

FermiNews

August 12, 1988 Vol. XI, No. 15



Fermi National Accelerator Laboratory

SISMT Continues to Teach the Teachers

Forty-five science and 15 mathematics teachers participated in the Summer Institute for Science and Mathematics Teachers (SISMT) held from June 13 to July 8, 1988, at Fermilab. The SISMT is an annual program sponsored by the Friends of Fermilab.

The first Institute was held in the summer of 1983. The curriculum included biology, chemistry, and physics until 1987 when mathematics was added. Since its inception, 270 science and 30 mathematics teachers have attended the Institute.

This year's participants included teachers from outside the Fermilab area, particularly educators from rural schools. Work began on the program early last fall when Marjorie G. Bardeen, Friends of Fermilab Program Director, and the Institute staff prepared the program announcement, reviewed the curriculum, and began selecting instructors. The staff looked for instructors who, in addition to being experts in their field, have the ability to present material on current research to an audience of teachers.

The 1988 staff included Institute Director William E. West, Science and Technology Chair at Naperville Central High School; Biology Coordinator George S. Zahrobsky, Science Department Chair at Glenbard West High School in Glen Ellyn; Chemistry Coordinator Lee Marek, chemistry teacher at Naperville North High School; Mathematics Coordinators Terry Perciante, Wheaton College mathematics professor, and Lee Yunker, Mathematics Department Chair at West Chicago High School; and Physics Coordinators Robert D. Grimm, physics teacher at William Fremd High School in Palatine, and Scott Welty, physics teacher at Maine East High School in Park Ridge.

The program consisted of morning sessions at Fermilab and afternoon sessions at Naperville Central High School. The morning sessions included three parallel seminars in each of the four disciplines and two plenary-session lectures on current research and contemporary relations among science, technology, and society. Plenary session lecturers included Leon Lederman and Rocky Kolb of Fermilab.

The afternoon sessions were devoted to laboratory and computer work. Participants were exposed to a variety of instructional materials and teaching strategies designed to stimulate student interest in science and mathematics. Participants presented a classroom activity to their colleagues and completed daily assignments usually requiring about two hours of homework. For their effort they received a stipend and could earn 4-1/2 semester hours of graduate credit from Aurora University. A follow-up session will be held in each discipline during the academic year, and a newsletter will keep participants and staff in touch with one another.

SISMT participant Leonard Freidhof, a teacher from Lanark, Illinois, a small town 90 miles west of Fermilab, teaches chemistry, physics, and human physiology in a high school with 250 students. He noted that he learned a great deal during his four weeks at Fermilab, and will return to his school with ideas for sparking interest in the learning of chemistry. Freidhof plans to share his new knowledge with educators from at least nine other schools in his area.

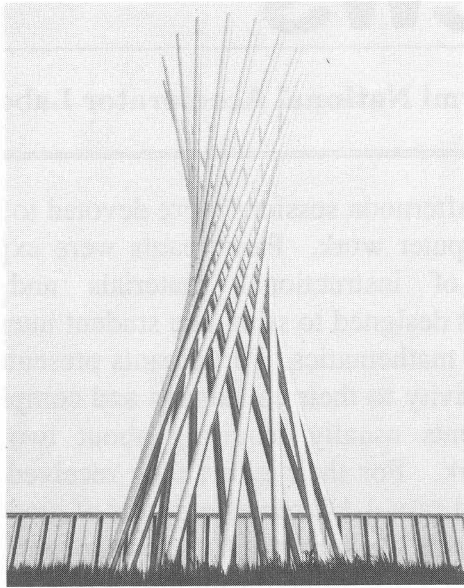
The 1988 Summer Institute was funded by the National Science Foundation, the Forest Fund, the Furnal Foundation, the Grainger Foundation, the Department of Energy, and the Universities Research Association, Inc.



'Wellness Works' News

In spite of the heat, 13 members of the Walking Club hiked a total of 390.10 miles in July for a two-month total of 780.55 miles. High-milers for the month of July are Betty Fay, Eileen Singer, and Pat LaVallie.

We realize that the intense heat of this summer caused some of our walkers to be unable to meet the program requirements. Don't let that stop you from turning in your mileage records. We want you to use common sense about when and how much to walk in this heat. Some miles logged-in are better than nothing. We encourage you to hang in there and turn in your mileage records! If you have any questions, call Dotti at ext. 4367. - Paula Cashin



The Fermilab Prairie(cont'd)

Illinois is known as the "Prairie State." This is somewhat ironic, because very few healthy, functioning prairie ecosystems remain intact in the state. But as a result of an extensive and ambitious prairie ecosystem restoration project in the center of the Accelerator Ring, a 455-acre prairie ecosystem is coming to life.

Mitch Adamus, immediate past chairman of the prairie restoration committee, explained that there are other prairies in the state, such as remnant prairies growing along railroad tracks and old cemeteries, but their small size limits the number of prairie plant and animal species they can support. "Their size makes them more like museum specimens than functioning ecosystems," he added.

In contrast, the Fermilab prairie seems to be developing into a self-sustaining prairie ecosystem, based upon the observed plant, animal, and soil interactions in the project. For example, we came across a raised oval of earth, devoid of prairie plants and covered with ants. "These mound-builder ants are characteristic of the prairie. You've got a mound about three feet in diameter that's essentially brought up from underneath the soil and obliterating everything on top of the ground." Adamus said that some of the ant mounds can be as large as six feet in diameter, which represents a significant disturbance in the prairie.

While watching the ants, Adamus explained that "the prairie community is in some sense a disturbance-oriented ecosystem." In the old days, herds of bison and elk would roam through the great prairies and create quite a bit of disturbance, ripping out and trampling prairie vegetation in their wake. Subtle, yet ongoing disturbances, such as groundhogs, squirrels, and the prairie ants burrowing underneath the prairie, contribute to the dynamic nature of this ecosystem.

Prairie history suggests that fire is vital to the life of the prairie. Although it can be a devastating disturbance in some ecosystems, it seems to encourage and nurture the growth of prairie species and discourage the growth of invasive Eurasian weeds. For example, purple lead plant won't flower on old stocks - only on lateral stocks or on new stocks that grow as a result of fire.

Prairie plants seem to occupy nearly every square inch of land, but Adamus pointed out that there's

Continued on page 3

Tractricious, the latest addition to Fermilab's outdoor sculpture collection, stands erect at last in front of the Fermilab Industrial Complex in general, Industrial Building 1 specifically. The artistic design for the piece came from Fermilab Director Emeritus Robert R. Wilson; the structural design was accomplished by Tom Nicol of the Technical Support Section (TSS); Paul Mantsch, Head of TSS, provided the impetus within TSS for completion of the project. Jerry Peterson and Luis Ramirez of TSS were involved with the welding and machining of the sculpture's tubes; Kurt Kasules, also of TSS, along with Fermilab's Construction Engineering Services Department, provided civil construction support and assured that the sculpture was up to code. Nicol began preliminary work in December of 1985, and the sculpture rose complete the week of June 2, 1988.

The sculpture is comprised of 16 stainless steel outer tubes, made from scrap cryostat tubes from TEVATRON dipole magnets, and 16 inner tubes, which are 5 in., Schedule 40, carbon steel pipes from old well casings salvaged from the Fermilab "bone yard." Each outer tube is 39 ft long and 6-1/2 in. in diameter, and weigh 550 pounds apiece; the sculpture itself rises to a height of 36 ft.

Each tube is free standing, designed to comfortably withstand winds up to 80 mph. In fact, the sculpture gently oscillates in the absence of wind and a light breeze acts as a damper to stop vibrations.

"Prairie" continued from page 2

still a lot of bare ground. Lifting a clump of vegetation aside and exposing the bare soil, he explained that "These are the spots where all the prairie forbs could fit in; there's room here - lots of niches for the different root structures and strategies of prairie plants." Diversity is the key to a healthy prairie ecosystem, and as Adamus said, there's plenty of room in the Fermi prairie for diversity.

Contributing to the prairie's diversity is the savannah, an open area of trees and grass undergrowth. The savannah isn't prairie or woods, but it has both prairie and forest species and unique species as well. One of the problems of restoring the savannah on site is that "we have little information about how savannahs function and what species live in them because there aren't any undisturbed savannahs in the Midwest," said Adamus.

The savannah fits nicely into the prairie ecosystem. For example, it is comprised primarily of fire-resistant burr oaks. Adamus explained that "In prehistoric times, fires burned right through the oak grove and out the other side without damaging the trees." The oaks are capable of withstanding the heat from prairie fires because they have a corky thick bark, an open, high branching pattern, and fire resistant acorns.

A fairly diverse sedgemoor also contributes to the prairie's diversity. "It gives us a dozen species that we didn't know we had a few years ago," he said.

Scientists find the chronologically successive plots useful for research. For example, scientists at Argonne National Laboratory are studying how the Fermilab prairie soil is redeveloping by comparing it to soils in native prairies, fields and cultivated fields. Their research indicates that the prairie soil structure is becoming more "prairie-like".

Non-disruptive scientific research, such as Argonne's soil research, can benefit the project in a number of ways. For example, the prairie committee would like some quantitative data to demonstrate that the prairie is doing well. Adamus said that "the prairie looks good, but we want data to confirm this observation." And scientists, by publishing the results of their research, will bring the project to the attention of the scientific community. "We're encouraging researchers to use the site; we want more activity and participation out here - we want a whole diverse base of scientific disciplines."

In the future, Adamus says that prairie restoration and preservation are important. "What we're working on now is restoring some of the small, early forbs - their seeds are difficult to obtain and they're delicate to grow." Most of the seeds for such plants as yellow stargrass, blue-eyed grass, and prairie phlox, have to be collected by hand. In the past, armies of volunteers would undertake the difficult task of collecting and planting seeds in the prairie. One time, "The children of Fermilab employees were recruited to plant grasses by hand, which was a fun project for them."

The project continues to grow, another of Fermilab's scientific and cultural contributions. As Adamus said, "In the beginning, this site was developed solely as a high-energy physics research facility, but now the ecological aspect is coming into view, and people like it." - Kevin A. Brown



The Activities Office.

It was a record day for Fermilab at the Fifth Annual Chicago 10K Run on Sunday, May 29, 1988. Over 1600 participants began the grueling 6.2-mile course at the One Magnificent Mile Building. Roger (*Accel. Div.*) Dixon and Steve (*Accel. Div.*) Conlon, prompted by Leon (*Directorate*) Lederman, rounded up 15 Fermilab employees to join the race. In addition to competing individually, they also entered the run as a corporate team sponsored by Fermilab. Tom (*Accel. Div.*) Jurgens ran away with 3rd place out of 250 participants in his age group. His average mile pace was 5:19.87. The team won 1st place for having the most participants from a single corporation. All proceeds went to the United Way Crusade of Mercy. Our congratulations go to all participants.

- Jean Guyer, Susan Winchester

Additional employee discount cards/opportunities

The following discount opportunities are in the pamphlet rack near the Activities Office, WH1E:

New Discount Cards: Sea World of Ohio and Texas; San Diego and Milwaukee county zoo discount cards; Silver Springs Wild Waters discount card; Florida's Weeki Wachi; Buccaneer Bay; Queen Mary & Spruce Goose.

Discount Opportunities: NCI Optical discounts; Contact lens replacement service (65% savings);

Continued on page 4

"Activities" continued from page 3

Bronson Pharmaceuticals (vitamins); AT&T discount catalog; BJ's Wholesale Club (5% over wholesale); Special Discount for Corky Seigel's "Chamber Blues" premier at the Paramount Art Center in August.

Stretch and Tone Exercise Classes

A workout for strength, flexibility, and muscle toning. Tuesdays and Thursdays, August 11 through September 29, 1988. 5:30 p.m. to 6:30 p.m. at the exercise room in the Gym. For more information, call Jean at ext. 3126. Gym membership is required, fee is \$1 per class.

In the Library

If bound journals have found their way to your office, would you kindly return them to the Library, MS 109. Summer students: Please return your library books before you depart. - Paula Garrett

The Film Society Presents:

3 Men and a Cradle, tonight, August 12. Baby Marie wins the hearts of everyone in this 1986 French film upon which the American hit, *Three Men and a Baby*, was based.

Hope and Glory, is director John Boorman's cinematic recollection of his experiences as a 9-year-old in World War II England under the Blitz, will be shown on August 26.

Bliss, on September 9 tells the tale of average advertising executive who dies for four minutes, is revived, and begins a surrealistic journey into suburban lunacy.

All films will be shown at 8:00 p.m. on their respective dates in the Ramsey Auditorium. Admission is \$2 for adults, \$.50 for children.

FermiNews Cla\$\$ified Ad\$

FOR SALE

Motorized Vehicles:

1976 TREK PICKUP TRUCK CAMPER, 11 ft, sleeps 6, 4-burner stove w/oven and exhaust hood, double stainless steel sink, full bath w/shower, large refrig., 30-gal water tank w/elec. pump, 10-gal hot water tank, 1600-b.t.u. gas furnace and inwall elec. heater, lots of storage, needs minor repair, first \$500 (firm) takes it. Call ext. 3174 or 798-4239 after 5:00 p.m.

1979 FORD FAIRMONT, 2-dr., excellent condition, 63,000 miles, asking \$1200, negotiable. Call Hiroshi, ext. 3748 or 406-9302 after 6:00 p.m.

1984 HONDA CRX, red, 5-spd, 33,000 miles, air cond., AM/FM cassette, excellent condition. \$5000. Call Tom at ext. 3203 or 665-6305.

1988 DODGE RAIDER 4x4, 5-spd, AM/FM stereo tape, A/C, PS/PB, 2-dr, recl back seat, 2-tone paint, 6000 miles, must sell due to illness, \$14,000. Call Gene, ext. 3624 or 851-0901.

Miscellaneous:

GRAPHITE BAIT-CASTING FISHING REEL, Silstar-Starlite I, magnetic drag control, ball bearings, 5:1 ratio, star-wheel line drag, almost new, \$25 or best offer. Call Chuck, ext. 4116, page 117, or 879-0394 evenings.

COMMERCIAL VIDEO ARCADE GAME, Williams Electronics "Motorace," for one or two players, one owner, low hours of play, excellent condition. \$500 firm. Ext. 3174 or 798-4239 after 5:00 p.m.

8-in. TABLE SAW, tilting arbor, mounted on work table. \$60. 897-2377 after 6:00 p.m.

FAINTING COUCH, antique oak, no backrest or side arm, recently professionally re-upholstered, excellent condition, asking \$160. GIRL'S BIKE, 5-speed, blue, good condition, \$35. PEUGEOT "PIPELINE" MOUNTAIN BIKE, single speed, knobby tires, mint condition, used only a few times, \$80. Call Hans at 355-8279 after 6:00 p.m.

MOVING SALE. Dining table, bed, drawer, sofa, desk, bookcase, card table, traveling bags, crib & mattress, walker, and other furniture. Call Hiroshi, ext. 3748 or 406-9302 after 6:00 p.m.

FermiNews is published by the Fermilab Publications Office, P.O. Box 500, Batavia, IL, 60510 (312) 840-3278 BITnet: TECHPUBS@FNAL, DECnet: FNAL::TECHPUBS

Editor: R. Fenner Editorial Assist.: C. Kania
Fermilab is operated by Universities Research Association, Inc., under contract with the United States Department of Energy.