

The Alberta Science Teacher



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Caring for Our Watersheds—page 18

From the Editor



Conference 2010 has come and gone, and the long winter is near its end (well, we can hope). The conference codirectors, Chris Gibbon and Sandy Campbell, did a great job organizing everything at the

Fantasyland Hotel, in Edmonton, and hosting the 50th-anniversary celebration of the ATA Science Council. The conference theme was energy and how its use (and abuse) has changed over time.

Speaking of energy, this issue of *The Alberta Science Teacher* is packed with lesson ideas, stories and competitions involving energy and better ways to use it.

If you teach chemistry, check out www.chemistry2011.org. The International Year of Chemistry 2011 (IYC 2011) is a worldwide celebration of chemistry and its contributions. Students and teachers can participate in a range of activities related to the theme “Chemistry—Our Life, Our Future.” This year also marks the 100th anniversaries of Marie Curie’s Nobel Prize and the founding of the International Association of Chemical Societies. Thus, IYC 2011 will also celebrate the contributions of women to science and the benefits of international scientific collaboration.

On January 27, I attended the launch of IYC in Edmonton at the Telus World of Science. Dr Joe Schwarcz, director of McGill University’s Office for Science and Society, gave a presentation on how society views chemicals. After this eye-opening lecture, I surveyed my own students and, sure enough, many of them believed that all chemicals are poisonous and dangerous. As educators, it is our responsibility to help students view the world accurately, and IYC is sure to help us with this.

I look forward to your feedback on this issue. Please e-mail me at andilynn.bender@gmail.com.

Andi-Lynn Bender

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From the Council

Conference 2010 Report

Conference 2010, held in November, was a big hit. The Fantasyland Hotel, in Edmonton, once again hosted the Science Council (ATASC) annual conference in style. Although the weather didn't cooperate, many braved the blizzard to attend the wine and cheese on Thursday night. Chris Sudyk planned the Segway tours, and everyone had a great time going through the obstacle course. The conference theme was "Energy." The subtheme—"Where We Have Been, Where We Are, Where We Are Going"—went perfectly with our 50th-anniversary celebrations, and many retired teachers attended the wine and cheese. We thank Amgen for sponsoring this event and for introducing Jane Diner, a past winner of the Amgen Award for Science Teaching Excellence (AASTE).

As delegates registered, they were surprised to see the incredible amount of swag given out with the handbook. Notable gifts were a special edition lab coat, a Jay Ingram book and a chocolate bar. Delegates also appreciated the logbook and other gifts from the 50th-anniversary committee. Thank you to the University of Alberta's Centre for Mathematics, Science and Technology Education (CMASTE) and the ATASC for the extra swag this year!

In line with the theme "Energy," Tang Lee, professor of architecture at the University of Calgary, kicked off the conference Saturday morning with an inspiring plenary address showcasing some of his energy-efficient building designs. He encouraged us and left us with new ideas to share with our students. Stefan Bachu, a Nobel Prize-winning scientist, gave an excellent lecture on carbon-capture techniques. This is certainly an area in which Alberta can lead.

The banquet featured more keynote speakers: the Science Alberta Foundation shared its views on teaching in the 21st century, and John Acorn

entertained us as only a Nature Nut can. Jayni Caldwell won the ATASC's Outstanding Science Teacher Award, and Patty Rooks won the Distinguished Service Award. It was also announced that Colleen Yoshida had won the Outstanding Biology Teacher Award from the US-based National Association of Biology Teachers. Congratulations to all!

I had a lot of positive feedback about the break-out sessions this year. The lineup was excellent and included something for everyone. Our 80 speakers covered all grades and all specialties, and quite a few followed the conference themes. Another common topic was chemistry as 2011 is the International Year of Chemistry. Great job, speakers!

Jay Ingram closed the conference with an engaging rock show. He and five musicians performed songs that followed his presentation topic. This was certainly unlike any keynote presentation I have ever seen. After his session, Jay graciously agreed to sign the *Daily Planet* books that were given as delegate gifts.

I would like to thank all of our sponsors, displayers, volunteers, keynote speakers and session speakers for their role in making our conference such a huge success. Chris Gibbon (conference codirector) and I enjoyed planning this conference for you, and we couldn't have done it without the help of our team: Rose Lapointe (registration), Chris Sudyk (sponsors and displays), Man-Wai Chu (sponsors and displays), Ed Leong (50th-anniversary committee), Frank Jenkins (50th-anniversary committee), Kevin Klemmer (AV), Peter Kalis (ATA), Gerry Bourassa (treasurer) and the ATASC executive (registration desk and other odd jobs). Thanks also to our student volunteers, especially Danika.

I also thank those of you who provided feedback on the conference. I'm sure I will learn from your comments and that next year's conference will be even better. Conference 2011 will be held October 20–22 in Lake Louise. I can promise that it will feature inspiring scenery, inspiring food and inspiring science. Hope to see you all at Conference 2011!

Sandy Campbell
Conference 2010 Codirector

Science Teacher News

Cold Lake High School Goes Solar

We all rely on energy in so many ways every day. One “snow day” when the power goes out is a painful reminder of just how much energy we use daily. Burning fossil fuels provides most of the energy we use; however, as fossil fuel is a finite resource, we need to start looking toward alternative sources of energy. As we do so, it is imperative that we provide opportunities for our students to critically evaluate the benefits and risks associated with each energy source.

Cold Lake High School (CLHS), in Cold Lake, is the first school in the Lakeland area to incorporate solar energy into its school structure. Not only will the solar array installed on the roof of CLHS provide electrical energy to the provincial grid, but it will also allow students to see first-hand how solar panels work. Teachers plan to incorporate this technology into the curriculum in numerous ways, throughout all of the science disciplines: earth science, biology, chemistry and physics.

Science students will monitor the amount of electricity produced by the solar array and graph the seasonal differences. Through a mentorship program, they will then pass on their knowledge to

younger students from the local middle and elementary schools when they tour the facility and investigate the solar panels.

CLHS students and staff are able to harness the sun’s energy with the help of Osum Oil Sands Corp. Osum and the school’s science department are currently in the third year of a partnership that aims to expand students’ knowledge and understanding of science, and to help students recognize that innovation is an integral component in the advancement of both science and technology. The innovation and collaboration in this partnership is evident in the fact that an oil company is forward-thinking enough to step outside the fossil fuel realm in order to get our students thinking beyond petroleum. We all recognize that this transition will be slow but necessary, as our finite fossil fuel resources will undoubtedly continue to be depleted.

*Jennifer Dusyk-Johnson and Rose Lapointe
Science Teachers
Cold Lake High School*

Justin Robinson, of Osum Oil Sands Corp, shares a laugh with CLHS students during the unveiling of the solar panels.



Energy and Innovation in Nicaragua: The Eco-Stove

In July 2010 I participated in a program called Just Teach, offered through the Change for Children organization. This program involved a 15-day excursion throughout various regions of Nicaragua. As we visited the communities and interacted with the people who live there, we

learned about the issues they face. These issues include social justice concerns stemming from poverty (Nicaragua is the fifth-poorest country in the world) and environmental issues due to climate change.

One of the coolest projects we saw was something called an eco-stove. We even got to get our hands dirty and build one. This is where I was able to recognize the importance of science and innovation and how they can change people's lives for the better. An innovator named Juan Gutiérrez recognized that cooking with their traditional stoves was causing some major problems for the people of Nicaragua. It takes a lot of time to collect enough wood to burn, and burning this wood



Jennifer Dusyk-Johnson and Karla Whittaker help build an eco-stove in León, Nicaragua.



Jennifer Dusyk-Johnson with Juan Gutiérrez, eco-stove inventor and entrepreneur

creates significant carbon dioxide emissions, which contributes to global warming and deforestation. Also, the smoke exhausted from these stoves is released into their homes and creates respiratory health issues.

Juan came up with several prototypes of stoves that would require merely kindling to heat up to the same temperature as the traditional stoves, and these eco-stoves have chimneys attached in order to vent the smoke outside of homes. This ingenious innovation requires one-third the amount of wood as a traditional stove. This means less time collecting wood, less deforestation and less time for children away from home or school collecting wood. He designed several sizes and cooking surfaces so that the stoves could be used in regular homes and even restaurants. The cost of each stove is minimal, starting at \$80 for an eco-stove meant for the home.

We visited a rural community and were amazed at the difference such a simple innovation is making in the lives of the people. The owner of the home we visited said that his family was lucky to have an eco-stove: they were grateful not to have to spend so much time collecting wood, and the air quality in their home had drastically improved thanks to the stove's chimney. The people in his village who did not have eco-stoves recognized that their lives were much harder without this innovation, he told us.

To learn more about this inspiring innovation, or to purchase one for a family in need, visit the Change for Children website at www.changeforchildren.org and click on How You Can Help. I have seen first-hand the world of difference this stove makes for people.

*Jennifer Dusyk-Johnson
Biology Teacher
Cold Lake High School*

News from the Perimeter Institute

The Perimeter Institute (PI) for Theoretical Physics outreach team would like to share information about the following exciting opportunities for science teachers and students.

The Power of Ideas: Teacher Contest

Show us the power of ideas in your classroom! The Perimeter Institute challenges Canadian intermediate (Grades 7–10) and senior (Grades 11–12) science teachers to inspire and engage students with the Power of Ideas, a multimedia resource that explores the six most powerful ideas in physics history and their transformative effect on our world.

Teachers will develop a lesson plan and related activities. The winning entry will receive \$1,000 for the school's science department and a pizza party prize pack worth over \$150 for the class. Entries are due May 16, 2011. For details, visit www.perimeterinstitute.ca/Outreach/The_Power_of_Ideas/Teacher_Contest/.

Confessions of a Converted Lecturer, with Eric Mazur

Last November, PI Outreach hosted a teacher talk, "Confessions of a Converted Lecturer," with

Eric Mazur of Harvard University. The event attracted more than 130 educators. This talk is available for online viewing at <http://pirsa.org/10110081/>.

Free Summer Programs

The Perimeter Institute is now accepting applications for free summer science camps for students and teachers who have a keen interest in modern physics. All expenses are paid for those applying within Canada.

ISSYP

The International Summer School for Young Physicists (ISSYP) will be held July 21 to August 6, 2011. The application deadline is March 31, 2011.

For more information about the program, visit www.issyp.ca.

EinsteinPlus Workshop for Teachers

The EinsteinPlus workshop for physics teachers will be held July 10–16, 2011. The application deadline is May 2, 2011.

For more information or to apply, go to www.einsteinplus.ca.

If you have any questions, please contact Julie Taylor at 519-569-7600, ext 5080, or jtaylor@perimeterinstitute.ca.

*Greg Dick
General Manager
PI Outreach*

What's New with World Water Monitoring Day?

WWMD 2010

Over 200,000 people in 85 countries monitored their waterways for World Water Monitoring Day (WWMD) 2010. Their reports represented water conditions in both hemispheres on six continents. These results demonstrate the amazing power we all have to make a positive difference in communities worldwide!

To read the *Year in Review* report, go to www.worldwatermonitoringday.org/Docs/10YIR_Web_Res.pdf.

WWMD and Project WET Lesson Plans



The WWMD program is pleased to announce the release of a series of water monitoring lesson plans developed in partnership with Project WET. Covering

monitoring program design, common water quality indicators, cumulative human impacts and graphic analysis, these lessons provide a convenient guide for groups that want to augment their WWMD activities.

To download the lesson plans, go to www.worldwatermonitoringday.org/Resources/Toolkits.html.

Thank You

Each year the WWMD program strives to fulfill its mission of raising awareness and educating the public about water quality issues. We at the Water Environment Federation and the International Water Association would be remiss if we did not take a moment to recognize the good work and support of WWMD's sponsors, partners and participants. Without this support, we would not enjoy the growth we have witnessed over the past several years (over 650 per cent since 2006).

Thank you all for your dedication to this important mission!

A promotional banner for World Water Monitoring Day. On the left is a globe with the text "World Water Monitoring Day" in orange and yellow. In the center, the date "September 18, 2011" is written in large, blue, bubbly letters, with the text "...or choose YOUR day March 22 - December 31!" below it. On the right are the logos for the Water Environment Federation (with the tagline "the water quality people") and the International Water Association (IWA).

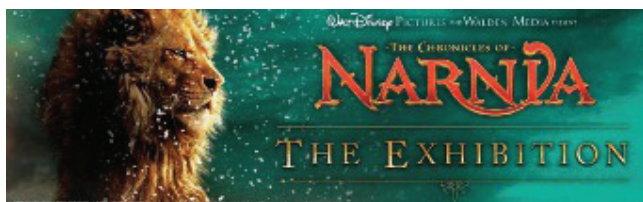
Telus World of Science (Edmonton)

Attention teachers! The Telus World of Science, in Edmonton, has an exciting new lineup for your students.

The Chronicles of Narnia: The Exhibition

Step into a world of science and wonder. Based on the blockbuster film series and C S Lewis's beloved books, this exhibition allows students to explore the world of Narnia. Scenes and characters from the films launch visitors into a journey of scientific inquiry. Can animals communicate with humans? Can a waterfall really freeze? Can we manipulate the climate? Come see the wonder of science through the wonder of Narnia.

This exhibit covers curriculum connections in science, social studies and language arts and is available for schools until April 29.



One World, One Sky: Big Bird's Adventure

You've never seen Sesame Street like this before! Open your students' eyes to the sky, and they will see how people all over the world are connected. With Big Bird, Elmo and new friend Hu Hu Zhu, they will take an imaginary trip from Sesame



Street to the Moon and discover how different it is from Earth. This full-dome show in the Margaret Zeidler Theatre nurtures a child's natural sense of wonder about the night sky while forming cross-cultural connections. This show is best for preschool/kindergarten to Grade 2 students, and especially fits the Grade 2 "Space and Culture" unit. It is available for schools now.

The Ultimate Wave Tahiti

Bring your students to catch this IMAX wave. *The Ultimate Wave Tahiti* is an extreme blend of surfing and ocean science, starring nine-time world surfing champion Kelly Slater. This is the first IMAX film to explain wave science as it visually illustrates how waves form

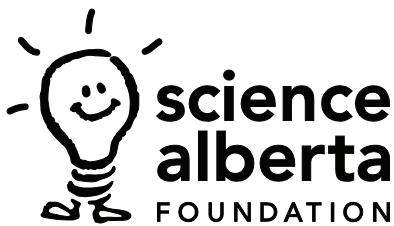


and where their energy comes from. Find out how they become great breaking waves pummeling coastlines or the barrel wave formations that surfers love to ride. From outstanding surfing action to the chaos of ocean storms, the film will lead students on a quest to understand the science behind one of this planet's most intriguing and dramatic phenomena.

This film, open for schools now, fits curriculum for Grade 2: Topic A: "Exploring Liquids" and Topic B: "Buoyancy and Boats"; Grade 8 Unit E: "Freshwater and Saltwater Systems"; and Science 10 Unit D: "Energy Flow in Global Systems."

To find out more about all of the Telus World of Science's exciting full-dome shows, immersive galleries and IMAX film experiences, visit www.telusworldofscience.com/edmonton/ (click on School Programs and then Field Trips), or call 780-451-3344 and press 4.

Science Alberta Foundation Bridges Gaming and Learning



20th
Anniversary

Educational researchers are eager to identify how computer games are engaging young people in ways teachers would give their left arm to achieve in the classroom.

With computer games, players cannot remain idle but, rather, must take specific steps to move the action forward. Even the most rudimentary games offer this, and the most popular games offer much more. They regularly pose complex questions or puzzles that must be addressed at every stage, often with time constraints that add a degree of tension to the process of discovery.

Parents and teachers who assume that these challenges are simple and straightforward would do well to check out some games for themselves. James Paul Gee, an education professor at Arizona State University, did just that while overseeing his six-year-old son's progress in a game. When Gee purchased another game at random to sample what else was available, he was unprepared for the game's level of sophistication.

Gee marvels that legions of young people will eagerly delve into this sort of demanding educational pursuit, consistently displaying the effort that teachers desire but rarely witness in the classroom. He insists that the educational potential of games is too enticing to ignore, since games incorporate principles that not only draw players into a learning process but also accelerate and reinforce what has been learned.

Unlike conventional school-based instruction, Gee explains, computer games celebrate the virtue of commitment. Rather than being told to take part, players choose to take on a game's various rules and tasks. They therefore identify themselves not merely as receptacles for new information but, rather, as motivated individuals obtaining new experiences.

Of course, the nature of those experiences will vary with the content of the game. Learning how to blow up something in a computerized scenario might not seem like a valuable lesson, but the Science Alberta Foundation has applied this principle to more-abstract lessons in science. Using a basic computer language to program a sequence of events, students encounter the concepts and phenomena that are usually taught first, only now they are discovering those relationships for themselves.

This no longer surprises Gee, who sees modern education systems being held back by their reliance on traditional exams to confirm what students have learned. The rough-and-tumble marketing of computer games, on the other hand, sorts out other kinds of learning interactions that will capture the attention of students at all levels. "Designers respond by making harder and more complex games that require mastery of sophisticated worlds and as many as 50 to 100 hours to complete," Gee writes in an article published in *Wired* magazine ("High Score Education: Games, Not School, Are Teaching Kids to Think," May 2003). "Schools, meanwhile, respond with more tests, more drills, and more rigidity. They're in the cognitive-science dark ages."

The Science Alberta Foundation has bridged gaming and learning through interactive games and digital activities that explore everyday science. Many of the activities are directly linked to the provincial curriculum and offer an engaging way to keep young people motivated about science.

For more information and a list of activities available for your students, go to www.wonderville.ca.

Classroom-Ready Resources

Free Online Resources from the CNA

Nuclear issues are prominent in today's headlines—controversies about the transport and storage of nuclear materials, the question of securing a supply of radioactive isotopes for medical procedures, the uncertain future of nuclear reactor development and production in Canada, and how to respond to various nations' attempts to acquire nuclear weapons.

Debates about nuclear technology are often highly emotional and poorly informed. To demystify nuclear issues and promote informed discussion in Canadian classrooms and beyond, the Canadian Nuclear Association (CNA) has created an online resource for junior and senior high school that explores all aspects of nuclear science and technology and their impact on our lives. All the content (available in English and French) is free, with no registration required.

The CNA is a nonprofit organization that was established in 1960 to represent the nuclear industry in Canada and promote the development of nuclear technologies for peaceful purposes.

From 2006 to 2008, the CNA developed the Nuclear Technology: Exploring Possibilities website (www.cna.ca/curriculum/default.asp), working with a team of science educators, nuclear scientists and energy experts. In 2009, the CNA partnered with Let's Talk Science to develop lesson plans and strategies to increase the use of the website. Let's Talk Science is an award-winning organization dedicated to building youth interest and engagement in science, engineering and technology. Let's Talk Science continues to work with the CNA to keep the website up to date.

The website consists of eight modules showcasing the diverse impact of nuclear technology on all aspects of Canadian society, with informative text, rare photographs, videos and supporting material (including a glossary, downloadable publications and interesting links). The site is easy to navigate, with consistent, clearly organized sections. The sections focus on such diverse topics as atomic theory, uranium mining, the history of nuclear research and technology in Canada, the characteristics of radiation, and the biological effects of radiation.

Each module contains at least three curriculum-aligned lesson plans designed to foster critical-thinking skills, including an issues-based lesson, a hands-on/minds-on inquiry or investigation, and a *Jeopardy*-style game. The engaging



Canadian Nuclear Association
Association nucléaire canadienne

lessons cover a range of topics, including portrayals of radiation in popular culture, food irradiation, nuclear nonproliferation, radioactive decay, electricity production and careers in the nuclear industry. A searchable database allows teachers to find lessons based on grade, subject, course and concept.

The lesson plans have been developed in consultation with science curriculum educators and departments of education across Canada.

Furthermore, the content has been reviewed by teachers and experts from the Canadian Nuclear Society for both accuracy and educational appropriateness, and the lessons are updated regularly to reflect current information. The lessons align with the outcomes in Alberta's programs of study for junior and senior high science, social sciences, social studies, and career and technology studies (CTS), and they reflect the priorities of the curriculum, particularly relating to science, technology and society (STS). The specific curriculum connections are as follows: Grade 7 Science; Grade 9 Science; Science 10, 10-4, 14, 20, 24 and 30; Biology 30; Physics 30; and Grades 8 and 9 Knowledge and Employability Science.

Each lesson plan provides teachers with all the information needed to teach the lesson, including background information from both the CNA and outside sources to provide balance. The lesson plans can be downloaded in a classroom-ready format, and editable blackline masters are provided so that teachers can customize them to suit the needs of their classrooms. The lesson plans provide a range of assessment options, including specific learning goals and assessment/success criteria that support formative assessment (including peer and self-assessment).

We hope that educators will visit the site and use the resources in their classrooms. We welcome feedback on the site content and suggestions for lesson plans. For more information, visit www.cna.ca/curriculum/default.asp.

*Scott Taylor
Education Specialist
Let's Talk Science*

Operation Community Water Footprint: Put Your School on the Map!



The Safe Drinking Water Foundation (SDWF) invites all teachers to put their school on the map!

Teachers are encouraged to engage their Grades 6–12 students in the Operation Community Water Footprint program (www.safewater.org/education/school-programs/operation-community-water-footprint.html). Students will calculate their community's water footprint (that is, how much source water it takes to produce one litre of treated drinking water). Then teachers can put their school on the map at www.safewater.org/education/put-your-community-on-the-map.html, and enter their community's water footprint. They can also share what they and their students are doing to educate others about drinking water issues and to alleviate those issues in their community and other communities. Students will be able to compare their community's water footprint to those of other communities across Canada and see what actions other students are taking.

For more information, e-mail info@safewater.org, phone 306-934-0389 or visit the SDWF website at www.safewater.org.

ASET Online Resource for Science and Technology Careers

Alberta teachers can now access a Web-based resource to help students explore career options in math, science and technology. The Association of Science and Engineering Technology Professionals of Alberta (ASET) is offering a free tool kit that introduces students to a variety of professional careers as respected members of the engineering team.

Science and engineering technicians and technologists typically complete a one- to three-year postsecondary program and are then eligible to start on the path toward certification through ASET, to gain a designation and be recognized as an industry professional.

The tool kit includes the following:

- Information on 17 fields of work (including bioscience, electronics, civil, mechanical, petroleum)
- A career search tool (a questionnaire based on the typical daily activities in various technology careers)
- Profiles of professionals in each field
- Links to appropriate educational institutions
- Salary information

ASET members are also available to attend career fairs or give presentations to junior and senior high school students.

For more information about careers in technology, or to order your free Science and Technology Career Toolkit, contact Judith Chrystal at judithc@aset.ab.ca. Please include your name, position, school and mailing address. For more information about ASET, visit www.aset.ab.ca.

Climate Kids: The Power of One Aluminum Can

What can you do with the energy saved by recycling one aluminum can?

In the newest Green Career profile on NASA's Climate Kids website, recycling program educator Kate Melby explains how recycling is a powerful way individuals, businesses and schools can help the environment. Read her profile and find out what that one aluminum can can do at <http://climate.nasa.gov/kids/greenCareers/recyclingcoordinator/>!

Check out NASA's great science sites for kids:

- Climate Kids (<http://climate.nasa.gov/kids/>)
- SciJinks (<http://scijinks.gov>)
- The Space Place (<http://spaceplace.nasa.gov>)

*Laura K Lincoln
Outreach Coordinator
NASA Space Place*



The Biosphère at Your School

The Biosphère Environment Museum, in Montreal, offers free videoconference presentations to schools across Canada. The presentations are an hour long and are geared toward students 12 years or older.

Five presentations are available:

- A Change in the Air (theme: climate change)
- A Breath of Clean Air (theme: air quality and air pollution)
- Drop by Drop (theme: water)
- One World, One Planet (theme: responsible consumption)
- Variety Is the Spice of Life (theme: biodiversity)

For more information, go to the English version of the Biosphère website (www.ec.gc.ca/biosphere/) and click on Educational Programs.

Professional Development

Science in the Cinema

Movies are often based on strange and fantastic science, leaving the audience to wonder how much of what they are seeing is possible and how much is pure fiction.

Enter the Alberta Innovates Health Solutions (AIHS) Science in the Cinema program, an initiative to illuminate the science in popular cinema and provide a venue for the general public to learn about current research.

Science in the Cinema provides free screenings (including popcorn) of selected movies related to health or biomedical issues. A researcher who works in a related field introduces each film. Following the presentation, the researcher discusses new areas of research related to the science highlighted in the movie, with time for audience questions and discussion.

On March 3, the film *Temple Grandin* was shown at the Citadel Theatre in Edmonton. *Temple Grandin* is an engaging portrait of a young autistic woman who becomes, through timely mentoring and sheer force of will, one of America's most remarkable success stories. The film chronicles Grandin's early years as a child diagnosed with autism; her turbulent development during her school years; and the enduring support she receives from her mother, her aunt and her sci-

ence teacher. Against all odds, Temple eventually transitions into a highly functional, esteemed inventor in the cattle industry, which she revolutionizes with her scientific research and designs.

Join us at our upcoming events, and tell your students!

Into Thin Air

Topic: Altitude sickness

Date: Thursday, April 7, 2011

Time: 6:30 PM

Location: Plaza Theatre, 1133 Kensington Road NW, Calgary

Date: Thursday, May 5, 2011

Time: 6:30 PM

Location: Citadel Theatre (Zeidler Hall), 9829 101A Avenue, Edmonton

Based on Jon Krakauer's best-selling book, *Into Thin Air* recreates an ill-fated 1996 expedition to Everest that claimed at least five lives, including those of two world-class climbers. The film jumps right into the action at Everest base camp and compresses the two-month trek into just a few days of exhilarating adventure, guiding us through the invisible, intensifying effects of altitude and stress. Krakauer joins the trip with the intention of writing an article on the commercialization of Everest, but as conditions on the mountain deteriorate, he is forced to focus all his energy on survival.



Summer Institutes at the Huntsman Marine Science Centre



Are you looking for a summer program that is hands-on, informative and fun all at the same time? Look no further than the summer institutes for students and teachers offered by the Huntsman Marine Science Centre. Join us in our outdoor marine classroom!

Huntsman is located in the busy resort community of St Andrews By-the-Sea, New Brunswick, on the shore of the St Croix estuary. Nearby, you'll discover the diversity of marine mammals, seabirds and invertebrates living in and around the bountiful waters of the Bay of Fundy—home of the world's highest tides. Huntsman is a teaching and research facility that offers students of all ages hands-on experience in field biology through excursions, lab facilities, the new Fundy Discovery Aquarium, and trips on its research vessel, the Fundy Spray.

The programs offered in the summer of 2011 are designed to provide a hands-on introduction to the marine environment of the Bay of Fundy.

Active Researchers (July 11–15) will provide first-hand experience collecting data for a variety of research projects (including invasive species; invertebrate biodiversity; seabird, whale and seal surveys; aquaculture issues; and bird-banding mark/recapture techniques). This institute is open to all over the age of 15, including students and teachers.



You can find amazing biodiversity under just one rock in the intertidal zone!

To see a sample schedule and learn more about this institute, visit www.huntsmanmarine.ca/html/high_school.html.

The Marine Biodiversity Institute (July 25–29) is designed to help teachers deliver science in the classroom in a fun, hands-on way. Join us to discover whales and seals, explore the intertidal and subtidal zones, learn to identify marine creatures, and determine how it all fits into your classroom. To see a sample schedule and more information about this institute, visit www.huntsmanmarine.ca/html/adult_teachers.html.

For each course, the all-inclusive fee is \$590. This includes dormitory accommodations for four nights, all meals shown on the schedules, instruction by the Huntsman teaching staff, boat and lab fees, and taxes. You just need to find your own way to the Huntsman!

Grace Simonetti, a high school science teacher from Mississauga, Ontario, attended a Huntsman teachers' institute in the summer of 2010. "I highly recommend it to any teacher who is teaching anything in biology, especially inland teachers. You get the hands-on experience."

For more information on these programs or to apply, visit www.huntsmanmarine.ca, call 506-529-1220 or e-mail tdean@huntsmanmarine.ca.



Participants collect live creatures, in this case marine worms, to examine further in the Huntsman lab.

Women in Science

AWSN Mentor of the Millennium Profile: Marie-Eve Caron

This profile has been reprinted with permission from the Alberta Women's Science Network (AWSN) website (www.awsn.com). Minor changes have been made to spelling and punctuation to fit ATA style.

A geology adventure far from home gave Marie-Eve Caron life lessons she would never forget.

It all started while she was working on her undergraduate degree in environmental science with a geology concentration from the University of Calgary. That opened the door for Caron, now a geologist-in-training (GeolIT), to spend some memorable time in Tuktoyaktuk, Northwest Territories.

"I wanted to see the northern landscape and experience the culture, so I worked two months in Tuk, a community of 900 people who live along the Arctic Ocean," she says. "It was an eye-opening experience to see what life is like in a remote part of the country. Family ties are very strong, and it's a big social hurdle for people to leave the community to seek education, just as it is a challenge to find teachers willing to move up there. For a local person, getting a university education means leaving home to get their degree and then making the decision to come back afterwards. It's an entirely different life up there and so it was like culture shock."

During her first summer up north, Caron worked as a swimming instructor and lifeguard and enjoyed the opportunity to meet the local people. By the time she had to leave, she knew she wanted to return one day, which she did a couple of years later while working on her master's degree.

"I was able to return to Northwest Territories to do fieldwork with the Geological Survey of Canada. Although I had less direct involvement with the people and more focus on the technical aspect of my role, I was able to apply my earlier experiences to my work," she says. Her work involved a proposed expansion of the Nahanni National Park Reserve of Canada, nestled in the Mackenzie Mountains.

"At the time, we were conducting a study of the geological resources for the expansion project, which was a special agreement between Parks Canada and the Dehcho First Nations people," Caron explains. "The Dehcho people were the ones living there and most affected by the expansion. Some wanted the expansion of the park, others didn't. But the key thing I took away from the experience was the importance of keeping the local people informed and their voices heard."

In spending time with First Nations people, Caron says she gained greater understanding of their culture and became intrigued enough to want to work closer with them.

"Because I study the environment and because their culture is naturally very observant of nature and its cycles, I think I naturally responded to them," she says.

Upon completing her master's in 2007 and beginning work at Matrix Solutions, an environmental and engineering consulting company based in Calgary, Caron decided to continue her affinity with First Nations people in a new role—as a mentor in the APEGGA (Association of Professional Engineers, Geologists, and

Geophysicists of Alberta) Aboriginal Mentorship Program. Caron is one of several mentors who visit various high schools, middle schools and elementary schools so that students can benefit from hearing about their professional experiences and opportunities in science, engineering and technology.

“Being a geologist, I love rocks. So I bring in samples from my own personal rock collections to show how interesting they can be,” she says. “I also do activities with the students, like demonstrating how water moves through different types of soil by packing soil samples into yogurt containers and then having coloured water flow



Marie-Eve Caron doing fieldwork in the South Nahanni River basin, in NWT

through them. Last week we also coordinated for an archaeologist guest speaker to present and show samples of arrowheads and obsidian rock.”

Hands-on learning is vital to helping engage students, especially those from an Aboriginal background, Caron says.

“Although the kids I meet these days live in a big city and not a small northern community, there are certainly some similarities in how both groups communicate. I really admire the way they think before speaking; they pause and take their time. They tend to be more observant. They also appreciate storytelling and participating in activities they can do with their friends, which is what we try to do to make the demonstrations fun for everyone.”

She says that it’s difficult to tell what lasting impact the mentoring activities will have on the students, but she is encouraged to see how much they enjoy it.

“I feel like we’re doing such a small thing, but hopefully by coming back month after month, we can share our enthusiasm and show the kids all the different options that are available to them,” she says. “The purpose is really to help students understand what they like, what they want to do and realize what their passions are—whether it’s related to science or not.”

Caron believes that the mentoring program is especially important in reaching kids who haven’t been exposed to the scientific world of possibilities.

“If you don’t know any engineers or don’t have a scientist in the family, you might not see it as an option for you. You might not even realize you really like it until you give it a try.”

As for her own background, Caron’s father is an engineer and her mother was an inspector with the Canadian Food Inspection Agency, so they were both science-educated mentors to their daughter.

“They were both very supportive and encouraged me to go to university, although it took a while for me to realize exactly what it was I wanted to do,” she remembers. “When I was a kid, our family would go camping and hiking

and skiing, and that nurtured my love for the outdoors. So once I discovered the university’s environmental program, I knew it was right for me.”

In her work, Caron focuses on groundwater, specifically working with energy companies or government groups to do pre-assessments before a project goes into development or getting called upon to conduct evaluations of contaminated areas.

“When I started out, I did more fieldwork, such as collecting water samples from water wells or springs, drilling for soil samples and bringing them back to the lab,” she says. “Fieldwork is an adventure. You get to see different parts of the country that you may not normally see.”

Since completing her master’s, Caron spends more time writing reports in the office, a change she says is especially welcome when it is –40°C outside.

“I really enjoy it. When you’re a consultant, you get to think like a detective. You’re given pieces of information, but not all the pieces. You try to figure out the whole picture: Is there contamination in the ground? Will it affect people? Will it affect a water source like a creek and impact the fish living in it?” she says. “You always have to keep one step ahead and consider all the possibilities to predict the outcome. You want to be able to predict whether or not you can proceed with the development while still protecting the environment.”

Caron tries to convey how much she loves her work to her students so that they are inspired to discover their own passions and reach out to other mentors who will help them find their way.

“Once you find your natural abilities and go in that direction, you’ll find mentors who can provide you with the support and guidance you need. If you have questions or doubts, you only need to ask someone you look up to at home or school,” she says. “The most important thing is to follow your heart and natural gifts. After that, things will start falling into place.”

Barbara Chabai

Awards and Competitions

Caring for Our Watersheds

Caring for Our Watersheds (CFW) is an environmental contest that turns ideas into solutions.

CFW asks Grades 7–12 students to submit a proposal that answers the question, What can you do to improve your watershed? Students research their local watershed, identify an environmental concern and come up with a realistic solution.

Students compete for the first-place cash award of \$1,000, and participating schools are eligible for \$12,000 in rewards. There is also \$10,000 in funding available to help implement ideas.

Students who live in Calgary and south of Calgary are asked to enter the Southern Alberta

contest. The entry deadline is April 1, 2011, with a final competition on May 1, 2011.

Students who live north of Calgary are asked to enter the Central Alberta contest. The entry deadline is May 11, 2011, with a final competition on June 4, 2011.

For more information, visit www.caringforourwatersheds.com, or call Lindsey at 403-225-7782 or Erin at 780-672-0276.



SGF - FUSION

WHAT: Lethbridge Regional Science Fair and Science Olympics

WHO: Students grade 4-12 are welcome to participate

WHERE: University of Lethbridge (Atrium)

WHEN: April 8 & 9, 2011

WHY: Science is AWESOME!

WHY: There are cash prizes!

WHY: You could get a free trip! Up to 4 high school students (grade 7 -12) will be selected to attend the Canada Wide Science Fair in Toronto.

Project Categories: *Physical Sciences* *Life Sciences* *Engineering*

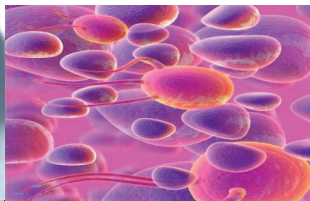
For more information or to register:

Visit www.yssf.ca and "Find your Fair"

Call Career Transitions at 403-328-3961



Youth Science Canada
Sciences jeunesse Canada



\$3,000 Project Grants Available

The ATA Educational Trust is a charitable organization dedicated to the professional growth of Alberta teachers. The Trust awards a number of grants of up to \$3,000 to help Alberta teachers or others involved in education and teaching to develop innovative resources that support curriculum, teaching or learning. Individuals or groups planning to undertake a project or conduct research must submit a detailed proposal on or before May 1, 2011.

In January of each year, the Trust posts application forms for grants and bursaries on its website. For details, go to www.teachers.ab.ca, and click on For Members; Programs and Services; Grants, Awards and Scholarships; and ATA Educational Trust.



\$300 ATA Specialist Council Grants

The ATA Educational Trust is a charitable organization dedicated to the professional growth of Alberta teachers. For this grant program, interested teachers may enter their name into a draw for \$300 towards the cost of an ATA specialist council conference.

In January of each year, the Trust posts application forms for grants and bursaries on its website. The deadline for conference grants is September 30, 2011. For details, go to www.teachers.ab.ca, and click on For Members; Programs and Services; Grants, Awards and Scholarships; and ATA Educational Trust.



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\$500 Bursaries to Improve Knowledge and Skills

The ATA Educational Trust is a charitable organization dedicated to the professional growth of Alberta teachers. The Trust encourages Alberta teachers to improve their knowledge and skills through formal education. The names of 40 (or more) eligible teachers who apply for this bursary will be entered into a draw for up to \$500 to be applied toward tuition.

In January of each year, the Trust posts application forms for grants and bursaries on its website. The deadline for bursary applications is May 1, 2011. For details, go to www.teachers.ab.ca, and click on For Members; Programs and Services; Grants, Awards and Scholarships; and ATA Educational Trust.



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