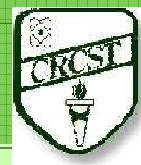


THE CRCST QUARTERLY



. . . from the Editor

Norm Schmidt

Ms. O'Reilly and I went on the early morning walk at Dyke 14 on Saturday, May 16 <<http://www.dike14.org/>>. It was a beautiful morning and the ability to view downtown and the lakeshore environs while in a nature preserve, that is quite wild, is a nice experience. As we were observing lots of Warblers and Baltimore Orioles and other birds that do not often frequent my homes bird-feeders, I noticed a familiar critter crawling on Margaret's back. I tried to brush the tick off and it hunkered down. I finally flicked it off and we moved on. A moment or two later a fellow hiker alerted another that she had a tick on her shirt. We moved on and agreed to check over our clothes and hair carefully at the end of the walk.

We found a couple more ticks on us as we headed for the parking area and then on the trip home I felt one crawling in my hair and Margaret found one on her as well. We came home to brunch and another fell off of Margaret as she sat at the table. We then did a careful check of our clothes for the critters; found no more and sat again to have our meal. Another tick crawled out of Margaret's hair. She did another check of her hair and felt she was clean.

She called me up on May 20th, 4 days later and said she picked a tick off of her ear that day.

Now that you are all scratching and vowing never to take that lovely walk at Dyke 14, scroll down to page 14 and read the article about Lyme disease in this issue.

The next time I go to Dyke 14 I plan to wear a biohazard suit or shave my head first and wear a tight fitting sweat suit. Well, probably not but I now know to check very carefully for the critters after the walk.

Enjoy your summer.

During the summer of 2009 teachers of science



Presidential Column
Ray Patacca, President

have a number of opportunities to improve their craft, teaching (and in particular teaching science) through a plethora of free and low cost professional development opportunities. Many are included in this issue of the newsletter.

The summer also provides an opportunity to practice your science teaching locally by supporting recycling, energy conservation and environmental improvement efforts. Talk to your children, neighbors and your neighbors children about the importance of using cloth or even re-using plastic grocery bags to help keep them out of landfills and out of our streams, rivers and lakes. We know that there are huge gyres of plastic debris in both the North Atlantic and North Pacific oceans and the plastic eventually degrades into toxic molecules that can enter the food chain just like DDT did in the 50's and 60's. You will likely not take a cruise to get the stuff out of the N. Atlantic and Pacific but you can help reduce the plastic bags being used and discarded in your community.

Turn your air conditioner from 70 to 73 or 74 degrees on those hot days or **Cont. on Pg. 21**

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Science in the News

Irene C. Heller Annual Award Presented to the Outstanding High School Chemistry Teacher in the Cleveland Section

The Cleveland Section of the American Chemical Society annually sponsors an award to recognize an outstanding high school chemistry teacher in the Cleveland Section. The award consists of an honorarium of \$1,000 and a framed certificate. The award is named for Irene Heller of North Olmsted High School in recognition of her contributions as an outstanding high school chemistry teacher and her service to the Cleveland Section. Irene also served as a CRCST Board member and Lori is a CRCST member.

Congratulations to the 2009 winner:

Mrs. Lori Koss, Magnificat High School, Rocky River, OH



Previous Winners:

Irene C. Heller, North Olmsted High School, 1993

Fen Lewis, Strongsville High School, 1997

Elizabeth Dabrowski, Magnificat High School, 1998

Jesse Bernstein, Hawken School, 1999

Judith Lachvayder, Parma Senior High School, 2000

Lois Kuhns, Chardon High School, 2001

Sean McGuan, Riverside High School, Lake County, 2002

Olga Gueits, Lincoln West High School, 2003

Marylin Rohr, Chardon High School, 2005

Roger Storm, Fairview Park High School, 2006

John P. Davis, Kenston High School, 2007

Kristin J. Gregory, West Geauga High School, 2008

Elementary Science Education in the K–12 System

4/22/2009 - Page Keeley, NSTA Pres.

"Any collection of things that have some influence on one another can be thought of as a system. Thinking of a collection of things as a system draws our attention to what needs to be included among the parts to make sense of it, to how its parts interact with one another, and to how the system as a whole relates to other systems."—American Association for the Advancement of Science (AAAS) 1989, p. 166.

An essential component of higher-level thinking is the ability to think about systems—how parts relate to one another and to the whole. Systems thinking can help us see and understand science education in new ways. This is why one of the goals of my presidency, a goal also shared by President-Elect Pat Shane, is to take a K–12 system approach to supporting the need for high quality elementary science education in every school district.

Elementary science is a critical part of the K–12 science education system. Tragically, the enactment of No Child Left Behind (NCLB) has greatly diminished the time spent on teaching science in many elementary schools. In some schools that have not attained adequate yearly progress (AYP) status, science is not taught at all, and teachers are told point blank not to teach science so they can spend more time on reading and mathematics. The good intentions of NCLB eroded the fundamental foundation for science in our K–12 education system. One of the crucial parts for a fully functioning system is missing or damaged.

Learning in science begins in early childhood. This is a time when young minds are curious about science and ready to engage in the practices and language of science that form a foundation to be built upon and strengthened throughout a student's K–12 education. Young children bring to science views of the natural world and ways of thinking that have a major impact on their learning as they progress from one grade level to the next. Ignoring these ideas and delaying the development of science language and practices until students formally encounter science in middle school certainly violates what we know about systems: If one part is missing, it affects the other parts of the system.

"Something may not work as well (or at all) if a part of it is missing, broken, worn out, mismatched, or misconnected."—(AAAS 1994, p. 264).

We know science education is not working well for many students in the United States. We also know our system of education is strongly connected to our ability

to compete in an increasingly global economy dependent on highly skilled workers in the science, technology, engineering, and mathematics (STEM) fields. One solution in the past few years has been to funnel more funds into Advanced Placement and International Baccalaureate courses in high schools, undergraduate and graduate education, recruiting qualified secondary science teachers, and increasing the rigor of middle level classes. These strategies might work if they match well with the other parts of the system. However, we can't expect students who have missed six years of science to suddenly be prepared to take on more demanding opportunities to learn science in middle and high school. All the parts of the system that should include the K–6 years of knowledge and skill building are not there to support the cumulative steps that contribute to high levels of learning.

When we look at the progression of learning over time, starting with fundamental ideas and skills developed in preK–2 and built throughout the elementary years, teachers are often surprised to find middle school and high school students have major mis-

conceptions about fundamental ideas developed early on that went unchallenged through school. They are also dismayed to find there are often large gaps in students' conceptual understanding of even basic ideas in science. Is it reasonable for a school district to eliminate science for six years and then expect students to fill in the blanks in middle and high school? Science learning is a cumulative process. It is time to give science a foothold equal to that of reading and mathematics in the K–6 curriculum.

We all have a responsibility to advocate for high quality elementary science programs, increased time spent on teaching elementary science, and opportunities for elementary teachers to get the professional development they need to teach science well. The burden for elementary science advocacy can't be placed solely on the elementary teachers who like to teach science.

Middle school and high school teachers, I implore you to speak out to your administrators and help them understand the ripple effect the demise of elementary science has had on student learning in your grades. Your teaching is affected

significantly by the loss of elementary science!

You can also push for more elementary science professional development. Bring a team including elementary, middle, and high school teachers from your district to an NSTA conference. Stay tuned for more information about an upcoming NSTA Research Dissemination Conference (RDC) on linking research to practice in elementary science, to be held at the 2010 NSTA National Conference in Philadelphia. Encourage the formation of elementary science professional learning communities to learn how to best restore science to the curriculum and advance K–6 science learning. Encourage a K–6 team to attend NSTA's August 2009 summer institute on Professional Learning Communities in Science.

Public support for early science education is important as well. Parental involvement is key to increasing the public's understanding of why science education must begin in the early grades. The new NSTA Science Matters website is a great a six



This is a newly found species of seagull.. called shargull. It was found, named and photographed by a Riverside HS, senior Nick Donato, a student of CRCST board member, Carol Fleck

Be vewy, vewy, caweful.

source of material for helping parents understand the importance of elementary science.

Even though not all of us teach elementary science, we have a collective responsibility to ensure every student in every grade has the best possible science education. That is why we as individuals must act as a system. A simple K–2 systems learning goal says, "When parts are put together, they can do things that they couldn't do by themselves" (AAAS 1994, p. 264). Imagine what the output could be at the end of grade 12 if we all band together to strengthen our K–12 science education system to include

years of rigorous, high quality elementary science. After all, each part of the system, including elementary science, contributes to the whole. We can't continue assuming we will increase our schools' output of students who will become our next generation of scientists and engineers without ensuring an input of elementary science learning into the K–12 system.

References

AAAS. 1989. *Science for all Americans*. New York, NY: Oxford University Press.

AAAS. 1994. *Benchmarks for science literacy*. New York, NY: Oxford University Press.

Student scientists make lasting a impression with their experiments

by John Campanelli/Plain Dealer Reporter

Monday April 27, 2009, 7:41 AM



Ted Crow/The Plain Dealer

Like anyone who's ever completed a science fair project, Nancy DiIulio will never forget the experience. "I built a plaster model of a geyser," she remembers. "The idea

was when the geyser went off, the water would fall back down and collect in the basin and then refill the reservoir down underneath where I had a Bunsen burner heating it."

Of course, there was a problem. "I had it on a pretty high stand, and every five minutes, it would go off and hit the ceiling. Slowly the ceiling got wetter, and I started running out of water. It was a big mess."

She didn't win a prize for her ceiling-soaking Old Faithful, but in a way, she did. DiIulio became a professional scientist -- she's a biology professor at Case Western Reserve University -- and is on the board of directors of the Northeast Ohio Science and Engineering Fair, or NEOSEF, the annual showcase of the area's best science fair projects.

Science fairs are a rite of passage for kids, their first opportunity to pose a scientific hypothesis, test it and report the results. They also make for some good stories. PDQ asked

local fair veterans -- organizers, teachers, judges - to share the projects they'll never forget.

Last year, Kaleigh Eichel, then a senior at Strongsville High School, wowed the judges at the Northeast Ohio Science and Engineering Fair with her project on goldfish.

She created a maze in a tank and repeatedly had a goldfish navigate it, rewarding it each time with food. Once that fish was trained, she added another fish to the tank and discovered that the trained fish actually shepherded the new one to the food. "It's not only brilliant, but it was fun," says Jeanette Grasselli

Brown, a retired chemist who sits on the NEOSEF board. Eichel went on to win a national science fair competition and a trip to the Nobel ceremonies in Sweden.

The power of onion skin

Joan Borovicka, now retired from teaching science at St. John Nepomucene Elementary School in Cleveland, remembers a project involving lots of onions. After reading about the insulating properties of onion skin, the eighth-grade student decided to test it out.

"It was a really clever project," said Borovicka. "The problem was, he had to get a lot of onion skins, because how many onions do you peel a day?"

He got local restaurants to donate their onion peels, enough for him to figure out the insulating "R-value" of the skins and compare it with Styrofoam.

"It turned out that they make great insulation," said Borovicka, "He took a first prize."

Beans in space

Borovicka remembers another student doing a relatively simple project, answering the question: "Does gravity affect the growth of bean seeds?"

What made it so special was the student's determination and excitement. After discovering that, yes, gravity affected plant growth, he decided to take the project a step further.

"He was so into it, he contacted NASA. He said, 'I did this project and I found out that the force of gravity does affect the growth of seeds, and I'd like you to send this off on one of your missions.'"

"And guess what? They did."

Not so brilliant

Cleveland State University physics professor Jearl Walker, who has

judged many science fairs, often walks away with a hole chewed through his tongue -- all because of the one project he sees at almost every fair.

"It's 'the effect of music on the growth of plants.' I've seen it countless times," says Walker.

"That one gnaws at me. "They set up some little plants, they grow them from seeds. And they blast them with -- and here comes your choice -- classical music, rock music, heavy metal, reggae, rap, you name it."

Some projects conclude that music benefits growth; others conclude it stunts it.

"I'm always polite and cordial and encouraging to the students, but I always want to say, 'Don't you realize there is no effect!?'"

"When I see it, I often think back to what I was told during the early days of rock 'n' roll when I was growing up in Texas. The Southern Baptist preachers would say, 'That rock 'n' roll music it will stunt your growth!'"

"They might have been right."

First impressions

Carl Jeffries Jr., science department chairman at John Adams High School in Cleveland, has over 20 years of experience of guiding students at science fairs. He remembers one student doing a remarkable psychological project.

"She had two groups of student go into stores," he remembers. "One group was dressed like hoods, and the other group was dressed like junior businesspeople."

She tracked how they were treated and then had them switch their clothes and go back in the stores. "She definitely saw a difference in the response."

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Opportunities for Teachers and Students

Climate Change: EPA provides comprehensive, in depth information about climate change. Learn about the science behind it, greenhouse gas emissions, health and environmental effects, regulatory initiatives, U.S. climate policy, economic analyses, and what you can do to reduce it at home, school, and elsewhere.

(Environmental Protection Agency)

http://www.free.ed.gov/resource.cfm?resource_id=2127

Climate Change Kids Site looks at climate change -- what it is, why it matters, and what kids can do about it. Games, animations and quizzes, and a climate change calculator are provided. (Environmental Protection Agency)

http://www.free.ed.gov/resource.cfm?resource_id=2112

Energy Star Kids helps students see where energy comes from, how it is used, and what they can do in their own room to conserve it. (Environmental Protection Agency)

http://www.free.ed.gov/resource.cfm?resource_id=2111

EPA's SunWise Program provides activities to teach children (K-8th grade) about the ozone layer, UV radiation, and how to be safe in the sun. Sign up to receive a free activity kit and access to other educational resources. (Environmental Protection Agency)

http://www.free.ed.gov/resource.cfm?resource_id=2110

Dare to Compare invites you to test your knowledge against stu-

dents nationally and around the world. Pick a grade and subject: civics, economics, geography, history, math, or science. (Department of Education)

http://www.free.ed.gov/resource.cfm?resource_id=1113

Genetics: Tour the Basics uses animations to answer six questions: What is DNA? What are genes? What are chromosomes? What is a protein? What is heredity? What is a trait? (University of Utah, National Institutes of Health)

http://www.free.ed.gov/resource.cfm?resource_id=2097

Why Files Interactives feature the latest news in science, math and technology. Make rainbows, control a tornado, play with lightning, make a snowflake, and hit a home run. (University of Wisconsin-Madison, National Science Foundation)

http://www.free.ed.gov/resource.cfm?resource_id=2100

Opportunity from NSTA

Page Keeley, President-National Science Teachers Association (NSTA)
2008-09

Dear Chapter and Associated Groups Leaders,

As President, 3 of the goals I had this year were to support embedded forms of professional development led by teachers, bridge the gap between research and practice, and offer NSTA summer institutes focused on a school-based topic that would attract school teams. In August, NSTA is offering a summer institute on PLC's. Professional Learning Communities (PLC's) are one type of teacher-led PD that supports collaborative learning among teachers within a school with a focus on

student learning needs. Combined with this institute, is a book commissioned for my Presidency through NSTA Press on Professional Learning Communities in Science titled *"Professional Learning Communities for Science Teaching-Lessons from Research and Practice"*. The editors of this book, Susan Mundry and Kathy Stiles, will be the featured presenters at the institute along with some of the chapter authors. The summer institute for school teams (individuals can attend as well) is a new venue for NSTA and I would like your help in letting teachers in your state know about it. Information about the PLC conference can be found on the NSTA web site at: <http://www.nsta.org/conferences/2009/summerinstitute.aspx?id=tnav>

This is a great opportunity for teachers and administrators to learn about different science PLC models and how they can create and support science PLC's in their schools/districts.

Highlights from the May Coalition on the Public Understanding of Science newsletter, the COPUS Clarion, (available online at <http://copusproject.org/resources/COPUS-Clarion-2009-05.pdf>)

1. Michael Pollan celebrates Year of Science:

Curious what *New York Times* bestselling author Michael Pollan has to say about sustainability and the environment? So were we! Check out the new May content on the Year of Science Web site to see our one-on-one video interview with him! <http://www.yearofscience2009.org/home/>

2. "Why Is Science Important?"

Alom Shaha is a physics teacher at an inner city, comprehensive school in the United Kingdom. Shaha also works as a television producer, science writer, and science communications consultant. Back in 2008 he began a film and blog project to try to answer the very important question, "Why Is Science Important?" Learn more about this project in this month's *Clarion*: <http://copusproject.org/resources/COPUS-Clarion-2009-05.pdf>

3. The YoS2009 "Zine-a-thon" Contest is here!!

The moment you have all been waiting for! Get the full scoop on how to participate: <http://www.yearofscience2009.org/about/zine-contest.html>

Many thanks to our sponsors -- Shodor and Understanding Science! To learn more about becoming a sponsor of the Zine contest, or a prize contributor, please contact admin@copusproject.org.

Don't forget to check out this month's downloadable resources:

- One Page handout to highlight the Sustainability and the Environment theme of the Year of Science in your business, classroom, library, museum, facility. One side is blank for your own organizational YoS message!

http://www.yearofscience2009.org/themes_sustainability/YoS09MayOnePage.pdf

- Understanding Science Flow Chart as an 18" x 24" poster.

http://www.yearofscience2009.org/about/us_poster_vert_1_13.pdf

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From page 5

Can you hear me infect you now?

At this year's NEOSEF held in March, Christine Moravec, a research scientist at the Cleveland Clinic and president of the fair, was impressed by one student's project that asked whether health-care workers might be bringing home staph and other dangerous bacteria on their cell phones.

"She went to a nursing home," remembers Moravec, "got the cell phones of the workers there and swabbed them."

Her findings? Disturbing.

"She actually showed that 25 percent of the health-care workers were carrying pathogens on their cell phones, and 10 percent were positive for hospital-acquired staph."

Snack time

Bill Badders, director of the Cleveland Math and Science Partnership for the Cleveland School District, remembers a project from years ago when he taught elementary school.

A second-grader decided to use science to figure out "how to kill cockroaches."

"He tried suffocation in a plastic bag," Badders says via e-mail, "freezing in water in an ice cube tray, smashing with a hammer, drowning in a bottle of water, and, of course, spraying with roach spray."

All the methods worked, but with "some issues."

"The suffocation and drowning methods seemed to take too long," Badders remembers,

"the smashing with a hammer made his mother yell at him for making too much noise, and the freezing in the ice cube required him to first catch the cockroaches and get them in the freezer tray."

On the day of the fair, things got

even more interesting.

"We would have a little lunch in the classroom after the judging had been completed. Students would bring food to share. The boy who did the roach experiment brought popcorn that he said he popped fresh at home. It was quite tasty and was well enjoyed by the class. "When I was cleaning up later, I noticed that among the unpopped kernels of corn were, you guessed it, a small handful of dead roaches, apparently killed by the heat during the popping process.

"I never said anything to him, but to this day I hope that he is aware of one more way to kill roaches."



Perhaps this stream should have been cleaned up earlier.

Become a part of the Ohio Building a Presence Initiative - at least one teacher getting science information in each school building in Ohio:

www.BaPohio.org

Mark your calendar for the next **SECO conference** which will be in Columbus, Ohio on February 27, 2010. **All proposals for short courses must be postmarked by 6/1/2009. All concurrent session and poster session proposals for the 2006 Conference must be postmarked by 9/1/2009.** www.secoonline.org

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More cool stuff to check out from YoS:

-- Participate in the EPA/Year of Science -- "Science of Sustainability" photo project! Learn more at http://www.yearofscience2009.org/themes_sustainability/students/

-- Hello there High School students! If you are passionate about the environment and sustainability -- check out "Planet Connect" -- a social network where you can meet others who share your passion! <http://www.planet-connect.org/>

-- Encyclopedia of Life and National Geographic are teaming up to celebrate sustainability and the environment at an Indiana Bioblitz -- learn more about the event at <http://www.nationalgeographic.com/field/projects/bioblitz.html>

-- The 76er's cheerleaders recently had a "Brain-makeover" thanks to the help of Science Cheerleader Darlene Cavalier, and scientist James Trefil --

check out these great video snippets at: http://sciencecheerleader.com/category/brain_makeover/



Wow, birds **really** are dinosaurs!

**PD All Year Long
Through NSTA**

Professional Learning Communities Institute

NSTA has extended our professional development conferences into the summer months, especially for teachers and their principals who are interested in building a Professional Learning Community. This first-time Institute will be held Aug. 3-5 in Orlando, FL at the Buena Vista Palace Hotel, a great location for enjoying Disney's marketplace. For just \$300 per person, teams will work together to learn what PLCs are, examine different structures for PLCs, and experience a range of science-specific tools and strategies as a function of PLCs. Presentations by Susan Mundry, Kathy Stiles of WestEd and other national leaders will cover various models of PLCs and facilitate planning sessions for implementation in schools and other organizations. For more information and a meeting agenda, visit the [NSTA website](http://www.nsta.org).

New Online Environmental Science Course from the Museum of Natural History

Join *Seminars on Science* in a summer session of our award-winning online graduate courses in the life, earth and physical sciences from the American Museum of Natural History. *Seminars on Science* courses connect classroom teachers with scientists engaged in current, real-world research. Each course is authored by leading scientists in their fields, and is then co-taught by an experienced researcher affiliated with AMNH. Our newest course, *Water: Environmental Science*, delves into the complex relationship between water and the environment. The research of authoring scientist **Dr. Eleanor Sterling**, Director of AMNH's Center for Biodiversity and Conservation, has focused on a range of habitat and conservation issues from the aye-aye

(lemur) populations of Madagascar to sea turtle habitats of the equatorial Pacific. Co-author and Fulbright lecturer **Dr. Nora Bynum** currently focuses on the seasonality and phenology of tropical canopy trees. Together they have created a course that emphasizes the critical role of water on our planet, the impact of human consumption on aquatic and terrestrial ecosystems, and the social, economic, and environmental implications of water management.

In addition to *Water*, all of our most popular courses are also available for the summer, including *Earth: Inside and Out*; *The Ocean System*; *The Solar System*; *Genetics*, *Genomics*, *Genethics* and *Evolution*.

Designed for K-12 educators, each six-week course is led by an experienced classroom teacher and a research scientist. In-depth readings and assignments paired with rich web-based discussions assure that educators come away from each class with a deeper understanding of both the science and the tools of scientific inquiry. Each participant receives a CD of course resources suitable for classroom use.

Please see the website for the full course listing. Free sample resources for each course—including essays, videos and interactive simulations—are available online at learn.amnh.org.

Registration for Summer Session One closes May 26! Summer Session One runs June 8–July 19. Summer Session Two runs July 6–August 16. **Sign up now and receive a \$50 early registration discount.** For more information and to register, go to learn.amnh.org or call 800-649-6715.

Check this out: Dolphin Bubbles: <http://www.youtube.com/watch?v=wuVgXJ55G6Y> Very Cool!

Cleveland Regional Council of Science Teachers

39th Annual Fall Conference

Dolan Science & Technology Center
Saturday, October 24, 2009

**Tentative Schedule**

7:30 – 8:00am	Registration, Continental Breakfast, Networking & Browsing Vendor Displays
8:15 - 9:05 am	Concurrent Session I
9:20 - 10:15am	Keynote Address: Dr. Glenn Starkman "Origins"
10:15 – 10:30am	Annual Membership Meeting
10:45 - 11:35 am	Concurrent Session II
11:50 - 12:40pm	Concurrent Session III
12:40 - ???	Explore Vendors, Network with your colleagues.
1:15 – 4:15	Optional online PD opportunity for K-2 teachers (pre-registration required)

Concurrent session topics include life, earth/space, physical, and integrated science for elementary through college classrooms. Give-aways and vendors also back by popular demand. Enjoy networking, other professional science education organizations displays, and more. In July, detailed information will be available on our web site: www.ctsc.org/crcst

Questions: Mark Waner: 216-397-4791 mwaner@jcu.edu

CRCST Fall Conference 2009 Registration

Please use one form per person, copy as needed. Membership in CRCST or CRABS is required.

Please check the appropriate option		<i>Early-bird (by Oct. 10)</i>	<i>On-site</i>
<input type="checkbox"/>	Conference only (existing member)	\$20	\$25
<input type="checkbox"/>	1 year CRCST membership & conference (undergraduate education student)	\$20	\$25
<input type="checkbox"/>	1 year CRCST membership & conference	\$35	\$40
<input type="checkbox"/>	2 year CRCST membership & conference	\$44	\$50
<input type="checkbox"/>	3 year CRCST membership & conference	\$53	\$60
<input type="checkbox"/>	1 year CRCST/CRABS membership & conf.	\$40	\$45
<input type="checkbox"/>	2 year CRCST/CRABS membership & conf.	\$54	\$60
<input type="checkbox"/>	3 year CRCST/CRABS membership & conf.	\$68	\$75

Name: _____ H Phone (____) _____

H Address: _____

City: _____ ZIP _____

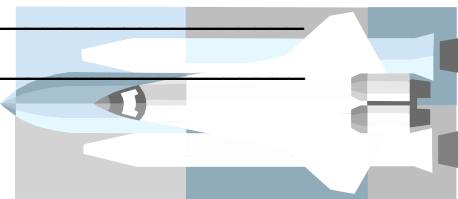
School/Work Site _____

City: _____ ZIP _____

Phone: (____) _____ E-mail _____

Make check payable to **CRCST**

Mail to: Mark Waner, Dept. of Chemistry, John Carroll University
 20700 North Park Blvd., University Heights, OH 44118



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check out these great video snips at: [http://](http://sciencecheerleader.com/category/brain_makeover/)

sciencecheerleader.com/category/brain_makeover/

The Space Place

<http://spaceplace.nasa.gov>,

NASA's award-winning web site for kids, presents the Space Place cartoon kids hosting their own talk show "live" from the Space Place Clubhouse. Their guests are NASA scientists and engineers. The goal of "Space Place Live!" is to introduce kids to the human, down-to-Earth side of real scientists and engineers working in the space program. Each guest is presented as a passionate and accomplished role model for. In the latest

Continued on Page 14

Scientific Reasoning: No Child's Play

Shira Blum leads her 5th graders to a park across from the Academy of the Americas to observe plants and animals in their natural habitat. She uses a curriculum designed to build students' scientific-reasoning skills through observation, data collection, and claim substantiation.

—Brian Widdis for Education Week

In Detroit, a curriculum requires elementary pupils to do the work actual scientists do.

By [Sean Cavanagh](http://www.Edweek.org) www.Edweek.org

Primed with a few simple instructions, a group of 5th graders ventures into a rich ecosystem, alive with birds, invertebrates, and even a few mammals—like the rabbits they see, but can't catch.

This habitat isn't a lake, river, or forest. It's a scruffy school courtyard in the heart of southwestern Detroit.

The elementary schoolers, wearing hooded sweatshirts and jackets on this raw April day, dig into the lumpy grass with hand shovels. One team spies an earthworm slithering for cover. "Look! Look!" a boy shouts. A class-mate scoops it into a plastic vial.

His group scampers to another corner of the yard and pries up a heavy

stone block, exposing moist soil and a bed of insects beneath. "Right there, right there!" a student cries out.

By the time their teacher, Shira Blum, marshals them back into their second-floor classroom, the teams have collected worms, centipedes, slugs, and "roly-polys," tiny bugs that roll themselves into balls.

Anthony Suarez, left, Diego Calzada, and Daniel Gonzalez collect and enter data from observations the Academy of the Americas 5th graders made in a park across from the school.
—Brian Widdis for Education Week



The students, from the Academy of the Americas, a public school a few miles from downtown, are being asked to do the painstaking work of science, in an unlikely setting. It's part of a curriculum and professional-development program called **BioKIDS**, which seeks to build students' skill in complex scientific reasoning. The approach goes well beyond fostering students' knowledge of science facts and concepts, to place a heavy emphasis on the more difficult work of having them devise scientific arguments based on evidence. In other words, it's the work that actual scientists do.

Cultivating complex scientific-reasoning skill takes time and continued practice. But if children develop those abilities early, the creators of BioKIDS contend, it can gird them for more difficult content in middle and high school and stoke a deeper love of science. So far, the investment seems to be paying off in De-

troit. At the 22 city schools taking part in the program, science scores on the Michigan state exam, which have lagged below state averages, have risen. Students also have scored well on separate tests of their science-reasoning ability.

In the days following their recent outdoor activity, Ms. Blum's students will review the characteristics of the specimens they've collected and make claims and present documentation about them. Later, they'll cover specific vocabulary terms—like "biodiversity"—and begin making more-detailed observations of species from each "zone" in the grassy courtyard.

Ms. Blum, like other teachers using the program, has traded her traditional science textbooks for thinner workbooks provided by the University of Michigan, in Ann Arbor, where the program was developed.

"They're going deeper into it, but this way, it's more fun," Ms. Blum says of the science she covers. "It's teach, ask questions, teach, ask questions. ... [A textbook] doesn't take them outside. This takes them outside."

Urban Terrain

The workbooks and the overall BioKIDS program were designed by a team of researchers led by Nancy Butler Songer, a professor of science education and learning technologies at the university.

A core idea behind the program, which was created in 2001, is that early-grades science tends not to challenge students to move beyond very basic facts and reasoning. That shortcoming partly explains U.S. students' struggles as they move from elementary to middle school science, as shown on international tests, Ms. Songer argues.

BioKIDS, which stands for Kids' Inquiry of Diverse Species, tries to give students a thorough foundation in reasoning skills through a curriculum that lasts eight weeks in the 4th, 5th, and 6th grades. Students

are given five 50-minute science periods per week. "There's a huge mismatch between the kind of knowledge that's needed for the future and what's taught in the classroom," Ms. Songer said. "We're trying to bridge that gap."

Scholars have been exploring how students acquire and develop scientific knowledge for years. But psychologists and education researchers have taken a renewed interest in that question over the past decade, said Leona Schauble of Vanderbilt University, in Nashville, Tenn., who shares that focus.



David Camarena observes a slug collected outside the Academy of the Americas, a public school in Detroit.

—Brian Widdis for Education Week

One goal is to move the teaching of elementary and middle school science away from presenting the subject as "carved-up modules" and topics isolated by grade level, Ms. Schauble said. BioKIDS and similar research, she said, seeks to build knowledge in a more systematic and productive way.

Scientists "don't just learn final-form facts that someone else has produced," said Ms. Schauble, a professor of education. Students, she said, need to know how scientists "produce knowledge about the natural world" based on scientific research, substantiation,

and argumentation.

While BioKIDS was not created specifically for urban schools, Ms. Songer believes its principles could benefit other big-city districts. Instruction in city schools tends to become "dogmatic," as teachers struggle to cope with students' behavior problems, she said. BioKIDS, by contrast, gives students more independence than many elementary science programs do. Managing students in a BioKIDS classroom takes work, Ms. Songer said, but the Detroit teachers she works with have put forward the extra effort.

"There's a real hunger in urban schools," Ms. Songer said, even though "many people have just written them off."

The **Detroit district**, to be certain, faces myriad challenges. It has long been plagued by low test scores, high dropout rates, and financial woes, exacerbated by steady job losses in the city's signature automaking industry. Student enrollment has plunged from 185,000 two decades ago to about 95,000 today.

The latest tumult came last year, when the district reported a deficit of \$408 million, prompting Michigan schools Superintendent Michael Flanagan to place the city schools in a state of financial emergency. Last month, the state-appointed financial overseer, Robert Bobb, announced plans to close 23 schools and lay off 600 teachers to cut costs.

BioKIDS serves a student population that is poor and highly transient. About 30 percent of the program's students move to schools out of the program each year. Roughly the same proportion of teachers leaves those schools annually, Ms. Songer estimates.

Ms. Blum hopes she will not be one of them. But last month, the Academy of the Americas teacher said she was told she would be laid off at the end of the school year. Ms. Songer is planning to write to district

officials to try to persuade them to keep the educator.

Think Like a Scientist

The Academy of the Americas is a red brick building in a neighborhood of single-story houses, which borders a church and a weather-beaten playground. Visitors are admitted through the school's front door by pressing a buzzer that plays "The Star-Spangled Banner" inside.

Some days, Ms. Blum has her students, the vast majority of whom are of Latino descent, do their BioKIDS work directly in front of the school entrance, in the grass buffering the sidewalk. Other days, they work in the more spacious grass courtyard, dotted with benches and pine trees. At other schools, BioKIDS teachers have students conduct fieldwork in even more unlikely settings, like asphalt playgrounds, because that's what's available, Ms. Songer said. Even there, she noted, they see a surprising amount of biodiversity, especially birds and insects.

One day last month, Ms. Blum watches as her students dig for specimens in the school's courtyard. She moves from team to team, asking questions: How will you classify that insect? How do you know what it is? Occasionally, a group strays off task, and she guides them back.

One of her adolescent explorers is David Diaz, age 10. His father is a construction worker who moved to the United States from Mexico, but the 5th grader dreams of designing cars for a living—including a model that can turn invisible and fly. The field research appeals to him.

"You're acting like someone who finds things," he says of the activity, "like someone who tries to find fossils."

Like other participating BioKIDS teachers, Ms. Blum was introduced to the curriculum through workshops run by university faculty members over the summer

and school year. Ongoing workshops allow teachers to bring in samples of individual students' work to discuss common problems.



Factory emissions are graphically represented in Shira Blum's classroom. The science curriculum she uses gives students more freedom to explore their subject. —Brian Widdis - Education Week

"We keep adjusting and adjusting," she said.

BioKIDS assignments gradually become more complex. Fourth graders are asked to practice making scientific claims and providing proof for them. In later grades, students produce more fully formed scientific explanations. In addition to building science skills, the tasks help students learn how to form more general arguments, Ms. Songer said.

Ms. Blum has her students follow those steps in writing, on pieces of paper many have decorated with pictures.

"Hilario is a Mexican-American," one student writes. Under evidence, he says: "He was born in Las Vegas. His parents were born in Mexico." For reasoning, he cites his and their origins.

BioKIDS also attempts to build scientific reasoning through technology. One such tool is CyberTracker, a system that allows students, using hand-held devices, to record and graph information on species. The tech-

nology was originally developed for wildlife trackers in Africa. It helps students on state tests, which require graphing knowledge.

Darkness to Light

Many BioKIDS lessons, though, rely on simpler tools. At Brewer Elementary School, in northeastern Detroit, teacher Beatrice May has arranged what at first glance looks like a standard classroom activity. She asked her students to plant seeds at home, water them, and record the plants' growth, either in dark or light conditions. Now, a week later, they're charting the growth and making observations about color and height.

The work does not stop there, however. Ms. May challenges the children to use the data to make a scientific argument. Do plants, she asks, need light to grow? Most students say yes; a few say no. She points to their data and asks for their evidence. During the discussion, Ms. May also presses her 4th graders to act, and talk, like scientists.

"My plant was 5½," one student informs the class. "Five and a half what?" the teacher asks.

Five and a half centimeters, the child responds. Jaylyn Fortune, 11, took his assignment seriously. He says he was careful to keep his plant in good light, on a dresser near an upper-story window in his house. Soon, it had grown to 7 centimeters, data he dutifully recorded.

"I like watching it grow from a seed," he says. "It's something I can do on my own."

His teacher, Ms. May, has been an elementary teacher in Detroit for 21 years. Many of her predominantly African-American students come from poor households; a majority of their parents are out of work, she estimates. The strength of BioKIDS, as she sees it, is that the curriculum is stripped-down, yet rich.

"Before, we just had the textbook," Ms. May said. Students were "just reading and trying to understand it." Now, she explained, "they can understand the language. ... It's real life. They can see it."

Coverage of mathematics, science, and technology education is supported by a grant from the Ewing Marion Kauffman Foundation, at www.kauffman.org.

From Page 10

every child interested in science or engineering. In the latest episode, the kids interview a cartoon version of the GOES satellite Deputy Project Scientist, Andre Dress. Andre works at NASA's Goddard Space Flight Center in Greenbelt, Maryland. He talked with Kate and Kyo about preparing the new GOES-O weather satellite and the team for the most exciting day of the mission, the launch!

Lyme Disease

As spring eases toward summer, Lyme disease season heads into full swing. While those who live in areas that have higher rates of Lyme disease may be more aware of what to watch for, those planning vacations for the summer should also have knowledge of the disease.

"More than 23,000 cases of Lyme disease were reported in 2005, making it the leading tick-borne (carried by ticks) disease in the United States. Experts think that the number Lyme disease cases may be even higher, though, because sometimes people don't know that they have it. Nearly all cases of Lyme disease (95%) in the United States happen in the Northeast, upper Midwest, and Pacific coastal states. ... Some cases have also been reported in parts of Canada as well as in northern and southern Europe and even in Asia."

http://kidshealth.org/teen/infections/skin_rashes/lyme_risk_teen.html

For those who contract Lyme disease and don't know to think of it as a possible reason for their symptoms (and even for those who do), there can be often be difficulties when those symptoms go misdiagnosed.

"Sometime in the mid 1990s, my sister contracted

Lyme disease, likely through being bitten by a deer tick or black-legged tick. The bacterium that had introduced itself to Sue's bloodstream went undetected, and then was misdiagnosed for the better part of two years. ... She was misdiagnosed twice in the early stages of the disease -- once with Chronic Fatigue Syndrome, the second time with Epstein-Barr virus. She was accused of exaggerating her symptoms to avoid work, or inventing them in order to get pain medication. By the time anyone thought to give her a definitive blood test for Lyme, the disease was on the march. Patients treated in the early stages -- within about two to four weeks after the onset of symptoms - usually make a complete recovery. Not everyone is so fortunate."

<http://www.msnbc.msn.com/id/30725967/>

Early detection is key, but it is also difficult.

"It's hard to put a number on how common misdiagnoses are, but early detection can be difficult,' says [Dr. Paul Auwaerter, clinical director of infectious diseases at John Hopkins University School of Medicine and a leading specialist on Lyme disease]. 'It takes the body some time to generate enough antibodies to show up in testing, and the symptoms are common to many other ailments.'"

<http://www.msnbc.msn.com/id/30725967/>

The longer the disease stays undiagnosed (and therefore untreated) in a person's system, the more damage it can do.

"If Lyme disease is left untreated, it may progress in stages from mild symptoms to serious, long-term disabilities. There are three stages of Lyme disease: early localized, early disseminated, and late persistent.

* Stage 1: Early localized infection (1 to 4 weeks): Some people with Lyme disease have a rash (called erythema migrans) at the site of the tick bite. The rash is usually circular and it gets larger over time. ... Some people with Lyme disease will have flu-like symptoms with or without a rash. ... In some cases of Lyme disease, the person does not notice any symptoms during this stage.

* Stage 2: Early disseminated infection (1 to 4 months): If Lyme disease is not detected and treated while early symptoms are present, or if you do not have early symptoms that trigger the need for treatment, the infection may affect the skin, joints, nervous system, and heart within weeks to months after the

initial infection....

* Stage 3: Late persistent infections: If Lyme disease is not promptly or effectively treated, damage to the joints, nerves, and brain may develop months or years after you become infected (late Lyme disease). ... Heart, nervous system, and joint symptoms may be the first signs of Lyme disease in people who did not have a rash or other symptoms of early infection."

<http://arthritis.webmd.com/tc/lyme-disease-symptoms>

Getting treatment earlier is better than later, but knowing what Lyme disease is, how to avoid it, and what to do if it is suspected are all key factors in obtaining an early diagnosis and reducing the risk for complications.

"Lyme disease is caused by the bacterium *Borrelia burgdorferi* and is transmitted to humans by the bite of infected blacklegged ticks. Typical symptoms include fever, headache, fatigue, and a characteristic skin rash called erythema migrans. If left untreated, infection can spread to joints, the heart, and the nervous system. Lyme disease is diagnosed based on symptoms, physical findings (e.g., rash), and the possibility of exposure to infected ticks; laboratory testing is helpful in the later stages of disease. Most cases of Lyme disease can be treated successfully with a few weeks of antibiotics. Steps to prevent Lyme disease include using insect repellent, removing ticks promptly, landscaping, and integrated pest management. The ticks that transmit Lyme disease can occasionally transmit other tick-borne diseases as well."

<http://www.cdc.gov/ncidod/dvbid/Lyme/>

Even if Lyme disease is not suspected, but a tick bite has been noted, it is important to make health care providers aware of the potential for a tick-borne ailment. While certain areas of the country have a higher instance of certain tick-borne ailments, anyone who notices a tick on their skin and has traveled to (or lives in) an area with reported cases should talk to a health care professional.

"The ticks pick up the bacteria when they bite mice or deer that are infected with Lyme disease. You can get the disease if you are bitten by an infected tick. Lyme disease was first reported in the United States in the town of Old Lyme, Connecticut, in 1975. Cases have now been reported in most parts of the US. Most occur in the Northeast, upper Midwest, and along the Pacific coast. Lyme disease is usually seen during the late spring, summer, and early fall. ... Risk factors for

Lyme disease include walking in high grasses, doing activities that increase tick exposure, and having a pet that may carry ticks home."

<http://www.nlm.nih.gov/medlineplus/ency/article/001319.htm>

For those who engage in activities that increase the likelihood of tick exposure, it is important to check the skin for ticks after spending time outdoors.

"If you find a tick: Call your doctor, who may want you to save the tick after removal so that the tick can later be identified as the type that may carry Lyme disease. You can put the tick in a jar of alcohol to kill it. Use tweezers to grasp the tick firmly at its head or mouth, next to your skin. Pull firmly and steadily on the tick until it lets go of the skin. If part of the tick stays in your skin, don't worry. It will eventually come out — although you should call your doctor if you notice any irritation in the area or symptoms of Lyme disease. Swab the bite site with alcohol. One note of caution: don't use "folk remedies" like petroleum jelly or a lit match to kill a tick. They don't get the tick off your skin quickly enough, and may just cause the insect to burrow deeper into your skin."

http://kidshealth.org/teen/infections/skin_rashes/lyme_risk_teen.html#

Questions of the Week:

What do you need to know about Lyme disease? What risk factors do you have for contracting the disease? What can you do to reduce your risks while still enjoying time outside? What can you do to increase the chances of an early diagnosis if you suspect you might have symptoms related to Lyme disease? What can you do if you suspect that you have been misdiagnosed?

Please email me with any ideas or suggestions. I look forward to reading what you have to say.

Thank you,

Cindy

aehealth@yahoo.com

Health Community Coordinator

Access Excellence @ the National Health Museum

<http://www.accessexcellence.org>

What Can CRCST Do For You?

Jo Ann Lane

I have been a member of the CRCST Board of Directors for many years. The Board meets monthly

from August to May each year and usually has about twenty directors present at each meeting. Our primary work each year is to plan a Fall Conference and a Spring Symposium that will provide members with new teaching ideas, updates in scientific knowledge, access to vendors, and anything else that will enhance their teaching.

The usual amount of work was put into planning the two symposiums to be held on April 25th and May 2nd this year. Both were cancelled due to lack of interest. This brings me to why I decided to write this article. When the Board met in May, we discussed reasons why we thought the symposiums had to be cancelled including: it is a busy time of the year, Saturday is not a good day, the topics were not interesting or helpful to teachers, etc.

Truthfully, participation in workshops, conferences, etc. presented by both CRCST and CRABS has been declining in recent years and I have only heard the ideas of other Board members as to why they think this is so. I would like to hear from members about why you did not plan on attending one of the Spring Symposiums. Is the Board out of touch with what you need? Are you too busy taking courses to attend an extra meeting? Would a different time of the year or day of the week be better? What types of topics would you like to see presented? Will you plan on attending the Fall Conference on October 24th? Please take a minute to dash off an email to me at jlane7824@sbcglobal.net to let me know what is on your mind. I will share all answers with the Board at our first meeting of the next school year in August. The Board of Directors wants to plan activities that will help you be a better science teacher. This is your chance to be heard.

Upcoming Events:

CRCST Fall Conference Oct. 24 (see pg. 9)

SECO Annual Conference Feb. 27, 2010

THE GREAT LAKE ERIE BOAT FLOAT

Saturday, October 3rd, 2009
Edgewater State Park, Cleveland, Ohio

Submitted by Cathi Lehn, Ph.D., Conservation
Program Coordinator, Biodiversity Alliance

Today, plastics make up a large part of our disposable society; however, we pay a substantial cost for the luxury of living in such a society. Every day we throw plastic away, however it hardly ever goes "away". Evidence for this may be found in the Great Pacific Garbage Patch or more locally, a walk along Lake Erie's beaches. This is the message delivered by Dr. Marcus Eriksen, Director of Research and Education of the Algalita Marine Research Foundation.

In 2003, Marcus sailed down the Mississippi River on a plastic raft called *Bottle Rocket*. Last year he constructed a raft out of 15,000 plastic bottles called *JUNK* and sailed across the Pacific Ocean. This October, Dr. Eriksen will construct another boat made out of plastic bottles called *The Cola-hoga* and will sail it in Lake Erie at Edgewater State Park.

Biodiversity Alliance* invites your school groups and classrooms to join Marcus on Saturday, October 3rd, at Edgewater State Park with your own plastic boat. Registration fee is \$50 and registration is required for all participants. Participants will be invited to meet with Marcus for tips on plastic boat construction and will receive tickets to hear Marcus speak at the Northeast Ohio Environmental Awards** on Friday, October 2nd at 7:30 p.m. at The Cleveland Museum of Natural History (www.cmnh.org).

Don't want to float a boat in the Lake? Then bring your own smaller version for display or just come and watch the FUN! Registration is required but no registration fee is requested to display your boat.

More information will be available online on July 15th at www.lakeerieboatfloat.org or contact Cathi Lehn at (216) 707-2826 or clehn@cbgarden.org for details.

*Biodiversity Alliance is a conservation collaborative involving The Cleveland Museum of Natural History, Cleveland Metroparks Zoo/Cleveland Zoological Society, The Holden Arboretum, and Cleveland Botanical Garden.

**Nominations are now being accepted for the Northeast Ohio Environmental Awards. The deadline for submission of materials is June 30th. More information about the Awards may be found at: www.biodiversityalliance.org

All photos courtesy of Marcus Eriksen

National Wildlife Federation Seeks Volunteers to be Certified as Wildlife Habitat Stewards

Cleveland, OH – This Fall, the National Wildlife Federation (NWF), with the support of the Cuyahoga Soil and Water Conservation District, and local natural resource professionals is looking for dedicated individuals to train as Certified Habitat Steward Volunteers. Trained and certified Backyard Habitat Stewards can help promote and encourage the principals of watershed protection as they assist community residents to create backyard habitats that are environmentally healthy and wildlife friendly. **Registration fee is \$50.00 per person and includes an instruction manual and numerous resource materials, several classes of instruction and certification upon completion.**

The training is taking place beginning the evening of Tuesday, September 22, 2009 and continuing Tuesday and Thursday evenings from 6:30pm – 9:00pm until October 8, 2009 at the Walter F. Ehrnfelt Recreation and Senior Center – 18100 Royalton Road, Strongsville, OH 44136. Instruction will also take place on two Saturdays during that time period. Certified stew-

ards will be requested to complete 30 hours of volunteer service upon completion of the course.

Wildlife Habitat subjects to be included in the sessions are: four components of establishing a Natural Wildlife Habitat, use of native plants, how to attract wildlife such as birds, butterflies, and amphibians, establishing a rain garden in a habitat, composting and other topics.

To register, visit our website at www.cuyahogascwd.org.

Bernadette Hackett, Administrative Assistant
Cuyahoga Soil & Water Conservation District
6100 West Canal Road, Valley View, Ohio 44125
bhackett@cuyahogascwd.org
Ph: 216.524.6580 Ex:10, Fx: 216.524.6584

The Space Place

The latest issue of a bi-monthly newsletter for formal and informal educators has just been published. The newsletter is all about the many useful and--it goes without saying--free resources on The Space Place website that can be helpful to classroom and home school teachers, after-school program directors, museum and library program directors, and other informal educators.

A .pdf version of the newsletter may be downloaded from <http://spaceplace.nasa.gov/en/educators>.

It is hoped that you and your colleagues find the newsletter and www.spaceplace.nasa.gov helpful.

Science In The News Weekly

Today's Headlines - June 9, 2009

New Technologies Allow Scientists to Watch Cells in Motion

from the New York Times (Registration Required)

It's easy to imagine the cells in our bodies like bricks in a house, all cemented into place. But we are actually seething with cells that creep, crawl, and squirm. They start wandering soon after conception, and, throughout our lives, our bodies continue to hum with cellular traffic.

Some cells burrow into old bone so that new bone can be laid down in their wake. The tips of new blood vessels snake forward, dragging the cells behind along with them. White blood cells race along on flickering lobes to chase down bacteria before they can make us sick.

... Thomas Pollard, a biochemist at Yale, started studying crawling cells in the 1960s, when, he said, "Exactly zero was known." Today Dr. Pollard and his colleagues have identified many of the key proteins that work together to let cells navigate through our bodies. Scientists can even see some of these proteins at work in living cells and measure their forces.

<http://tinyurl.com/kletog>

Mysterious Inscribed Slate Discovered at Jamestown

from National Geographic News

Archaeologists in Jamestown, Virginia, have discovered a rare inscribed slate tablet dating back some 400 years, to the early days of Americas first permanent English settlement. Both sides of the slate are covered with words, numbers, and etchings of people, plants, and birds that its owner likely encountered in the New World in the early 1600s.

The tablet was found a few feet down in what may be the first well at James Fort, dug in early 1609 by Capt. John Smith, Jamestown's best known leader, said Bill Kelso, director of archaeology at the site.

<http://tinyurl.com/kuvoul>

Meds as Good as Surgery for Diabetics with Heart Disease

from USA Today

Prompt bypass surgery holds no advantage over intensive drug therapy in many patients with type 2 diabetes when it comes to dying from strokes or heart attacks, new research suggests. Results from a study that explored the best treatment for patients with both type 2 diabetes and stable coronary heart disease were reported Sunday at the American Diabetes Association's 69th scientific conference in New Orleans. The study, a multicenter trial led by the University of Pittsburgh Graduate School of Public Health, took place at 49 medical centers in six countries over five years.

<http://tinyurl.com/nywqa6>

Blood and Treasure

from the Economist

Two of the oddest things about people are morality and culture. Neither is unique to humans, but Homo sapiens has both in an abundance missing from other species. Indeed, that abundance -- of concern for the well-being of others, (even unrelated others), and of finely crafted material objects both useful and ornamental -- is seen by many as the mark of man, as what distinguishes humanity from mere beasts. How these human traits evolved is controversial. But two papers in last week's Science may throw light on the process. In one, Samuel Bowles of the Santa Fe Institute in New Mexico fleshes out his paradoxical theory that much of human virtue was forged in the crucible of war. Comrades in arms, he believes, become comrades in other things, too.

<http://tinyurl.com/pyh5ok>

Too Few Women in Clinical Trials?

from Nature News

Women are under-represented in cancer studies, according to a survey of clinical research published Monday. The finding suggests that women are not getting fair access to experimental drugs,

the authors believe, and that the effectiveness of some treatments, which can work differently in women than men, may not be fully understood. Reshma Jagsi, an oncologist at the University of Michigan Medical School who led the survey, is a clinician who specializes in breast cancer ... In a sample of hundreds of studies, including more than half a million participants, Jagsi and her colleagues found that 75% of the studies under-represented women Out of studies on seven different cancer types, six under-represented women, often by as much as a third.

<http://tinyurl.com/mqojmb>

Tour de Force

from the San Diego Union-Tribune (Registration Required)

Oded Tour isn't trying to reinvent the wheel, just the engine that turns it. Ever since a one-time traveling salesman named Nikolaus Otto built the first practical internal-combustion engine in 1876, people have been tinkering with it, attempting to make the technology more powerful, more efficient, more of both. All of that tweaking has arguably produced the epitome of engineering excellence, a highly refined machine that's driven human society farther and faster than anyone might have imagined. It's an engine, though, that's far from perfect, especially in its most common use - the gasoline-powered car. ... Enter Tour, a 42-year-old biophysicist and former colleague of Nobel laureate Roger Tsien, who says he has the makings of a simply better internal-combustion engine.

<http://tinyurl.com/l3h2ad>

New Guidelines on Concussions Stir Controversy

from the New York Times (Registration Required)

New guidelines for the care of youth athletes who

sustain concussions are causing controversy among brain-injury experts, reigniting the debate over whether strict rules regarding concussions can actually leave athletes at greater risk for injury.

An international panel of neurologists, updating their recommendations on concussion care in the May issue of The British Journal of Sports Medicine, said that any athlete 18 or younger who was believed to have sustained a concussion during a game or practice should never be allowed to return to the playing field the same day.

The group had previously said that such athletes could return if cleared by a doctor or certified athletic trainer, but now contend that such determinations are too difficult and dangerous for same-day return to be considered safe.

<http://tinyurl.com/mcumzk>

Early Rocks to Reveal Their Ages

from BBC News Online

A new technique has been helping scientists piece together how the Earth's continents were arranged 2.5 billion years ago. The novel method allows scientists to recover rare minerals from rocks. By analysing the composition of these minerals, researchers can precisely date ancient volcanic rocks for the first time. By aligning rocks that have a similar age and orientation, the early landmasses can be pieced together. This will aid the discovery of rocks rich in ore and oil deposits, say the scientists. The approach has already shown that Canada once bordered Zimbabwe, helping the mining industry identify new areas for exploration.

<http://tinyurl.com/nvqgmz4>

Students Devise a Mariner's Lifesaver

from the Boston Globe (Registration Required)

The students at Rockport High School know the dangers that fishermen face because their fa-

thers are lobstermen on the North Shore, or simply because they've grown up steeped in their hometown's rich, seafaring history.

So it makes sense that some of the Rockport students might want to create a life-saving invention for fishermen.

The Rockport students are using a Lemelson-MIT InvenTeam grant to make a device that shoots an Emergency Position Indicating Radio Beacon up to 60 feet away from a boat in trouble, before it capsizes and traps the beacon beneath the vessel, where it might fail to work.

<http://tinyurl.com/kqwj2v>

"Essence of Maggot" Ointment to Heal Wounds Faster?

from National Geographic News

Bandages and ointments infused with essence of maggot may soon be coming to a drugstore near you. Battlefield medics hundreds of years ago were the first to notice that bloody wounds infested with maggots actually heal faster than "clean" wounds.

Today hospitals around the world breed selected fly larvae in sterile environments. These "medical maggots" are applied directly to wounds such as ulcers and burns, which are otherwise difficult to heal.

There is no question that the somewhat grim technique works. But how maggot therapy heals has long been a matter of debate. The secret, according to a new study, is in a fluid secreted by the maggots to help them consume decaying tissue.

<http://tinyurl.com/pf6w9l>

More Summer Science Events

June 26, 2009, 7:00p.m. - 9:00p.m. Family Friday Night FREE

This FREE public event will be held at Cleveland Lakefront State Park Headquarters, 8701 Lake-

shore Blvd NE, Cleveland. Hands-onScience activities from Dr. Robert Ballard's Immersion Presents Ocean Exploration program will engage all who attend in real science. We'll practice our compass navigational skills, create tools of an explorer, have a scavenger hunt, and simulate a remote search for a shipwreck in a "Who sunk my battleship" type game. This program is offered in collaboration with the Park System, the Center for Science and Mathematics Education, and Cuyahoga County Public Library. Reservations are requested. Please call 216-881-8141 x3001.

July 20 - July 31, 2009, 9:30a.m. - 3:30p.m Daily, Shipwreck Camp 2009

In partnership with the Cuyahoga County Public Library andCleveland Lakefront State Park (ODNR), the Center for Science and Mathematics Education brings back Shipwreck Camp. Twelve to 15 year old youth participate in an expedition to virtually find shipwrecks in Lake Erie. We'll retrofit small remotely operated vehicles and build Mindstorms robots, be introduced to SCUBA, and canoe in Euclid Creek. For more information, call 216-368-5075. Cost of this two week camp is \$450, includes \$25 non-refundable application fee. Applications are now available.

August 10-14, 2009 9:30a.m.- 2:30p.m. Environmental Heroes Orientation-Ohio & Erie Canal Reservation; After School Program Through Academic Year. Select 12-15 year olds will be preparing to continue the research around the question: What factors impact the abundance and distribution of amphibians and reptiles in the Ohio & Erie Canal Reservation of the Cleveland Metroparks. During the school year, students will conduct field research after school each Tuesday (4:00pm – 6:00pm). FREE. Applications are now available. All applicants will be interviewed for placement in vacant positions. Call 216-368-5075 for more information and applications.

SAVE THE DATE: October 16, 2009, Friday, 9:30a.m. - 4:00p.m.

Immersion Presents: Ocean Exploration
This professional development opportunity for After School leaders, Children & Teen Librarians, Teachers, Informal Educators, Day Care Center Providers, Science Club Leaders, Home School Families and others interested in hands - on science features Immersion Presents Adventure Series: Ocean Exploration curriculum for 5th - 8th grade level students. Designed for after school , hands-on science experiences, this program will connect to the exploration of Dr. Robert Ballard, oceanographer-explorer-finder of the Titanic. Virtually travel to the Thunder Bay National Marine Sanctuary to learn about shipwrecks, simulate a search for a sunken ship in the Black Sea, and develop strategies to prevent over-fishing off the coast of Newfoundland in the Grand Banks area of the North American continental shelf.
Fee: \$50. Call 216-368-5075 for more information.

President's column continued from Page 1
simply use a fan to cool your days and evenings. The more electrical energy that is used, the more greenhouse gases that end up in the atmosphere.
The shrinking of budgets in cities throughout our area may have an unintended benefit to the environment. Many communities are scaling back or eliminating the unnecessary cost of fireworks around the fourth of July holiday. Fireworks pump lots of toxic compounds into our atmosphere leading to a reduction of air quality, acid rain and an eventual fouling of our water resources. [See the diagram on page 22] The Disney folks have stopped using gunpowder to propel their fireworks and now use compressed air. They still are putting lots of nasty, toxic stuff in the air from the actual explosive displays, but it is a step in the right direction. Laser light shows can be as impressive as firework displays and won't wreak havoc on the atmosphere, the water supplies. Encourage, at every opportunity, your community leadership to move away from the fireworks and toward laser displays. Enjoy your

Conference.



From: http://www.geocities.com/yosemite/falls/9200/toxic_fireworks.html

Also see the following websites for more information about firework pollution:

<http://www.buzzle.com/editorials/6-23-2006-100289.asp>

<http://www.angelfire.com/co3/NCFS/science/breathtaking.html>

<http://conservationreport.com/2009/02/24/pollution-sparking-the-pollution-blaze-%E2%80%93-93-do-we-really-need-fireworks/>

Congratulations to President-Elect Mark Waner

Mark was presented with the Technical Achievement Award by the Cleveland Technical Societies Council at the May 11 Event. Here are the remarks from CTSC president and CRCST board member, Norm Schmidt:

I am very pleased to present this award to my friend, colleague and fellow Cleveland Regional Council of Science Teachers board member (our president elect), Mark Waner.

When I began working at John Carroll in 2000, Mark was one of the first faculty members to welcome me to the university. Of course, I thought he was a student.....he looked so young. Now he and Kristina have four children so he has aged a bit.

Mark received his undergraduate degree in chemistry from JCU and his masters and doctorate degrees in physical chemistry at Michigan State University. He is currently an Associate professor of Chemistry and the Director of the Center for Faculty Development at John Carroll University.

I will borrow from some of the letters of support written by his colleagues:

One writes: Mark Waner is one of the truly outstanding educators I have met in my 40+ years in

education. There are many educators who do a great job in the classroom, but Mark adds a dimension seldom seen. His energy is nearly limitless. His concern for the student and what they learn runs deep. His vision for the path of education in the future is clear and well thought out.

Another notes: In 2007, the National Chemistry Week co-chairs presented Mark a Salute to Excellence award in recognition of his outstanding contributions to the leadership of the Cleveland Section's National Chemistry Week Program. Mark has been a motivating force for the Cleveland Section's award winning National Chemistry Week program for many years. He has contributed fun experiment ideas for hands-on demonstration programs at local libraries, served as the section's liaison to the Cleveland Regional Council of Science Teachers, made outstanding contributions to the NCW website, and judged yearly chemistry contests for the area grade schools.

Another states: Mark mentored and organized the student affiliates at John Carroll to participate in the NCW activities. The students contributed significantly to the success of the competitions and preparations. Mark has also been the webmaster for the ACS Cleveland Section for years, maintaining the website for the Cleveland Section members and other chemists in the region.

And from me: Mark has published many scholarly articles and made numerous presentations at local, statewide and national professional meetings. Beyond his regular teaching responsibilities at John Carroll University he has also been involved in professional development programs for practicing middle grades teachers for several years. He has received lots of grant money and is acknowledged by his peers at JCU as a technology guru willing to help out others in need.

Perhaps Mark's greatest honor, prior to tonight's award (of course), was receiving the 2006 Lucrezia Culicchia Award for Teaching Excellence. This award is the result of student voting at JCU.

Congratulations, Dr. Mark Waner.....



Kristina and Mark Waner