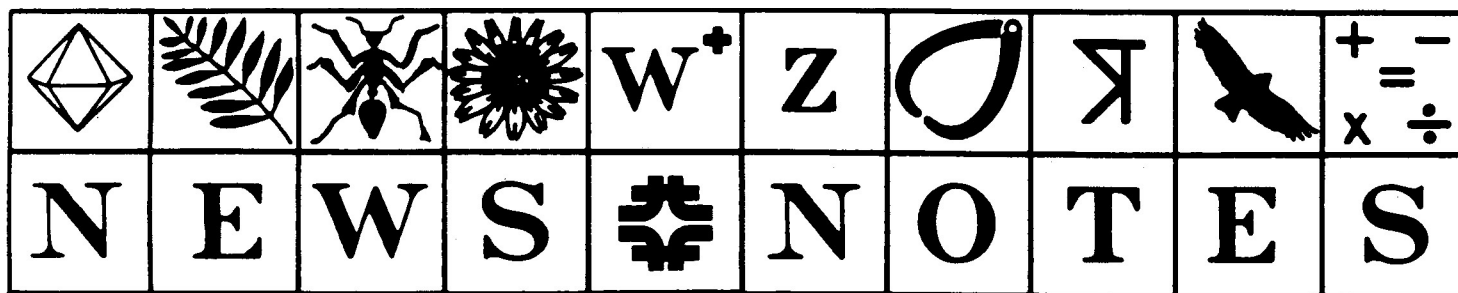


Fermilab Friends for Science Education



P.O. Box 500, MS 226 Batavia, IL 60510-0500

Fall, 2005

A Prairie Schooner for the LSC

Standing outside the Lederman Science Center is the newest enhancement to prairie field trips: a Prairie Schooner-style covered wagon. Made in Tennessee by a business specializing in replication of historic wagons, it incorporates vintage John Deere running gear. Horses or oxen would have pulled a wagon like this and the owners would have walked alongside, since there was no room for riders in the small, jam-packed interior. To help visitors visualize how tightly goods were packed for the long trip west, barrels and crates for the wagon will be bought with money donated to FFSE. The donation is in exchange for LSC docents volunteering time as hosts for receptions after Friday night lectures at Ramsey Auditorium.

The wagon will sit outside the Lederman Science Center from May through October each year. When prairie field trips are over late in the fall, the ribs that hold up the canvas cover will be taken down and stored inside the wagon, and the wagon itself will be put into storage by the Roads and Grounds crew.

Prairie Schooners were designed to be light, sturdy and versatile. Not only could the wagons pass over the Rocky Mountains, but upon arriving at the Columbia River in Oregon, travelers on the Oregon Trail could take



the wheels off their wagons, tie them together with other wagons, and float them downstream.

World Year of Physics Outreach Program

As part of the ongoing celebration of the World Year of Physics, the Education Office has put together a series of presentations for students in grades 2 through 12.

A cryogenics show and some demonstrations developed by graduate students, such as "Charge! Electricity and Magnetism" and "Light and Color," have been presented in the past. But new demonstrations, such as "Physics of Sports" and "Force and Motion," were developed especially for the WYP. Other selections include "Zap! Light and Color," "Stories of Science," "Physics in the Real World," "Cosmic Rays," and "Space, Time and Einstein."

The demonstrations have been very well received. "I have never seen any of my students so attentive and interested in any educational presentation before," commented Sarah Garcia, a fifth-grade teacher at Stevenson

Elementary School in Melrose Park. "They were eager to participate and eager to show everyone else what they had learned. Our presenter was wonderful and tried to give every student a chance to participate. He even allowed the students to come up after the presentation and work with the demonstrations that they didn't get to participate in. In my opinion, this was the best 'field trip' we had all year. I would highly recommend this to any teacher, and plan to ask Fermilab to come out again this year."

Fermilab staff have already made presentations to over 7,000 students, making it clear that the goal set in January, 2005 of reaching 10,000 students during the WYP is certainly attainable. The presentations are free of charge to the schools. These and other World Year of Physics activities are funded by FFSE through a grant from an anonymous donor.

PRESIDENT'S MESSAGE

Welcome back to NewsNotes. We are fortunate to have two docents interested in putting together our newsletter and helping with the annual report. Gail Haynes and Anne Mary Teichert are our new editors.

We will cover program activities and introduce you to members of the Education Office. We will share success stories so you can "meet" our participants.

As Pat Franzen says, with your support we "strive to create education opportunities that are relevant, challenging, exciting and grounded in solid, standards-based science." We trust that this newsletter will keep you in touch with our programs.

We look forward to a great year during 2005 and 2006.

APPLETON STUDENTS SALUTE FERMILAB

Last spring, Advanced Placement Chemistry students from three high schools in Appleton, Wisconsin visited Fermilab. Their teachers, Bruce Smith and Steve Franklin, wrote a thank-you note afterward and enclosed a picture of their students' post-trip "salute to Fermilab."

The teachers wrote that the students "were really excited about visiting such a world-class facility and they sure were not disappointed. There were so many special moments, but let me say that the mini-performance of "Schrödinger's Cat" on the stage of the Ramsey Auditorium was a highlight."



The picture shows students arrayed around "The Rock" outside North High School, nearly all of them sporting Fermilab t-shirts. The rock has been painted a brilliant Fermilab blue. In yellow and orange paint the words proclaim, "Fermilab '05" and "I ♥ Chemistry."

WORKSHOP: "THE READING CONNECTION"

This past spring, Priscilla Meldrim, Public Information Specialist at the Lederman Science Center, was struck by a teacher's comment that one reason science is not taught more in elementary school classrooms is that so much time must be spent teaching reading. "Why not teach reading using books about science?" she wondered.

Thus was born "The Reading Connection." Meldrim met with fellow Chicago Wilderness consortium members who volunteered to research books and develop a program appropriate for elementary school classrooms.

As their first selection they settled on Jean Craighead George's book, *The Firebug Connection*, the story of some children attending a summer camp where their parents are researchers. Left to their own resources during the day, the children entertain themselves by setting up experiments to learn about their environment. Would a mother bat recognize her baby if it was switched with another? The children mark some bats' wings with fingernail polish, then switch the babies to find out. Could a spider reweave a web with a hole in it? The children set up another experiment to gather data.

The committee selected this book because it gives insight into the scientific method and illustrates how experiments are conducted. The author was awarded the Newbery Medal for her book, *Julie of the Wolves*. When reading *The Firebug Connection*, students will be exposed to both intriguing science and well-written literature.

The committee proceeded to develop a two-day workshop, "The Reading Connection," presented to teachers on July 12 and 14. The two-day format was chosen so that teachers would have time to develop and run experiments of their own that could be duplicated in their classrooms. The workshop included an overview of science-related children's literature to provide the teachers with resources for future use.

The workshop was very successful; thirty teachers attended and more were turned away for lack of space. Participants went away with materials, activities, and ideas to use in their classrooms. Another Reading Connection workshop is planned for next year.



During the past year Education Office programs served more than 25,000 students.



SUMMER SECONDARY SCIENCE INSTITUTES

Among the new programs sponsored recently by FFSE are the Summer Secondary Science Institutes (SSSI). The institutes were developed in response to input from high school science teachers asking for content-oriented workshops.

A needs assessment revealed that what high school teachers really wanted were more opportunities to improve content knowledge and lab experience. This was especially true for new teachers and those teaching outside the field in which they were trained. Staff also determined that even teachers strong in content knowledge wanted help with “practical content.” This includes the identification of chronic trouble areas for students and instruction on ways to help them master those areas.

Physics was chosen as the pilot subject. The team of Bob Grimm (Palatine District 211), Paul Madson (Rosary High School, Aurora), and Ed Moyer (Proviso District 209) developed one-week workshops on four different topics: mechanics; electricity and magnetism; waves, optics, and sound; and astrophysics and relativity. The workshops were piloted in the summer of 2004, with half of the participant fees subsidized by FFSE. PASCO Scientific lent equipment for the workshops. Jason English (Fremd High School) replaced Bob Grimm for the workshop instruction.

Tom Knutson and John Chamberlain from Glenbard North High School and Laura Cox from Glenbard South High School developed and led the Biology Institute, which was added to the SSSI as a pilot program in the summer of 2005. Participants in this program, as well as in the physics programs, have been very happy with their experiences.

One mechanics workshop participant commented, “This class was outstanding in that it truly helped strengthen my knowledge of mechanics. Being that this will be my first year teaching physics, I feel the demonstration ideas I’ve learned in this seminar will help me confidently relay these concepts to my students.”

NEW FACE AT THE LSC

In November of 2004, Waylon Meadors joined the Fermilab Education Office staff. Waylon takes the position of Sue Mendelsohn, who passed away last year. He is the exhibit caretaker and building manager at the Lederman Science Center as well as the Education Office’s technology expert. Waylon remarks that he especially enjoys his job because it involves a variety of responsibilities. Originally from Normal, Illinois, Waylon served in the Navy from 1998 to 2002 as an information systems technician. When not working at the LSC, he takes classes at the College of DuPage.

FUNDING NOTES

❖ FFSE scholarships allow teachers to attend Education Office summer workshops and allow some schools to cover transportation expenses for their field trips to Fermilab. This year FFSE was able to award \$1,575 in scholarships.

❖ The partnership between the North Central Eisenhower Mathematics and Science Consortium, Eisenhower National Clearinghouse and the Teacher Resource Center holds an uncertain future. The U.S. Department of Education has discontinued funding the NCEMSC and the ENC. NCEMSC, part of the North Central Regional Educational Laboratory, provided funds for teachers from seven states in the Midwest to attend the Regional Software Review held by the Teacher Resource Center.

Discussions about future collaborations, as mathematics and science efforts continue in the newly designed consulting model called “Learning Point Associates,” have yet to take place. NCEMSC also funded some staff expenses in support of the ENC Demonstration Site collaboration.

The TRC hopes to find new sources for funding the Regional Software Review.

FIELD TRIPS

Between September 1, 2004 and August 30, 2005 the Lederman Science Center hosted 315 field trips for elementary and middle school classes who visited Fermilab to learn about particle physics and the prairie.

One middle school student commented, “Seeing all of the stuff was really cool. I always enjoy learning about atoms. Someday I hope to work at Fermilab.”

A student attending a prairie field trip wrote, “The thing I liked the most was when we were in the lab, it was so fun. Also I liked it when we went to see all of the plants that I wanted to see...That day was the best, thank you so much.”



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Annual Dues:

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Patron.....\$500
Sponsor.....\$250
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*Please check the appropriate membership category and enclose your check made out to **Fermilab Friends for Science Education**.
Include matching funds from your company, if applicable.*

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