, in question twenty-four, whether they found the selection of articles interesting or dull, on a scale of 1 to 5. The results appear in Table 4.

	1	2	3	4	5
Number	28	119	165	113	24
Proportion	6.2%	26.5%	36.7%	25.2%	5.3%

TABLE 4: Selection of articles – Interesting (1) to Dull (5).

Roughly similar proportions of members find the selection of articles interesting (answers 1 and 2, 32.7%), moderately interesting/dull (answer 3, 36.7%), and dull (answers 4 and 5, 30.5%).

It is in the category of technical difficulty of the content of the *Journal* that responses were the most weighted toward one end of the answer scale. In question twenty-five, members were asked whether they find the technical level of the publication easy or difficult, again on a scale of 1 to 5. Table 5 shows the results.

	1	2	3	4	5
Number	5	29	141	183	92
Proportion	1.1%	6.4%	31.3%	40.7%	20.4%

TABLE 5: Technical level of Journal – Easy (1) to Difficult (5).

Only one member in about seven answered that the technical level of the *Journal* is easy (answers 1 or 2), while about 61% find the level to be difficult (answers 4 and 5). It does not necessarily follow that R.A.S.C. members are dissatisfied with what they obviously believe is the difficult technical level of the *Journal*. It may be, however, that the less than completely satisfactory level of readership of the *Journal*, and the membership's ambivalent response when asked about the usefulness of the publication, may be caused by an excessively technical level of its contents.

Other questions asked of members had to do with the usefulness of the book reviews that appear in the *Journal*, and whether members had in the past submitted or would consider submitting articles

for publication. In the interest of conciseness I have not included tables for these results.

Conclusions

It is always difficult, and sometimes dangerous, to attempt to draw conclusions from survey results and statistics. As an old-time baseball sage said, "There are lies, there are damned lies, and then there are statistics." Nonetheless, I offer the following possible conclusions from the foregoing:

- 1) Members of the society definitely do not want publication of the *Journal* to cease completely;
- 2) Most members would prefer a less expensive format for the *Journal*, or that costs be reduced in some manner;
- 3) A large minority of members want to leave the *Journal* as it is (these members obviously include many who find the articles somewhat less than useful, and technically difficult);
- 4) While members do not read the *Journal* as much as we would all wish, the level of readership is significant, and members definitely do not ignore the publication, and;
- 5) Members of the society feel that the content of the *Journal* is too technical to be enjoyed to the maximum.

Standing back and taking a broad view of this issue and the survey results, I suggest that the majority of members of the society would support a reform that would see the *Journal* combined with the **BULLETIN**, perhaps in a form in which the overall technical level would be lowered to a point that would make the publication more comprehensible to more members. Such an initiative could be expected to have the following advantages:

- 1) Costs would be decreased, perhaps significantly;
- 2) The present unsatisfactory rate of submission of papers to the current-format *Journal* would be increased. More amateur members would feel that papers that they are capable of producing would be appropriate for publication;
- 3) Members would read and understand the publication more easily, and;
- 4) The constant complaining about the *Journal* would abate, allowing us to spend more time enjoying astronomy and each other! (This is a not insignificant benefit, in my opinion.)

I hope that these survey results will be of use in the ongoing debate about the future of the *Journal*, and that some important decisions about the publication will be made and implemented within the next year. ☺

Syllables govern the world.

*John Selden
English jurist (1584 – 1654)*

Common Problems, Common Solutions

Carl T. Milazzo
Niagara Centre

From conducting a recent survey of over fifty astronomy clubs, it was found that most clubs go through four to twenty year cycles during which they will have good, mediocre and bad levels of quality (as judged by their members). Unfortunately, these last two are by far the most common level of club quality and those that have reached truly great levels are almost unheard of. Some have achieved great levels by pure luck, others because they have set up a solid foundation which put them on the path to high quality and rapid progress. All clubs, even the best, have room for improvement.

There are many indications that there is much room for reform. For example, about 95% of amateur astronomers do not belong to an astronomy club, yet clubs are very important. In addition, most clubs have a high annual turnover (about 20%), which means that in five to six years it is possible for a club to consist of a totally new crop of people. The exception to the turnover rate tends to be executive members, who tend to stay on longer. Low meeting attendance (15 – 20%) also plagues most clubs. Most amateurs who come to their first few meetings drop out before they even join and the majority of new members who actually join a club will drop out after the first year.

Astronomy Clubs

Clubs can greatly accelerate progress by actively developing the interest of beginners who, at first, need special attention, practical information, guidance and advice. From day one, an emphasis should be placed on getting to know them and their needs. Start by giving them a questionnaire, a detailed club membership directory (listing other members' interest, equipment, etc.) and a booklet showing all the benefits of belonging to the club. For example, a beginner would need to know if the club has a loaner scope available, if a club observatory or library exists, who to get expert advice from, who can troubleshoot equipment, what other club activities there are (such as a newsletter and star parties) and other helpful advice. A beginner should be encouraged to hone their skills by participating in meetings, field trips and observing sessions. Each new member should be personally contacted by a current member and be invited to participate in an event. This one-on-one contact helps break down the shy-

ness barrier and not only involves the new member in the functioning of the club, but keeps the seasoned amateur active as well.

Without expert amateurs as members, a club is left with the blind leading the blind. A club needs to grow with its membership to keep up to date. It can help retain its active core of experts by drawing on their knowledge, wisdom, technical know-how and practicality. When a member demonstrates progress, they should be praised, rewarded and encouraged—the sooner, the better. However, if an officer or member is charged with a responsibility and does not follow through, steps should be taken immediately to rectify the problem. If this is not done, morale falls, membership drops off and the club suffers.

Some reasons for lack of involvement by beginners is that they feel intimidated, or that they think it will take forever to learn as much as

**“Ten percent of the people
end up doing ninety
percent of the work.”**

the more experienced amateurs. They need to be told that the average member gained their knowledge in three years. This bit of information could be in the detailed booklet given to them when they join. If a beginner finds it difficult to speak in front of the group at a meeting, they should be encouraged to write a newsletter article or a letter to the editor. Under no circumstances should they be discouraged from speaking or becoming involved. No matter how much of a beginner a person is, there is always some way in which they could contribute.

Leadership

There are times when club officers are not aware of the cause of the problem a member is experiencing. A method needs to be developed to make them aware—perhaps a suggestion box. Unresolved problems can cause members to become inactive or drop out completely. Executive members need to be sensitive to the needs of members; if not members will leave. Problems should be aired at meetings or it gives the appearance of covering them up.

Executive members, ideally, should be the most active amateurs, those who have the highest quality track record, who always encourage, have a wide current interest in astronomy and who are enthusiastic. They need to think of the long range ramifications of their decisions, have vision and specific goals with a timetable. To improve the quality of their decisions they need to communicate with all members, both asking

and informing in detail. Their planning has to balance the needs of the beginner with the needs of the experienced members.

The membership should be polled periodically to determine what is missing in their club. There should be brainstorming after an event to determine how it can be better or different next time. Members need to be informed beforehand of the agenda of their representatives. If they are kept informed, they can give input which may affect the decisions of the leaders.

Contact should be established and maintained with other successful clubs to determine the key differences, compare past action and find out in what direction other clubs are moving.

Giving members choices helps to increase participation in activities. People should run for election because they feel that they can do the best job, not just for power or prestige. The pros and cons of each issue to be voted on should be published in the newsletter for everyone to vote on. Absentee voting should be available for those who are unable to attend a meeting.

Shared Workload

Most clubs have difficulties with their system of workload distribution which results in burnout of its most active members. Ten percent of the people end up doing ninety percent of the work. This workload results in a club doing close to minimum work in order to survive instead of allowing time to do the best possible job.

Volunteering is a nice bonus for a club, but an incentive system gets a lot more done. Setting a minimum work level per year for all members, with two exceptions, is an alternative to be considered. The exceptions would be for students, and, for the first six months, new members. Both could volunteer, but sharing the workload would not be required.

There are many types of jobs that could be done and many possible incentives offered in exchange. Every job a member performs would earn a work credit value that is accumulated over the years. The more work credits earned, the more seniority gained. The more one works for the benefit of the club, the more privileges one would earn.

The executive is made up of elected officers and five judges, who are the members who have earned the most credits. If a member declines to be a judge, then the person with the next highest number of credits is eligible. The judges set the minimum work level required, place a value on the skills used, donations raised by members, develop incentives, prepare a list of jobs to be done, resolve disagreements and keep a tally of members' credits. A majority vote by the judges on these issues minimizes the likelihood of

laziness from settling in the club. Judges are also on the executive and have one vote each, just as the officers do. People who are willing to work hard for a club would welcome a system like this, while lazy members would, no doubt, be strongly against it.

The Observatory

Every club should set a goal for at least two observatory sites. The first one should be located not too far outside the city and be a short drive for most people. The site should have fair quality skies that can be used for identifying constellations, solar system objects, double stars, etc. This site does not require a large telescope, but does need a parking lot large enough to handle public nights and membership parking as well as a large clubhouse.

The building should contain one dome observatory to block wind and light pollution. This building could serve multiple purposes and eventually grow into an active complex. It may be used by members around the clock for workshops, meetings, classes, library purposes, public viewing of the Sun and stars and staging media events. The building can also have a darkroom, computers, a storage area for shop material and portable telescopes, kitchen, bathroom and a sleeping area for all-nighters.

Part of this site can be leased to other members who are willing to spend their own money on their own equipment, pad/pier or observatory for their research speciality. This affords many advantages for both the club and the individual. Amateurs of all levels are observing nearby and can interact with each other. This observatory complex can be a stepping stone to the second observatory site, without having to abandon the first one, a mistake often made by clubs.

Both sites have their advantages. The first site is conveniently close; the second site is at a point where light pollution from the city ceases to be a factor. This dark sky site is where the largest scopes should be and would be ideal for astrophotography and CCD imaging. If it is near the summit of a tall hill, dew and mosquitos would not be a problem. The southern horizon should be unobstructed and the road leading to it should preferably be a dead end. Given enough time, the second site can be developed with facilities as large and advanced as the first one. Both should never need to be abandoned, so that the time and money put into them will never be wasted. ☺

Once you ask the question, where is the carbon-14, and where does it go, it's like one, two, three, you have [radiocarbon] dating.
Willard F. Libby
American chemist (1908 – 1980)

Hypered Film for Astrophotography

(continued from page 3)

going out and doing a one hour exposure only to discover that the film is dead. I test my film by exposing a piece of it to a faint light source for about fifteen minutes in my darkroom. I then develop it and compare the density with that of properly hypered film.

Should You Hyper?

This depends on how fussy you are about the film that you are using and whether you are willing to go through the considerable effort of getting both the equipment and forming gas and perfecting your hypering technique. I find it satisfying and reassuring to know that when I do a two hour exposure, my film is properly hypered. There are many things that can go wrong in astrophotography, many of which you can do nothing about. Although it takes some effort, the quality of film is something you can control. ☺

National Awards

(continued from page 4)

should make their submissions directly to the committee via the national office.

Judging: Articles are judged based on their scientific accuracy, originality and literary merit.

Presentation: The award is presented at the General Assembly and stays with the winner's centre for display until the following April. ☺

R.A.S.C. Promotional Items

The R.A.S.C. has some great items for the winter season!

Turtlenecks: Warm and cosy, in black, with our crest in yellow. Adult size, XL.

Toques: Great for those cold nights at the telescope! Navy blue with yellow horizontal band and navy R.A.S.C./S.R.A.C. lettering.

Stickers: Royal blue vinyl stickers with our crest in white. 100 mm diameter, laminated for durability!

We still have a few golf shirts in stock, adult small in white and adult medium in white or light blue.

Item	Price	Shipping
Turtlenecks	\$20.00	\$4 each
Golf Shirts	\$20.00	\$4 each
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Stickers	\$1.25	\$1 per order

These figures include all taxes. To order, send a Canadian cheque or money order, payable to "Royal Astronomical Society of Canada" to:

R.A.S.C. Promotional Items
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M5R 1V2 ☺

The Speech That Never Was

Mary Lou Whitehome
Halifax Centre

The 1993 G.A. is now a thing of the past and I have had this beautiful Chant Medal sitting on my desk for a couple of months, just trying to get used to the idea of actually having it. It has been several months longer since I first learned that I was to be the 1993 recipient of this prestigious award and I am only now starting to come to terms with the reality of it. It is a very humbling thing to be selected for an honour like this. The Chant Medal has been awarded only twenty-one times since its inception in 1940 and I am only the second woman to be given this award.

I still do not really know how to express my gratitude to the society for this recognition but I am going to try. Twice I had the opportunity to do this; once at the Halifax Centre meeting when our national president, Peter Broughton, read the letter of announcement, and again at the awards ceremony during the G.A. Both times, to my chagrin and everyone else's great delight, I was struck totally speechless. My colleagues regard this situation as being quite irregular...

So here goes. I owe a lot to quite a few people. Firstly I want to thank those individuals who nominated me—and I know who you are because one of you squealed when I twisted the thumbscrews! Next I have to thank the members of the Halifax Centre executive, the national council and the awards committee who approved my nomination. However, mostly I owe a large debt of appreciation to a certain few individuals who gave freely of their time and expertise, who offered support and encouragement, and who are all great teachers. Without them I could not have gone the distance! So, will the following people please stand up and take a well deserved bow: Dr. Gary Welch, Dr. Randall Brooks, Dr. Jeremy Tatum, Dr. David Turner, Dr. Anne Underhill and Mr. Lloyd Whitehome. It is a great honour to be selected for this award—one that I never dreamed possible—and I thank you all from the bottom of my heart. ☺

In the Next Issue...

- ☞ **Membership Survey:** the raw data.
- ☞ **The Earth-Moon System** as viewed from our nearest neighbour.
- ☞ **Summer Star Parties** in review.
- ☞ **Fun at the G.A.** A look at what went on besides the business meetings. ☺