

CASCA Education and Outreach Committee, ANNUAL REPORT FOR 2004-5

Submitted by John R. Percy, Committee Chair, May 2005

The major issue confronting the committee is the continued funding of the Education and Outreach program; see below.

Committee Membership

Martin Connors (2004-2007), Paul Delaney (2002-2005), Jayanne English (2002-2005), Robert Lamontagne (ex-officio), Nathalie Martimbeau (2003-2006), Margaret Milne (2004-2007), John Percy (2002-2005, chair), Takashi Sato (2003-2006); Nancy Evans and Dave Turner are Board Reps, and Alyssa Moldowan is the Graduate Student Committee rep.

Note that John Percy's term as Chair and member expires soon!

Meetings

The committee meets at every CASCA AGM (it will meet after the Education Session at CASCA 05) and confers by email during the rest of the year. President Hesser participates actively as an ex-officio member.

Education Co-ordinator

The contract of our part-time (0.2FTE) education co-ordinator Heather was renewed in November for another year. I did not conduct a formal review, but informal comments which I solicited from experienced members of the committee were very positive. Her annual report is appended.

LRP Mid-Term Review

On behalf of the committee, I made a comprehensive submission to the committee which is drafting the mid-term review of the Long-Range Plan for astronomy in Canada. The report is now available on the CASCA website. There is a large section dealing with education and outreach.

Finances

Our NSERC PromoScience grant funds ran out at the end of February 2004; our Ontario funds run out this month, but I have requested to extend them until the end of 2005. Discussions have been undertaken on how to continue to fund the E&O activities, and it is generally agreed that we should conduct a major fundraising campaign. That, however, would require most of a year to plan (though we have made some progress), and another year or two to execute. A medium-term solution would be to seek corporate sponsorship for about three years (2006-9) until a viable fundraising campaign was undertaken, but it is not clear that a single major sponsor would be available. There are major questions of what aspects of astronomy E&O should be conducted by CASCA and what aspects should be conducted by our partners.

There is another solution, which was raised in the LRP Review: to encourage those agencies which fund major astronomical facilities in Canada to invest 1 percent (or more) of the funds in Education and Outreach. This could provide sufficient funds for CASCA, HIA, CSA etc. to maintain first-rate education and outreach programs. But it is surely not a short-term solution, and it would require considerable discussion and negotiation within the astronomical education community.

Cross-Country Discussions

As a first step in discussing these issues with partners -- especially those outside Toronto -- I met for half a day in Victoria with several members of the Victoria "astronomical community" (DAO, UVic, RASC, two colleges, public and independent schools). Useful input was obtained; I have brief notes, and Margaret Milne kept more detailed notes. A similar meeting in Halifax is scheduled for June 4, and a meeting with the Toronto "node" will also be held in June. I am giving a paper at CASCA 2005 which will deal with some of these same issues.

I also envision a more extended (1.5 days) meeting of key partners, including NRC, NSERC, CSA, RASC etc. to be held in the fall. This would, in some ways, be like the meeting of the Advisory Board for the

E&O Initiative which was held several years ago. It would also be like the "Education Initiative in Astronomy" workshop which was held in Washington in 1990, for members of the US astronomy education community.

CASCA-Westar Lectureship

Extensive publicity for the CWL was done over the summer, both print and electronic. So far, we have had only a nibble of interest -- from an astronomy club in the Bruce Peninsula, Ontario, and from sites near Toronto. Some Canadian institutions are requesting speakers through the AAS Shapley Visiting Lecturers Program and, although that saves CASCA the money, we should really be encouraging them to apply for a CWL. CASCA members, especially those who have contacts with smaller centres across Canada, should help us publicize the program. We have several willing volunteers, waiting to be assigned.

CASCA Education Web Site

Heather Scott continues to maintain and develop the website:

<http://www.cascaeducation.ca>

The website continues to be hosted by Travis Whyte in Alberta, but the future location of the site (or a mirror site) needs to be resolved.

The committee does not have a "general-purpose" website; it might be useful to develop one.

CASCA Annual Meetings

There were a variety of successful education events at CASCA 2004, including joint sessions with our physics colleagues, CASCA education sessions, and a workshop for several dozen local schoolteachers. We thank the Canadian Association of Physicists, the Canadian Organization of Medical Physicists, and the Biophysical Society of Canada, the local organizers, and Heather Scott for their contributions to this success.

At CASCA 05 in Montreal, there will be a plenary lecture on Education and Outreach, and a session of contributed papers. There will also be

a teachers' workshop, for which the response has been excellent. One afternoon session on the 16th, for 65 teachers, was filled; a second session has been organized on the 17th, and that is filled, also! The Montreal Planetarium is already well-known and respected for its teachers' workshops; more than 300 teachers have been served, in less than a year.

Publications

We continue to get a good number of education submissions to E-Cass, and we urge CASCA members to continue this habit. The Journal of the RASC continues to publish a useful Education Notes column.

Planetariums

A consortium of Canadian planetariums, following on their success in producing a planetarium program on "Origins" highlighting the work of Canadian astronomers, is applying for partial funding, from Heritage Canada, for a program on Astrobiology, again highlighting relevant Canadian contributions. We have written a letter in strong support of this project. A decision from Heritage Canada is pending; NSERC has pledged a contribution; CSA has also been approached.

The "Origins" program was attended by close to 50,000 people within a few months, and the history of its production will be featured in two international publications.

Science and Technology Awareness Network -- STAN

In November 2004 in Toronto, I attended the first annual conference of STAN. I am on the founding steering committee of this new organization; I see myself as representing scientific organizations such as CASCA, as well as the universities. The 2004 conference included useful workshops, such as one on fundraising, which will be helpful if CASCA embarks on a campaign to raise funds for E&O. The presentations are posted on the STAN website: www.scienceandtechnologynetwork.ca

CASCA Education Coordinator -- Annual Report

Submitted by Heather R. Scott, 29 April 2005

The past year has seen further developments of the CASCA Education website, an extension of CASCA Education representation at conferences and teacher workshops, and an expansion of research into best teaching practices. The following outlines the accomplishments in the past year, ongoing projects and future initiatives in Astronomy Education and Outreach.

Most of the emphasis continues to be placed on the CASCA Canadian Astronomy Education Website. The Greater Toronto Area current events page has been expanded to include Southern Ontario, a Western Canada events page was created and an Eastern Canada page is in progress. A nation-wide listing of Astronomy Day activities was also updated, with over 25 clubs represented. The Astronomer of the Month page has become a regular feature, with a different Canadian astronomer profiled every two months. The CASCA-Westar Lectureship and Canadian Junior Astronomer pages were updated with new information as it became available, and the English pages (of which there are about 90), were examined for broken links in the summer of 2004, with all broken links repaired. The links on the French pages are in the process of being checked and fixed.

An exciting new page on the site is "Canadian Contributions to Astronomy and Space Exploration Technologies," which highlights Canadian telescopes and satellites, including CFHT and MOST. This makes an excellent reference for teachers and students studying Canadian contributions to the field, as specified by the Pan-Canadian Protocol (and which is often under-developed in textbooks). It has been suggested that images from Canadian telescopes could be highlighted on the site, either by being placed directly on the Canadian Technologies page, or linked from it.

Finally, after testing the program with a local astronomy club and grade 6 class, the Canadian Junior Astronomer Program has been re-written to increase ease of use for both the teacher and the student. Links between the current curriculum (based on the Pan-Canadian Science Protocol) and the program have been highlighted, and guidelines for teachers have been expanded. It is hoped that this will increase the use of the program into more schools and student astronomy clubs.

This past year saw CASCA Education represented at both the Science and Technology Awareness Network (STAN) conference and the Science Teachers Association of Ontario (STAO) conference, where the website was actively promoted to Earth and Space Science teachers. The Education Coordinator presented a talk at the Education

Session of the CASCA 2004 General Assembly (*Bringing the Stars to the Students*), as well as a workshop for the Canadian Association of Physics Teachers' and Manitoba Association of Physics Teachers' Physics Teacher Workshop (*Lost Amongst the Stars?! Teaching Astronomy in the New Curriculum*). Talks are currently being prepared for the STAO 2005 conference and the CASCA 2005 General Assembly (*The 7 Habits of Highly Effective Astronomy Teachers*), as well as French flyers promoting the website and the CASCA-Westar Lectureship series for the Teachers' Workshop at CASCA 2005 in Montreal.

Several requests have been submitted for CASCA-Westar Lectureships (CWL) via the CASCA Education email address on the website (cascaed@astro.utoronto.ca), and while some requests could not be fulfilled due to the mandate not being satisfied (such requests were for only one classroom visit, or the like), three have been tentatively scheduled for the near future: Oshawa in August 2005, Ottawa in fall 2005 and Lethbridge in winter 2006. New evaluation sheets have been designed for more structured feedback for CWL sessions, which can either be sent to host of the lectureship, or delivered by the volunteer astronomer. The CWL series and the Education Website will be featured in articles written for science association magazines across the country.

The CASCA Education email address also receives comments and suggestions on the website, as well as astronomy-related questions and information on potential resources and links for the site. It is monitored regularly.

Articles and Education Notes are compiled for each issue of E-Cassiopeia, summarizing Astronomy Education events in Canada for the benefit of CASCA members, and introducing outreach and teaching ideas in the field.

Best practice research into astronomy education and teaching methods continues to be an ongoing project, particularly research into layered curriculum and contract learning. While it is important to develop projects and lessons for teachers that are comprehensive and easy to implement into existing units, the different learning styles of students must be addressed in an efficient manner. It is with this in mind that new resources and materials for Earth and Space Science courses are being developed.

As the CASCA Education Website is now up, operational and nearly self-sufficient, it is hoped that more time will be allocated to develop and produce other astronomy education resources. Promoting astronomy education awareness through teacher workshops and an expanded CASCA-Westar Lectureship base, continuing to build connections between CASCA Education and other Canadian astronomy education organizations by helping

promote their events and continuing the dissemination of astronomy education materials throughout Canada both to professors of university-level astronomy and elementary/secondary school teacher are all priorities.