The Alberta Science Teacher

Volume 27, Number 2 January 2007

The Alberta Science Teacher

From the Editor

As a beginning teacher, I am always looking for relevant information to support me in the classroom. This search led me to the ATA's Science Council three years ago, and now I have made it my objective to help other beginning (and seasoned) teachers find useful information for teaching science.

An invaluable event hosted by the Science Council is the annual conference, which I had the privilege of attending in Kananaskis in November. Keynote speakers Justin Trudeau and Joe Schwarcz engaged and amazed the audience. The conference sessions were full of classroom-ready lessons and ideas. This year's conference will take place in Edmonton at the Fantasyland Hotel.

Another event I took part in was the first annual Iron Science Teacher competition, which was held at the Telus World of Science in Edmonton. The contest's objective is to promote science education in a fun and interactive way. As the timekeeper, I had the opportunity to meet Natasha Stillwell from the Discovery Channel's *Daily Planet,* who served as a guest judge.

Attending professional development events and learning new classroom strategies are some of the immediate benefits I have discovered upon becoming an executive member of the council. Editing a newsletter, however, is a new endeavour for me. The example set by Derek Collins over the past four years will provide me with guidance and inspiration as I proceed.

I have introduced some small changes to *The Alberta Science Teacher* that I hope you will find appealing and useful: the cover design, the table of contents and the format of the articles have been subtly refined. In this issue, I have categorized information into sections. One section is Women in Science, and I hope to devote a future issue of the newsletter to female role models in science.

This newsletter is for you, the science teacher, and your input is always appreciated. If you have any suggestions for future issues, or have a lesson plan or idea you would like to share, please contact me at andilynn.bender@gmail.com.

Andi-Lynn Bender

Table of Contents

President's Message

Welcome to a new beginning for *The Alberta Science Teacher.* We hope to keep giving you all the good stuff you've come to love, as well as some new and exciting features.

The changes to the newsletter reflect some changes made to the Science Council executive as of the November conference in Kananaskis. The newsletter has a new editor, Andi-Lynn Bender. She has taken over this big job from Derek Collins, who has done a wonderful job for the last four years. Thanks, Derek, for your dedication and hard work.

As the new president, I look forward to serving science teachers across the province over my two-year term. I take this opportunity to thank Dennis Oppelt for the many hours he has dedicated to the council over the past two years. He has done a wonderful job as president, and I have big shoes to fill! I have some ideas for new directions for the council, and I can't wait to start working on them!

Speaking of new directions, high school science teachers are in the process of switching over to the new curricula. The dates for mandatory implementation are as follows:

- Science 20—September 2006
- Science 30, Biology 20, Chemistry 20, Physics 20—September 2007
- Biology 30, Chemistry 30, Physics 30—September 2008

If you need any help with implementing the new curricula in your classroom, please contact the appropriate director (for contact information, see the executive list on the inside back cover). We're here to help!

Finally, I extend a huge thank you to Mary McDougall and Barb Borchert for all their work in planning and organizing Conference 2006. We had a wonderful time in Kananaskis! We look forward to Conference 2007: "Planet Earth: Ours to Understand and Cherish," to be held in November at the West Edmonton Mall. Online registration is up and running at www.atasc.ab.ca/conference/registration.html. If you have any ideas for sessions, let us know!

I'm looking forward to two years full of change, renewal and the enhancement of science education in Alberta.

Colleen Yoshida

Recent Events

Science—Who Needs It? Celebrating Science and Technology Careers Throughout the Year

Science and Technology Week 2006 was officially celebrated October 13–20, but encouraging students to consider opportunities and career paths in Alberta's increasingly diverse science and technology community is a year-round priority.

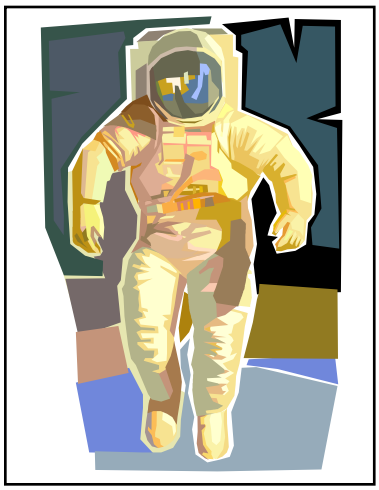
Alberta's future is bright. Just how bright depends on the growth of our knowledge-based economy, which already has an insatiable thirst for trained professionals in science and technology. For Alberta's young people, that means limitless opportunities to make a difference while making a living.

SciTech Week 2006 was launched with the West Central Festival of Science on October 13 and 14 in Edson. Carl Winter, described by various media sources as the "Elvis of *E coli*" and the "Sinatra of *Salmonella,*" put on a concert for a gymnasium full of junior high students, who rocked along to "Don't Get Sicky Wit It" (a parody of rapper Will Smith's "Gettin' Jiggy Wit It") and "We Are the Microbes" (a nod to the Queen anthem "We Are the Champions"). Sponsored by the Science Alberta Foundation, the highly entertaining concert demonstrated that food safety

Joe Edwards, former top gun and NASA astronaut

and science professors are far from boring. To find out more about Carl Winter's music, visit his website at http://foodsafe.ucdavis.edu.

Nearly 600 Edmonton and area junior high students were star-struck on October 18 and 19 when Joe Edwards, a former NASA astronaut and top-gun pilot turned executive, shared his stories of top-gun flights and space travel. Edwards encouraged students to view their science classes as important steps along a career path that stretches far beyond the lab. "There is an enormous international need for trained professionals in science and technology, which means abundant opportunities for young people," he told them. "Making the most of the future means choosing science options in high school."



Other SciTech Week events included outreach presentations and hands-on activities at the Telus World of Science in Calgary, sponsored by the Association of Professional Engineers, Geologists, and Geophysicists of Alberta (APEGGA), and the Family Science Olympics in Medicine Hat, sponsored by Praxis.

Calli Naish, a Grade 9 student at Spruce View School in central Alberta, won the SciTech Week 2006 essay contest. Sponsors Smart Technologies and Sharp's Audio-Visual donated the prizes: an interactive Smart Board and a computer/video projector worth approximately $6,000 for the winner's classroom. Calli's teacher, Ken Kure, was recognized for encouraging students in his entrepreneurship class to enter the contest.

Today's young people will deliver tomorrow's innovative solutions to problems affecting Albertans and people around the world. Teachers play a vital role in helping young Albertans understand how broad their opportunities are. SciTech Week and other events, such as Alberta Ingenuity's Iron Science Teacher competition, encourage teachers and students to bridge the gap between classroom theory and the real world, and to view science as a creative and rewarding field of study. Many of the occupations that will provide a high standard of living for today's students relate to new technologies, and those occupations require more than a high school diploma.

To show students the worldwide impact of cutting-edge research and amazing discoveries developed in Alberta, many teachers rely on the Alberta Innovation video series. These programs showcase finalists in the Alberta Science and Technology (ASTech) Leadership Foundation Awards. The series is developed by the Government of Alberta in cooperation with Western Economic Diversification Canada and Global Television. *Alberta Innovation 2006* was broadcast on Global Television on December 9. DVD copies will be distributed to schools soon. If you would prefer a VHS copy, please e-mail is.inq@gov.ab.ca. The series is also available for online viewing at www.innovation.gov.ab.ca. On the website, you will also find a list highlighting curriculum links. Please send your comments, feedback and ideas on ways to advance science and technology in Alberta to is.inq@gov.ab.ca.

Father Lacombe Teachers Win the Iron Science Teacher Competition

On October 6, the Telus World of Science in Edmonton became the arena for the first annual Iron Science Teacher competition, hosted by Alberta Ingenuity. Based loosely on the popular Food Network show *Iron Chef,* in which two chefs battle for glory by creating dishes based on a secret ingredient, the Iron Science Teacher competition had four teams of teachers craft 12-minute lessons on colour, this year's theme.

Along with two teams from Edmonton and one from Canmore, the intrepid Iron Maidens of Father Lacombe High School in Calgary ventured forth, with 25 fans from the school cheering them on. Presenting first, the four young science teachers declared themselves a rock band in need of fireworks for their first video shoot. In an attempt to determine which colours might best suit their needs, the four women launched into an exploration of electrons, wavelengths and the inner workings of the eye, drawing keenly on audience participation. As the clock wound down and the crowd went wild with anticipation, the Iron Maidens unveiled their music video, filmed with the help of Father Lacombe High School's partner CFCN Television.

When the judges proclaimed the Maidens the first-ever Iron Science Teachers, the arena erupted in cheers and pleas for autographs!

Sean Marchetto, Secondary Science Consultant, St Paul Centre

Father Lacombe High School's Iron Maidens (left to right: Candice Beermann, Marija Susnjar, Carrie Herman and Man-Wai Chu) celebrate after winning the Iron Science Teacher competition.

Education Updates

Alberta Education Update

Senior High Science

Biology, Chemistry and Physics 20-30

With the completion of the field tests of the Biology, Chemistry and Physics 20-30 programs of study, resources and assessment items, we are now seeing the new custom-developed resources meant to assist teachers in implementing the programs. These resources can be ordered from the Learning Resources Centre (LRC) at www.lrc.education.gov.ab.ca. Both Thomson Nelson and McGraw-Hill Ryerson have developed learning and teaching resources for Biology 20-30 and Chemistry 20-30. The biology resources developed by McGraw-Hill Ryerson and the chemistry resources developed by Thomson Nelson will be translated and contextualized to support distance education and the French-language program. Pearson Education has developed the Physics 20-30 resources, which will also serve for distance education and the French-language program.

Online courses for the Biology 20, Chemistry 20 and Physics 20 programs of study are being developed collaboratively by the Distributed Learning Resources Branch and partners in the online school community. The field-test versions of the courses are scheduled to be available for September 2007. The final versions of the courses and print distributed learning modules will be available for September 2008. Development for the 30-level courses will follow a similar pattern, with the field-test versions available for September 2008 and the print distributed learning modules available in 2009. For information regarding distributed learning resources, contact Eldon Krikke at eldon.krikke@gov.ab.ca or (780) 674-8727 (to be connected toll free within Alberta, dial 310-0000 first).

Workshops to support the September 2007 implementation of the programs for Biology 20, Chemistry 20 and Physics 20 (English and French) and the program for Science 30 (English only) have been tentatively scheduled through the Alberta Regional Professional Development Consortia (ARPDC). The draft schedule is as follows:

- February 16—Wainwright
- February 21—Edmonton
- February 22—Edmonton area
- February 23—Fort McMurray
- February 27—St Paul
- March 2—Red Deer
- March 5—Red Deer area
- March 9—Calgary
- March 12—Calgary area
- March 13—Calgary area
- March 15—Lethbridge
- March 19—Medicine Hat area
- March 20—Grande Prairie
- March 21—Peace River
- August 2007—Edmonton/Calgary/video conference (French programs)

Many of the teachers leading the workshops were involved in the 2005/06 field test and are thus able to share their insights on how to successfully negotiate the changes to the programs. Teachers attending the workshop will be provided with a complimentary copy of the Science 20 textbook. Samples of the Biology, Chemistry and Physics 20-30 resources will be available for teachers to work with. To register, contact Glenn Zacharuk at Glenn.Zacharuk@portage.college.ab.ca or the executive director of your regional consortium (see www.arpdc.ab.ca/contact.html).

For information regarding science programs, contact Caroline Nixon at caroline.nixon@gov.ab.ca or (780) 427-9593. For information regarding French-language science programs, contact François Lizaire at francois.lizaire@gov.ab.ca or

(780) 422-7992. To be connected toll free within Alberta, dial 310-0000 first.

Safety in the Science Classroom

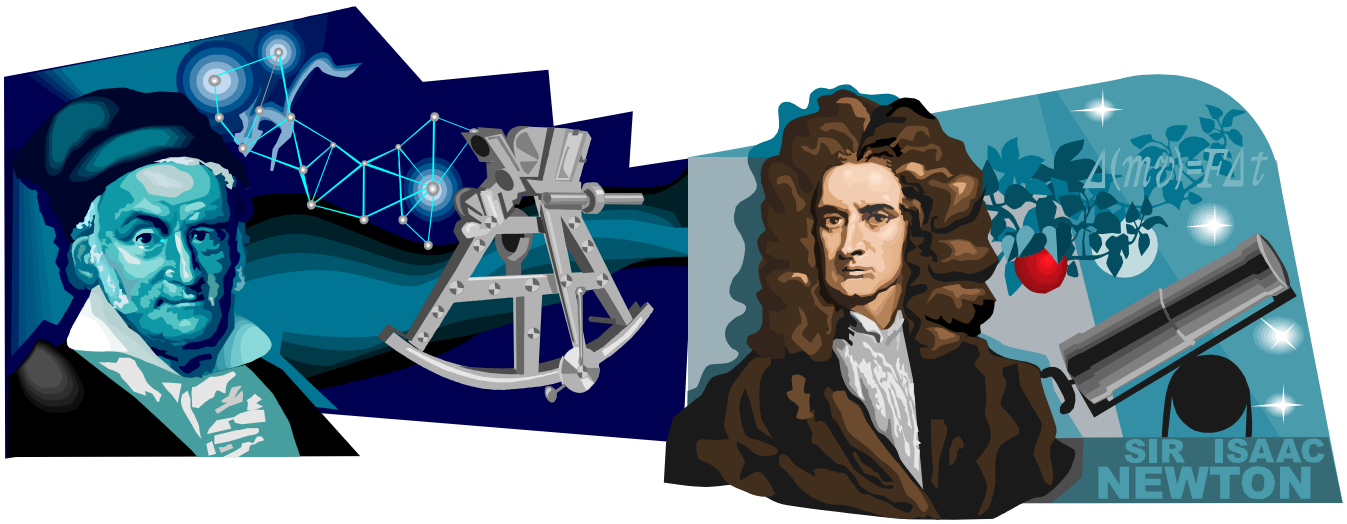
To support the release last fall of the *Safety in the Science Classroom* resource, the ARPDC offered full-day workshops in St Paul, Wainwright, Grande Prairie, Calgary, Red Deer, Fort McMurray and Edmonton. For more information or to schedule a session on use of the resource, contact Vic Romanyshyn at vic.romanyshyn@gov.ab.ca or (780) 415-8958, or Bernie Galbraith at bernie.galbraith@gov.ab.ca or (780) 422-3218. To be connected toll free within Alberta, dial 310-0000 first. The resource is available from the LRC or at www.education.gov.ab.ca/k_12/curriculum/bySubject/science/screport.pdf.

LearnAlberta.ca

Staff from LearnAlberta.ca met with teachers in November to identify the biology concepts that teachers find the most challenging to teach and learn. Many ideas were shared, and planning for the development of multimedia learning resources to support the implementation of the revised program of studies has begun. For more information or to provide input on this project, contact Wade Strass at wade.strass@gov.ab.ca or (780) 422-3280 (to be connected toll free within Alberta, dial 310-0000 first).

Elementary Science

Superintendents have been invited to nominate teachers to sit on the Elementary Science Advisory Committee, whose main responsibility will be to provide guidance regarding program revisions. The committee members will represent a cross-section of Alberta teachers in terms of grade level, gender, experience and student groups served. For more information, contact Caroline Nixon at caroline.nixon@gov.ab.ca or (780) 427-9593, or Bernie Galbraith at bernie.galbraith@gov.ab.ca or (780) 422-3218. To be connected toll free within Alberta, dial 310-0000 first.



Junior High Crates from the Science Alberta Foundation

Looking to inject a little excitement into your next science class? Look no further—the Science Alberta Foundation has a simple and engaging solution!

The Science-in-a-Crate program provides teachers with amazing ready-made science resources. Each trunk-sized crate is self-contained and includes hands-on, minds-on interactive activities. The activities are innovative and engaging, and they tie directly to Alberta Education's science and mathematics curricula.

Currently, the crates visit one in eight classrooms in Alberta, reaching more than 85,000 students in 3,500 classrooms.

The following crates have been developed specifically for junior high.

Geologist's Boot Camp: Discovery at Mine #909

Grade 7 (Planet Earth)

New minerals and rocks have been discovered in an abandoned mineshaft in northern Alberta. The town council has asked junior high students to identify three unknown minerals and rocks. To learn about the unique properties of rocks and minerals and how they are formed, students will first attend a boot camp for geologists.

Made possible through funding from the Anadarko Canada Corporation, the Canadian Society of Exploration Geophysicists, the Canadian Society of Petroleum Geologists and Schlumberger Canada

Planet Earth and the Time Mystery

Grade 7 (Planet Earth)

Your class has been transported at the speed of light to another time period. You discover that you have travelled two billion years—but to the past or to the future? Equipped with a set of clues, you will undertake a series of investigations to determine the time period based on geological information and discoveries made about the forces that affect Earth.

Made possible through funding from the Anadarko Canada Corporation, the Canadian Society of Exploration Geophysicists, the Canadian Society of Petroleum Geologists and Schlumberger Canada

Get Focused on Light and Optics

Grade 8 (Light and Optical Systems)

Explore the nature of light through the eyes of an optometrist. Use observation skills to see into the human eye; discover how lenses correct vision; and investigate properties of light with lasers, lenses and mirrors.

Made possible through funding from the Alberta Association of Optometrists; cosponsored by Essilor and Johnson & Johnson Vision Care

Team Aquatica: Fresh and Saltwater Systems

Grade 8 (Freshwater and Saltwater Systems); also available in French

Explore all aspects of aquatic ecosystems by diving deep into fresh and salt waters with a wacky group of colourful superheroes! From collecting and interpreting data found in glacial core samples to determining the potability of drinking water, the tasks will engage you in using scientific principles to investigate freshwater and saltwater systems and processes.
Made possible through funding from ConocoPhillips Canada

Extreme Alberta Challenge

Grade 9 (Biological Diversity); also available in French

You will discover the variety of life living in unique Alberta habitats and analyze how the Extreme Alberta Challenge, a multi-leg adventure race, may affect the plants and animals en route. You will help perform the necessary environmental assessments and analyze the outcomes. The activities showcase real-life examples of field research techniques, species at risk in Alberta, and species- and habitat-management practices.
Made possible through funding from Friends of the Science Alberta Foundation

Information Assurance: Electrical Principles

Grade 9 (Electrical Principles and Technologies); bilingual (French and English)

The Information Assurance Company, specializing in data information security and encryption services, is building seven new secure facilities worldwide, which you will help design. You will explore the form and function of many electrical devices, systems and processes that are part of our technological environment. In combination with these technologies, electrical principles will be used to show the transfer of energy, control of mechanisms and transmission of information in various forms.
Made possible through funding from the Cadmus Foundation and the Cadmus Fund at the Calgary Foundation

To book any of these crates or to see the other 24 crates, go to www.sciencealberta.org.

Limited-Time Offer

To get a crate delivered to your school for free until November 2007, input the following promotional code when booking the crate: PWKWPKF.

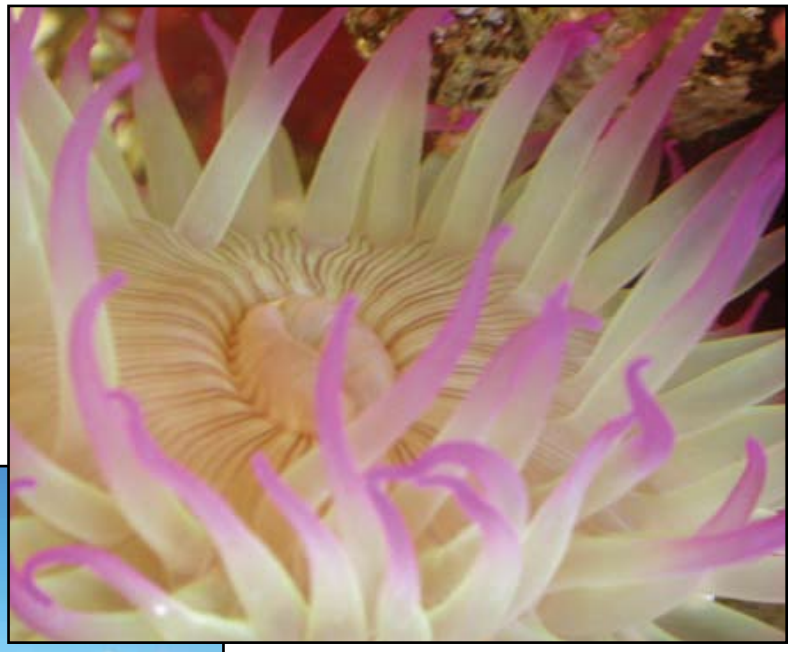
Bamfield Video Conferencing: The Next Best Thing to Being There

The Bamfield Marine Sciences Centre (BMSC) in Bamfield, BC, offers award-winning marine science programming. Now the BMSC makes it easy to bring the West Coast experience right into your classroom, by sharing experiences with live marine organisms and the natural environment of Barkley Sound through Internet video conferencing. Connect your class with the BMSC's outer coast learning resources, and experience the excitement of marine life.

Although bringing students on a field trip to the BMSC is ideal, the cost can be prohibitive. Internet technology makes it possible to bring to students reasonably priced educational content that is engaging, interactive and effective. The BMSC can help teachers and students connect specific concepts in the classroom to marine and coastal examples, thus enhancing learning opportunities.

Through real-time video conferencing, instructors present interactive labs with live organisms, covering a variety of learning outcomes and reaching across grade levels. BMSC staff can work with you to develop a program that meets the learning needs of your students—from invertebrate biology to predator–prey interactions, from testing predictions to ecosystem connections.

To learn more about the BMSC's video-conferencing program, visit www.bms.bc.ca/computing/videoconf/, or contact the Public Education office at public_ed@bms.bc.ca or (250) 728-3301, ext 226.



Using LearnAlberta.ca

Teachers are getting busier and busier, with more and more tasks imposed on us. I know I've felt swamped in the past couple of years, and I'm sure many of you are facing the same pressures of time.

If your school has a broadband Internet connection, there is a place you can go to free up some time for yourself: LearnAlberta.ca (www.learnalberta.ca). I'm assuming most of you have at least heard of it. Maybe you think that you don't have time to explore it. Trust me—it can end up saving you and your students lots of time. To access the site, you need a user name and a password. Ask your librarian for the log-in information for your school. You can give the log-in information to your students, so that they can access the site from home.

Here are just a few of the many things LearnAlberta.ca can offer to you and your students.

If you don't have access to a lot of equipment for exploring circuits in Grade 9, you can use a virtual electric circuit. Log on to LearnAlberta.ca and click Grade 12, then Science, then Physics 20-30. Navigate to the electric circuits. You will need the latest Java runtime module (if you don't know how to get it, e-mail me at ckarvonen-lee@atasc.ab.ca, and I'll guide you through the process). The virtual electric circuit involves a blank board with tools on the left-hand side (as shown in the picture at right).

You can use this circuit as a demo or as a virtual lab (with no setup required). If the kids blow a light bulb, it's only a virtual light bulb. They can do some extra problem solving to get the bulbs to stay lit without having to blow 13 real light bulbs in the process.

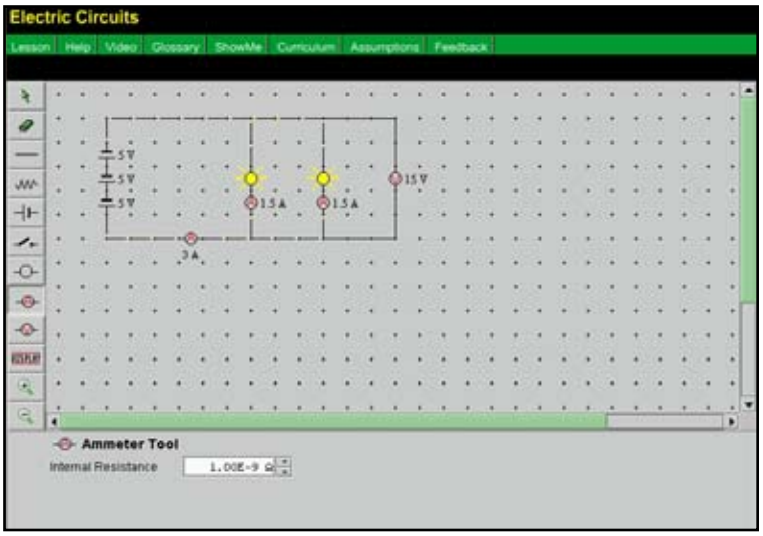
Many of you are giving your students Internet research projects to hit some information and communication technology (ICT) outcomes. You and your students know all too well the frustration of getting 1.5 million search results and trying to determine which sites are relevant and reliable.

LearnAlberta.ca can help! From the main page, click on Online Reference Centre. You'll find links to nine search engines that will give you prefiltered search results. This will save your kids a ton of headaches!

LearnAlberta.ca also contains online textbooks for Grade 9. Both *ScienceFocus 9* and *Science in Action 9* are available on the site. That means students can access their textbook at home if they have left it at school. These e-textbooks can also be useful for you: for example, you can display a page of the textbook in the classroom if you have an LCD projector. The *Science in Action 9* e-textbook has an extra feature that will be helpful for your weak readers: it will read the book to the kids. Try it out! Click on Grade 9, then Science, then *Science in Action 9* e-Textbook. When you click on any section in the textbook, you'll see an Audio button near the top right-hand corner of your screen. Turn up the sound and click on it.

I have yet to explore the entire LearnAlberta.ca site, but I'm sure it contains many other resources that will assist you in teaching your students. Please contact me at ckarvonen-lee@atasc.ab.ca if you need any help using LearnAlberta.ca.

Corey Karvonen-Lee,
Division III Director



Professional Development

Conference 2007

"Planet Earth: Ours to Understand and Cherish"
Fantasyland Hotel, Edmonton
November 16–18

Planning for Conference 2007: "Planet Earth: Ours to Understand and Cherish" is well under way.

The keynote speakers are as follows:

- Gilles Leclerc, director general of the Space Technologies Branch of the Canadian Space Agency
- David Schindler, Killam Memorial Professor of Ecology at the University of Alberta
- Brian Keating of the Calgary Zoo
- Frank Sulloway, a noted Darwin scholar and professor at the University of California, Berkeley
- Bob McDonald, host of CBC Radio's *Quirks & Quarks*

Free tours of the Dinosaur Adventure museum in the West Edmonton Mall will be available on Friday, November 16.

Registration Discounts

Early-Early-Bird Discount

All delegates who register and pay by **February 28** will receive a $75 discount and will be eligible for the following draw prizes, kindly donated by the Fantasyland Hotel:

- A free night in a theme room
- Dinner for two at the Fantasyland Grill
- Two passes to the World Waterpark

The draw will be made on March 1.

Early-Bird Discount

All delegates who register and pay by **September 30** will receive a $50 discount.

For more information on Conference 2007, go to www.atasc.ab.ca/conference/. You can also register or submit a session proposal online.

Trails to Sustainability: An Environmental Education Conference

Delta Lodge, Kananaskis
May 24–27, 2007

Registration is now open for Trails to Sustainability, an exciting conference designed for all educators, whether in a school or elsewhere. Come join us in the spectacular setting of the Kananaskis Valley. Picture yourself learning about and celebrating environmental education . . . in May . . . in the Rockies—it doesn't get any better!

Trails to Sustainability is a joint conference hosted by three organizations: the Canadian Network for Environmental Education and Communication (EECOM), the Alberta Council for Environmental Education (ACEE) and the Global, Environmental and Outdoor Education Council (GEOEC) of the Alberta Teachers' Association.

This event will help you learn more about the many trails to environmental stewardship and a vibrant society and economy. The keynote speakers reflect these three pillars of sustainability.

- *Environment*. Ecology professor David Schindler will help us examine our environmental impact and responsibilities through the lens of water, and wildlife biologist Karsten Heuer will demonstrate our connections to wildlife and wilderness.

- *Society*. Stephen Lewis, the UN secretary-general's special envoy for HIV/AIDS in Africa, will remind us what we can do to improve the human condition, in Canada and abroad.
- *Economy*. Hunter Lovins, president and founder of Natural Capitalism Solutions, will show us how schools, businesses and people profit and thrive when we "green" our practice.

The first 150 registrants will pay just $99, plus a mandatory fee of $35, which gives you a one-year membership in each of the three organizations.

The first full day of the conference (Friday, May 25) has already been planned. You can register online for one of 19 trails—thematic full-day sessions designed to help you explore a topic close to your heart.

For more information, visit www.trailstosustainability.ca. From there you can register for the conference, choose a trail for Friday, and arrange for accommodations and meals.

Gareth Thomson, Conference Cochair
and ACEE Executive Director

CAP Congress 2007

The Canadian Association of Physicists (CAP) is holding its national convention June 17–20 at the University of Saskatchewan in Saskatoon. At least 300 physicists are expected to attend. One goal of the convention is to promote physics education. The following events will be of interest to physics teachers.

Teachers' Workshop

On Monday, June 18, a free Physics Teachers' Workshop will be held. The workshop topics and speakers are still being finalized. Two speakers have agreed to participate:

- Peter Watson, a professor of physics and former dean of science at Carleton University, will talk about dark matter and dark energy. Peter is very proactive in education and outreach.
- Gary Slater, a professor of physics and dean of graduate studies at the University of Ottawa, will speak on the nature of scientific knowledge. He has written many popularization articles and, as he says, likes "to get involved in the fight against the pseudosciences."

Lunch and coffee breaks will be included. Funding for travel expenses may become available.

Public Lecture

Teachers are also encouraged to attend the free Herzberg Public Lecture on the evening of Sunday, June 17, at TCU Place (Centennial Auditorium).

The lecturer is Nobel laureate Carl Wieman, codiscoverer of the Bose–Einstein condensate. His lecture on education will appeal to a broad range of people interested in science, as well as to the general public.

In addition to these events, 90 posters will give teachers the opportunity to see the latest research, and a tour of the Canadian Light Source synchrotron is being coordinated.

For more information, visit www.cap07.usask.ca.

ASM Materials Camp for Teachers

If you are a high school science, technology or math teacher, you are invited to attend the ASM Materials Camp for teachers, which will be held August 20–24 at the Southern Alberta Institute of Technology (SAIT) in Calgary.

The goal of the camp is to help you excite young people in science, chemistry and math. We will show you how to integrate simple low- or no-cost labs and experiments that use everyday materials into your existing lesson plans to actively engage your students in applied science.

This camp involves five full days (8 AM to 5 PM) of workshops. Some days might run into the evening if field trips are scheduled. Snacks (morning and afternoon) and lunches will be provided.

The primary faculty are two experienced master teachers who have taught materials science courses for many years and helped develop this innovative approach to hands-on learning of applied science principles. Participants will be awarded two semester credits through the University of Washington (Seattle).

The application form is available at www.nacecalgary.ca/TeachersSummerCamp.cfm. Please note that the deadline for applications is **March 31**.

The camp is sponsored by the ASM[1] Materials Education Foundation, the Calgary Chapter of ASM International, the NACE[2] Foundation and NACE Calgary.

For more information, contact any of the following people:

- Pat Kaiserseder, pakaisersede@cbe.ab.ca
- Brent Harle, brent.harle@cnrl.com or (403) 514-7818
- Jeane Deatherage, jeane.deatherage@asminternational.org or 1-800-336-5152 (ext 5533)

Notes

1. Materials Information Society (www.asm-intl.org)
2. National Association of Corrosion Engineers (www.nace.org)

Science Exhibition 2009

The Musée de la Civilisation in Quebec City, jointly with MITACS (Mathematics of Information Technology and Complex Systems) and Université Laval, is proposing Science Exhibition 2009, to showcase cutting-edge science.

The theme is "Science and the Future," and the intention is to give patrons an interactive, hands-on experience. Topics will cover a broad spectrum of disciplines, including the life sciences, the physical sciences, the mathematical and computational sciences, engineering, the health sciences and the social sciences. The goals are to show connections between science and its applications, to stimulate young explorers to discover the beauty of science, and to inspire students to pursue scientific education and careers. Although the target audience is high school students and teachers, the exhibition will likely be of interest to the general public, also.

The museum is proposing to host the exhibition for approximately 12 months, after which it may move to other venues.

Early in 2006, a call for ideas for specific aspects of cutting-edge science to be presented at the exhibition was sent out, and the submissions were received at the end of August. The main criteria for selection will be the novelty of the science, the relevance of its possible applications, the possibility for interactive experiences, and the potential to reach out to and excite young people. Those whose proposals are selected will be acknowledged and may be invited to contribute to the development of the exhibit (although this is not a selection criterion and no one is obliged to help).

For more information, contact Olga Stachova, Science Exhibition 2009 coordinator, MITACS, East Academic Annex, Room 120, Simon Fraser University, Burnaby, BC V5A 1S6; phone (604) 291-5477; e-mail ostachova@mitacs.ca.

MEd Cohort in Elementary Math and Science

The University of Alberta's Department of Elementary Education will offer an MEd cohort specializing in elementary math and science commencing July 2008. The cohort will allow elementary teachers to meet and work with educators who share their interest in math and science. The program will feature flexible scheduling so that teachers can complete it while remaining in their full-time teaching positions. Three weeks of study will take place in Edmonton in July 2008 and again in July 2009. The other courses will be taken online.

For more information, contact Lynn McGarvey, professor of elementary math education, at (780) 492-2436 or lynn.mcgarvey@ualberta.ca; or Brenda Gustafson, professor of elementary science education, at (780) 492-0872 or brenda.gustafson@ualberta.ca.

Additional information about graduate programs in the Department of Elementary Education can be found at www.uofaweb.ualberta.ca/elementaryed/.

Women in Science

CEMF/AMEC Scholarships for Women in Engineering

Tyler Ball, a master's student at École Polytechnique in Montreal, is the winner of the $10,000 AMEC Masters Scholarship in Engineering offered by the Canadian Engineering Memorial Foundation (CEMF) in partnership with AMEC.

Ms Ball, who is the first winner of this new scholarship, was selected from a group of extraordinary female engineering students from across Canada.

Currently studying to earn her master's degree in civil engineering, Ms Ball is specializing in the area of potable water. She was selected based on her exceptional leadership skills, her extracurricular and volunteer activities, and her dedication to mentoring other young women.

Suzelle Barrington, CEMF president, says, "Tyler is a remarkable person. Among her numerous achievements, she speaks English, French, German and Spanish; acts as a mentor for Chaire Marianne-Mareschal; and is the graduate student representative for the Comité de gestion environnementale de Polytechnique. She has a long history of volunteering for organizations such as Meals on Wheels, the Mackay Centre and the Montreal Diet Dispensary for expectant mothers at risk. In her spare time, she enjoys taking dance lessons, travelling and hosting theme parties. Her interests and energies are boundless.

"AMEC and the Canadian Engineering Memorial Foundation are proud to present her with this well-deserved scholarship, and we have every confidence that she will continue to succeed in her future endeavours. Tyler is a great role model for young women and will inspire many to follow in her footsteps and pursue a career in engineering."

The CEMF was founded in 1990 to develop scholarship and award programs that encourage women to choose engineering as a career and to honour the memory of the 14 women at École Polytechnique whose contributions were abruptly and tragically ended on December 6, 1989.

The foundation provides 16 scholarships at the undergraduate, master's and PhD levels. Also in conjunction with AMEC, CEMF offers a $5,000 AMEC Undergraduate Scholarship for Aboriginal Women in Engineering. A $15,000 Claudette MacKay-Lassonde Scholarship and five $5,000 undergraduate scholarships are also available.

AMEC and the CEMF extend their sincere congratulations to all the scholarship recipients for 2006.

For more information, contact Meghan Howard, CEMF assistant executive director, at 1-866-883-2363 or info@cemf.ca.

AWSN Update

The Alberta Women's Science Network (AWSN) was developed to encourage women in engineering, science and information technology.

Aboriginal Women in Science
www.awsn.com/aboriginal.htm
The new Aboriginal Women in Science section links to biographies of Aboriginal women in science, scholarships for Aboriginal women and related websites (such as www.nativeaccess.com and www.casts.ca).

Mentor News
www.awsn.com/phpnews/news.php
Recently added to the Mentor News section is a report on three AWSN Mentors of the Millennium, who are among Canada's most powerful women!

Job Opportunities
www.awsn.com/phpnews/opportunities.php
Recent job opportunities posted range from program coordinator for the Calgary Science Network to executive director of the Association of Science and Engineering Technology Professionals of Alberta.

Awards, Scholarships and Fellowships
www.awsn.com/phpnews/awards.php
Scholarships available in 2007 include Canadian Engineering Memorial Foundation (CEMF)/AMEC scholarships, Alberta Women's Science Network scholarships, Canadian Pacific Railway scholarships, Seymour Schulich engineering entrance scholarships and the Dr Bonnie L Shapiro Distinguished Faculty Achievement Graduate Scholarship.

For the AWSN's ongoing opportunities and a calendar of events, see the insert included with this newsletter.

Operation Minerva

Operation Minerva brings young women and female science mentors together to encourage more female students to choose science, mathematics and technical courses. This is accomplished through

- a job-shadowing program,
- conferences,
- Mentors of the Millennium (see www.awsn.com/mentors/millementors/motml.html) and
- an essay contest (see www.awsn.com/essay.htm).

Operation Minerva was established and founded in 1988 by a group of Calgary teachers, female science mentors and others who recognized a need to develop awareness of the small number of female students choosing courses and careers in science, mathematics and technology. This group created a model to aid in bringing young women and female science mentors together. Each year, Operation Minerva projects across the province give young women the opportunity to job-shadow female mentors in careers related to math, science and technology. The projects have been very successful.

For more information about Operation Minerva, go to www.awsn.com/phpnews/opmin.php.

Essay Contest

Since 2002, the Alberta Women's Science Network (AWSN) has sponsored an essay contest to recognize the contributions of the approximately 50 mentors who host the 100 job-shadowing Grade 8 girls each year in Calgary.

Below is the winning essay for 2006. Congratulations to Danielle Sanjenko! Danielle's mentors were Amanda Klesken, Shannon Ward, Maria Sedgewick, Tracey Rizopoulos, Lesley Pelletier and J R Hourie (mentor coordinator), all from ARC Energy Trust.

A Day with My Operation Minerva Mentors

by Danielle Sanjenko

My Operation Minerva experience started off by getting selected from about 35 Grade 8 girls by my science teacher. When she asked me to go to the job-shadowing day, I was a bit hesitant at first, but as I learned more about Operation Minerva I began to get very interested, and I responded to her with a huge smile, saying, "Yes! I would love to go!" I did not know what I was in for, and I had no idea what I would be doing, but boy, was I ever curious!

About 20 of us loaded onto the bus at our pickup stop on May 11, 2006, at 8 AM. We were all very antsy and curious to know what we would be doing that day. We travelled for about half an hour to the next bus at the zoo. Once we got there, I was surprised to see about 100 girls total from all around Calgary. I never knew that this day was so popular throughout the separate school program! Thirteen of us loaded onto the bus that took us to our selected mentors.

As we drove up to the ARC Energy Trust building, we were informed that nine of us would be in a group being mentored for the day by five women who all had important jobs at the oil company. We entered the downtown high-rise, and I was amazed by the sight. The building was beautiful! We were led up to a meeting room that was bigger than my dining room. It had a large table and leather chairs all around it. I was a bit intimidated by the charts and all the diagrams that were projected and hung all around the room, but I soon relaxed when we started introductions.

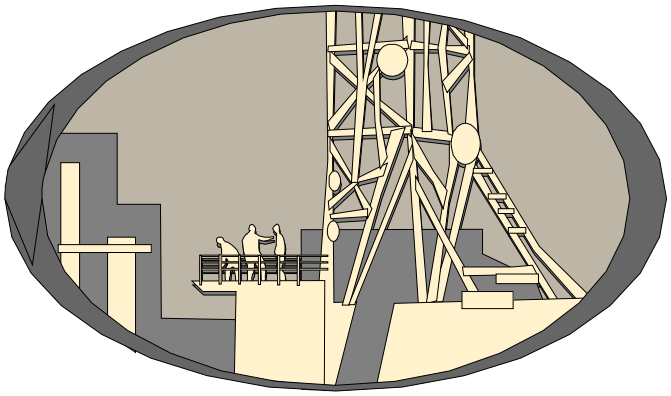
We had five women from all different levels of the gas and oil company as our mentors. Their names were Amanda, Shannon, Maria, Tracey and Lesley. They all talked about their jobs at ARC Energy Trust. I learned how many years of post-secondary education each job took and also what each job was. I discovered that there is more to oil and gas than just finding it, digging it and selling it. There is a lot of effort and preparation put into digging just one oil hole.

Shannon, the geologist, explained to us exactly how they would go about finding oil/gas and then drilling a hole. They first have to find an area where they think they might have success drilling. Then they have to make a presentation to their supervisor(s) and convince them that drilling in this area will be a success and ask for an appropriate amount of money for the drilling budget. If they get the OK to drill the hole, then they will need to buy the land. If there is wildlife or other settlements already established on the land, they need to clear the land and ask if the landowners will allow them to dig there (in many cases they also have to pay a share of money to the landowners on top of the price for the land). Next, they need to get all of their equipment, gear and workers to the site. They will then drill the hole (after a long while of deciding how to go about digging it—what angle to go in at, the depth, the width and so on). Once the hole is drilled, they need to pump out the oil/gas and transport it, many times through pipes or barrels, to the selling location. They will have to price the oil/gas per barrel and do a lot of paperwork to ensure that the oil/gas is all right to sell.

Once Shannon was done explaining the procedure for drilling an oil hole, she showed us samples of different types of oil and gas. She also showed us samples of rocks from different sites she had been in charge of. I found it quite amazing to see all the different types of rock, oil and gas. She also showed us an actual drill bit that was used for the holes. Even though they said that this was a small drill bit, it was *huge*!

Amanda, the engineer, talked to us about costs and complications to the job. She explained to us what could happen if the hole was not dug properly or if the dig was not a success. If the dig is not successful, the hole may be dry and it could end up

costing the company a large amount of money. Another unsuccessful dig would be if the hole collapsed or hit water. She also told us that even though an unsuccessful dig is costly and time-consuming, no one is likely to get fired from one miss of a dig.



After some games, explaining, and questions and answers in the office building, we went out to Japanese Village for lunch. The food was very delicious and got us all energized for the afternoon events that the team had planned for us. We really needed the energy for the "big dig" that was soon to take place.

We got back to the meeting room, and on the table was a cake. This cake was special because it had all different types of decorations: plastic trees, plastic animals, a Lego house, a lake, a river and even a few mountains. We were told that there was oil and gas somewhere inside the cake. Then we each got roles to play. I was the environmental technologist. My job was to voice the concerns I had about the company drilling in the spot where they wanted to drill, keeping in mind the wildlife and nature. We had to put our digging skills to the test. I think we failed . . . about 10 times. But in the end we ended up with a few successful holes, realizing that gas is often underwater and oil can be anywhere, even under a house!

We found out that an actual Olympic athlete works at ARC Energy Trust. The athlete is Lindsay Alcock. She competed in the Winter Olympics twice, in the skeleton racing, and she came to talk to us! She told us how her work helped her with her Olympic experiences when she failed to get a medal the second time she went and how you can achieve anything through perseverance and a lot of effort. She helped me realize that even as an Olympic athlete, she still has a normal life that she knows she has to live in order to keep herself balanced. I found out that I can be a professional athlete if I dedicate my time to it, and I still can have an everyday job.

The day ended with a tour of ARC Energy Trust's floors of the downtown high-rise. I was very impressed with the four floors that they worked out of. I was especially flabbergasted when I saw the president's office. It was like no other! The view was breathtaking, with windows covering two large walls. There was also a large meeting room with big, comfortable leather chairs all around it. Even the office desk was spectacular!

Through my Operation Minerva experience I learned about the gas and oil field, and I may even consider taking some postsecondary education to get myself into the business. I took a special interest in the geology career. I have looked into the career further and found something else I may like: a geochemist. This job-shadowing experience has made me realize that science is not all about mixing and sorting chemicals or studying organisms. Science is a lot more than I thought it was, and Operation Minerva was a lot more than I expected. I think that everyone would benefit from an experience like this.

My goal in the future is to become successful in my career, whatever it may be. I have also learned how to keep myself busy but balanced, with my work (now school and later my career), my sports (soccer, basketball, volleyball and swimming) and my social life (friends, family and coworkers). My eyes have been opened to a whole new view on science. By being given this opportunity to look into it further, I have realized it is much, much more than just a subject!

Awards

Science Alberta Foundation Named a Friend of Education

The Science Alberta Foundation has been selected by the Alberta School Boards Association (ASBA) to receive the 2006 Friends of Education Award. The foundation received the award—a brass school bell—at a luncheon in Edmonton on November 20, as part of the ASBA's fall general meeting.

The Friends of Education Award recognizes organizations that have made special contributions to education in Alberta by demonstrating leadership, competence and commitment to improving education for Alberta's students. The Science Alberta Foundation was nominated by Fort McMurray's public and Catholic school districts.

"We are honoured to have been bestowed with this award," said Arlene I Ponting, Science Alberta's CEO. "We are so pleased that our teaching resources and programs have an impact across the province and that our colleagues and stakeholders recognize the important work that we do."

The Science Alberta Foundation develops programs specifically designed to assist teachers in engaging students in Alberta's science, math and technology curricula. These programs include Science-in-a-Crate, Wonderville.ca and Wonderville.ca Science Challenges.

In 2005, the Science Crates/Science Leaders program was launched in Fort McMurray and Fort McKay to increase access to the Science-in-a-Crate program and to provide professional development opportunities for science teachers in the region.

The Science Alberta Foundation is a nonprofit organization committed to increasing science literacy and awareness. The foundation develops engaging resources that bring science and math to life for Albertans of all ages, and its programs motivate children, youths and families to embrace lifelong science and technology learning. Science Alberta is helping to create tomorrow's knowledge workers and instill an appreciation of science in a new generation of Albertans.

2007 Emerald Awards for Environmental Excellence: Call for Nominations

The Alberta Emerald Foundation's Emerald Awards for Environmental Excellence acknowledge the environmental initiatives undertaken each year by large and small corporations, individuals, not-for-profit associations, community groups and governments in Alberta.

Do you know an individual, group or business that has set an example for environmental achievement? Someone who has gone above and beyond what is expected of them in protecting the environment? Why not nominate that person or group for an Emerald Award? Several award categories are available, including categories for individuals, not-for-profits, the public sector and businesses. The deadline for nominations is **February 28** at 4 PM.

The 2007 Emerald Awards ceremony will take place at the Epcor Centre for the Performing Arts in Calgary on Wednesday, June 6.

For more information or to submit a nomination, visit www.emeraldfoundation.ca.

The Alberta Science Teacher

Science Council Executive 2006/07

President
Colleen Yoshida
Bus (780) 594-4058
yoshida@atasc.ab.ca

Past President
Tom Oppelt
Bus (780) 962-0800
doppelt@atasc.ab.ca

President-Elect
TBA

Secretary
Karen Atkinson
Bus (780) 416-9018
karen.atkinson@ei.educ.ab.ca

Treasurer
Kevin Joncas
kfjoncas@shaw.ca

Conference Director 2007
Gillian Vas
gilllvas@telus.net

DIRECTORS

Early Childhood/Division II
Erick Noriega
Bus (403) 777-6180
eenoriega@cbe.ab.ca

Division III
Corey Karvonen-Lee
ckarvonen-lee@atasc.ab.ca

Chemistry
Kevin Klemmer
Bus (403) 243-8880 ext 3171
kklemmer@shaw.ca

Biology
Rachel Toews
Bus (403) 286-5092
ratoews@cbe.ab.ca

Physics/Division IV
Geoff Sosnowski
Bus (780) 435-3964
sosnowskic@ecsd.net

Science
Myrna Foxcroft
Bus (403) 328-4723
myrna.foxcroft@lethsd.ab.ca

Journal Editor
Wytze Brouwer
Bus (780) 492-5613
wbrouwer@phys.ualberta.ca

Newsletter Editor
Andi-Lynn Bender
andilynn.bender@gmail.com

Technology Director
Wade Strass
Bus (780) 962-8000
wstrass@psd70.ab.ca

Postsecondary Representative
Keith Roscoe
Bus (403) 329-2446
keith.roscoe@uleth.ca

Alberta Education Liaison
Caroline Nixon
Bus (780) 427-9593
caroline.nixon@gov.ab.ca

PEC Liaison
Frank Bruseker
Bus (780) 447-9444
or 1-800-232-7208
frank.bruseker@ata.ab.ca

ATA Staff Advisor
Mike Kischuk
Bus (780) 447-9413
or 1-800-232-7208
Michael.Kischuk@ata.ab.ca

REGIONAL COUNCILS

Calgary Junior/High
Laurie Stackhouse
Bus (403) 777-6210
lgstackhouse@cbe.ab.ca

Joy Bader
Bus (403) 777-7420

Calgary Elementary
Pratt Hetherington
Bus (403) 777-6070
hetherington@cbe.ab.ca

Edmonton Biology
Morrie Smith
Bus (780) 477-8202
msmith@epsb.ab.ca

Edmonton Chemistry
Dan Leskiw
Bus (780) 422-5459
dan.leskiw@gov.ab.ca

Edmonton Elementary
Margaret Ebbers
margebbers@connect.ab.ca

Edmonton Physics
Vlad Pasek
Bus (780) 476-6251
pasekv@ecsd.net

The Alberta Science Teacher is one of the official publications of the Science Council (SC) of the Alberta Teachers' Association. SC Bylaw 9.4 states: *The Alberta Science Teacher* shall reflect on the contributions and activities of Alberta science teachers in the classroom.

 ISSN 0229-3099

Please address all correspondence to the editor: Andi-Lynn Bender, 15920 100 Street NW, Edmonton T5X 4E4; phone (780) 456-7600 (res); e-mail andilynn.bender@gmail.com. Material for publication may be submitted on disk or paper. Unformatted text is preferred. Articles may be given to any executive member for relaying to the editor. This publication is typeset using InDesign and operating under Windows.

Individual copies of this newsletter are available at a cost of $2 per copy plus 5 per cent shipping and handling and 6 per cent GST. Please contact Distribution at Barnett House to place your order. In Edmonton, dial (780) 447-9400, ext 321; toll free in Alberta, dial 1-800-232-7208, ext 321.